REFERENCE

The Determinants of the Foreign Exchange Risk Hedging Practices of Saudi Companies

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Declaration

I declare that the contents of this thesis have been composed entirely by myself, that the work contained is my own, and that all contributions from others have been clearly indicated and have been given due reference.

Fahad Al-Mohaimeed

Dedication

TO my wife Um Abdul Aziz

.....For her Patient, Support, and Encouragement.

For My Daughter, Atheer & Abeer

To my Son Abdul Aziz

Abstract

This thesis explores and examines the determinants of corporate hedging of exposure to changes in exchange rate. A new finance and contingency theory model of currency exposure management decision determinants is developed and tested by conducting a two stages survey of Saudi exporting and importing firms. This model suggests that the currency exposure of these firms is determined by four groups of forces. Finance theory is used to develop two explanations of why firms hedge. The first indicates that hedging increases firm value by reducing expected financial distress costs, agency conflicts, corporate finance costs, and the problem of underinvestment. A second explanation is that corporate hedging is attributable to managerial risk aversion. Contingency theory is used to develop two further explanations of why firms hedge. It suggest that the hedging decision is also dependent on the firm's need to hedge, and second on the firm's ability to hedge.

The empirical side of this study consists of two stages. In the first stage, detailed interviews with fifteen risk management decision makers were undertaken to help in exploring and building the study framework. In the second stage the research model was tested using a sample of 83 responses from Saudi exporting and importing firms. This study found weak support for what previous studies identified as the determinants for hedging incentives and, further, suggests a new explanation regarding the role of finance theory factors in the hedging decision. It found strong support for the hypothesis that corporate hedging is affected by managerial risk aversion. Our findings show that managers' characteristics appear to be more associated with corporate risk management than other organizational and environmental factors. According to the managerial risk aversion argument, firms which are controlled by owners, have monetary and equity compensation system, and have young managers, are more likely to hedge. In addition, the study found that contingency theory offers another two explanations for why companies hedge. The first explanation is that hedging decision depends on the firm's need to hedge. According to this explanation, firms with high levels of currency exposure, in specific industries, in competitive markets, and with operations highly sensitive to changes in exchange rates, are more likely to hedge. The second explanation is that the hedging decision depends on the firm's ability to hedge. Firms with qualified staff and risk management decision makers, more risk experience, risk management training programme, strong relationships with banks, more ability to bear the hedging costs, and active internal involvement of operating departments in risk management planning, will be more likely to hedge.

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List of Abbreviations

CAPM	Capital Asset Pricing Model
FT	Finance Theory
FX	Foreign Exchange
GCC	Gulf Co-operation Council
MNCs	Multinational Companies
NAARS	The National Automated Accounting Research System
PPP	Purchasing Power Parity
R & D	The Research and Development Expenditures
SAIF	Saudi Arabian Investment Fund'
Shariah	Islamic Law as contained in the divine guidance of the Quran and Sunnah
SIMEX	Singapore Mercantile Exchange
SR	Saudi riyal
Sunnah	The teaching and exemplary conduct of the Prophet Muhammad (*sallah alih wasallam*).
U. K.	United Kingdom
U. S. A. or U. S.	United State of American

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Chapter One

Introduction

1.1 Introduction

The recent growth in international trading and the volatility of exchange rates has raised concern about the importance of hedging decisions for a firm, affected by exchange rate movements. Hedging refers to all actions taken to protect a firm against the risks resulting from exposure to foreign currency exchange rate fluctuations. The international firms normally determine hedging decisions when the exact amount of foreign currency to be hedged is as yet unknown, and the future rate of exchange under floating exchange rate regimes is uncertain. In so doing, the international firm utilises firm specific information about its international operations as well as aggregate foreign exchange market information and the firms' specific hedging determinants. The result will be to hedge or not to hedge decisions that vary with the unique circumstances of each international firm.

This study considers one of the problematic aspects in the management of a business organization which is the determinants of the foreign exchange exposure management. Much of the documented evidences regarding various aspects of the determinants of foreign exchange exposure management decisions are limited. Due to a lack of academic literature regarding the determinants of foreign exchange exposure hedging decision, this study will contribute to the literature that deals with determinants of financial risk management activities. For managers it is important to understand the reasons that lead to a firm's risk management strategy. Important questions remain regarding the determinants of the extent to which a firm hedges or not, and the interaction between a firm's hedging policy and its internal and external characteristics. This chapter is divided into seven sections. Section two highlights the importance of the study. Section three presents the objectives from managing foreign exchange exposure. Section four outlines the research theoretical framework. Section five introduces the objectives and questions of the study. Section six presents guidance to the content of the thesis. The final section outlines the main conclusions in this chapter.

1.2 The Importance of the Study

Mathur (1985, p. 1) stated that "Under the 1944 Bretton Woods Agreement, Central Bank interventions in foreign currency markets were frequent, with relatively minor changes in exchange rates. Managers then could afford to ignore foreign exchange exposure. However, with the demise of the Agreement in 1973, exchange rates for major currencies have fluctuated freely, sometimes wildly. These currency fluctuations constantly change the values of foreign currency assets and liabilities, thereby creating foreign exchange risks". This statement by Mathur sets off the need for research in the area of foreign exchange risk management. Of all the winds of change that have buffeted international companies in recent years, none has had a more pervasive impact upon their risk profile than the demise of the international monetary system of quasi-fixed exchange rates that had prevailed until March 1973 under the Bretton Woods Agreement (1944-1971) and, later, under the short-lived Smithsonian accord (1971-1973). Exporting, importing, and investing abroad exposes a firm to foreign exchange risks. Managing these risks now becomes one of the most difficult and persistent problems for financial managers of exporting and importing firms. A number of arguments justify the importance of this study. From the late 1970s surveys have shown that companies give increasing attention to the currency exposure and its management. In the UK, Rosendale (1973) found that only 31% of UK engineering companies had any policy at senior management level on exchange rate risk prior to 1971, but Broder (1984) found that UK multinational companies (MNCs) were beginning to take currency management seriously, confirmed by 76% of respondents of his questionnaire.

Exchange rates are a major source of uncertainty for exporting and importing firms, being typically four times as volatile as interest rates and ten times as volatile as inflation (Mathur, 1985). Jorion (1990) examined the exposure of US multinationals to foreign currency risks and discovered a positive correlation between the value of US corporations and their degree of currency exposure. It is commonly believed among practitioners, as well as academics, that exchange rates are an important source of macroeconomic uncertainty that influence the performance and the value of the firm in an international context (Choi and Kim, 2003). Jorion (1990), Bodnar and Gentry (1993), Dominguez and Tesar (2001) argued that the changes in exchange rates affect the firm's stock returns. During the period spanning from 1980 to 1985, U.S companies

with overseas investment in the stock markets of such major countries as the U.K, Japan and Germany, had a total volatility of 50% of their dollar returns accounted by foreign exchange (FX) rate volatility (Eun and Rensick, 2001). One of the interviewees in this study stated that; "*most of our raw material imports come from the UK, and we pay the cost in pound sterling. The high value of the sterling on the foreign exchange market affects our payments. Our operating profit was down by 24 million Saudi riyals last year. The reduction is more than explained by the strength of sterling throughout the year*". Many current studies have found a link between a firms' profitability and FX fluctuations, (Belk and Edelshain 1997, Bodnar and Gentry 1993, Levi 1990). The institutional investors considered corporate hedging as way of maximizing the value of the firm and to minimize any possible loss of shareholders wealth (Almohaimeed, 1999). Recent surveys found that risk management is ranked by financial managers as one of their most important objectives (Rawls and Smithson, 1990). Fluctuating exchange rates are likely to compound the problem of estimating risk. It is well known that managers must estimate risk return characteristics of securities in order to construct optimal portfolios according to the Modern Portfolio Theory (MPT). Fluctuations in exchange rates will make this task more difficult, possibly leading to sub-optimal portfolio selection. Stonehill and Moffett, (1997), argued that it is important for managers and investors in today's environment of volatile foreign exchange rates to understand foreign exchange risk management.

It seems that the shortage in research to examine the determinants of FX risk activity depend on incompleteness of the existing theory and the lack of meaningful data relating to the corporate exchange risk hedging activity of corporations who disclose only minimal details of their currency risk management programs. As will be discussed in Chapter 4, previous studies in financial and risk management report that hedging decisions can be influenced by environmental factors (Froot, Scharfstein, and Stein, 1993). But the studies were unable to discuss most of these environmental factors since the theoretical approaches adopted (finance theory) and the methods for collecting the data in these studies (published data) were not appropriate. Unfortunately, finance theory has much less clear cut guidance to offer on the logically prior question of foreign exposure hedging strategy; should foreign exchange exposure be managed or not?. It seems fair to say that is not yet a single accepted framework which can be used to guide hedging strategies. Partly, this gap arises precisely because previous work has

focused on how corporations hedge their foreign exchange exposure, rather than on whether foreign exchange exposure should be hedged or not. Against this background, the study is specifically concerned with firm-specific attributes that influence the different corporate responses to foreign exchange exposure. Moreover, this study seeks to bridge the gap between business managers and business academics with the aim to provide rational evidence for hedging decisions and to explain its effect upon the business enterprise through an actual survey of hedging decision determinants. A further significance of this study is the potential contributions that it will make, such as the promotion of a better understanding of currency exposure management in companies in general, and in developing countries in particular. Haushalter (2000, p. 107), stated that "Despite the prevalence of corporate risk management and the effort that has been developed to developing theoretical rationales for hedging, there are no widely accepted explanations for risk management as a corporate policy. Important questions remain regarding the determinants of the extent of hedged, and the interactions between a firm's hedging policy and its other policy decisions". This thesis will attempt to at least partially answer the Haushalter question by developing a contingency and finance framework for the determinants of hedging decisions. Corporate hedging literature fails completely to consider the effect of contingency approach in determining the hedging decision. It is not enough to say that individual models such as Geczy, Minton, and Schrand (1997) should be adopted to each individual firm; it must be specified how such an adaptation should be effected (see section, 7.3.1).

This thesis aims to explore and understand the foreign exchange risk management policy being adopted in exporting and importing companies in Saudi Arabia, as perceived by Saudi firms, which may benefit other countries with similar environments, especially the members of the Gulf Co-operation Council (GCC)[1] which have similar environments to that of Saudi Arabia. Carrying out a study in another country rather than that of a developed one, aims to obtain results comparable to the developed

[1] The GCC Countries are: Bahrain, Kuwait, Oman, Qatar, the Kingdom of Saudi Arabia, and United Arab Emirates.

country's data. It was hoped that, by examining the corporate hedging behaviour in Saudi firms, broader and more substantial theories of perception of corporate risk hedging might also be formulated. The study will also contribute to the theoretical literature by exploring the relationship between hedging decision and the firm's managerial, organizational, and specific environmental characteristics. The empirical tests in this study will include a set of internal and external firm's characteristics that are more comprehensive than those used by previous studies. The foreign exchange risk management literature abounds with empirical studies which concentrate on "multinational companies" (MNCs). However, the focus of this study will mainly and largely be concentrated on "international companies", which are simply defined here as importers and exporters, with fairly limited range of internal and external currency risk management techniques available. This study will provide new knowledge regarding the hedging activities in small firms and their hedging decision determinants. Furthermore, this study is the first to examine the factors that influence the hedging decision using a hybrid approach (combination of inductive and deductive approach, questionnaires and interviews).

1.3 Objectives of Managing Foreign Exchange Risk

The review of the literature and evidence on the previous section demonstrated that in general foreign exchange risk management is an important activity for many companies. However, each company has different number of objectives in managing this risk. In general, Nance, Smith, and Smithson (1993, p. 267) stated that 'finance theory indicates that hedging increases a firm's value by reducing expected taxes, expected costs of financial distress, or other agency costs'. Froot, Scharfstein, and Stein (1993, p. 1629) argued that 'corporate risk management adds value to the extent that it helps ensure that a corporation has sufficient internal funds available to take advantage of attractive investment opportunities'. Kenyon (1990) who carried out a survey study on 13 UK public companies found that the objectives of currency risk management are likely to be subordinate to the company's main objective, they are also likely to be a heterogeneous collection of aims. He was unable to find a single goal, which is either in fact adopted by all companies or can be recommended to all. Most companies are likely to have more than one objective. One assumption in chapter 2 is that some currency risks are managed with an eye on the accounting, transaction and economic effects of exchange

rate changes on the corporation. As can be seen further in chapter 2, currency risks is not a single problem for the company, but a combination of accounting and cash flow issues which affect the company in different ways. As a result, each company should have a single or set of objectives which concern these forms of currency risk.

Fatemi and Glaum (2000) surveyed the risk management practices in all non-financial German firms listed on the Frankfurt Stock Exchange. They asked the respondents to rank eight different goals in terms of their importance for risk management on an increasing scale of 1 to 5. They found that "ensuring the survival of the firm" turns out to be the most important goal with an average score of 4.70 and when respondents were asked to choose the one goal which is the most important, the over whelming majority (67%) chose the survival goal. Whereas, "enhancing reported results" the objective is seen to be not that important for these companies with an average score of (2.58). They also found that "reducing earnings volatility" turns out to be a less important goal with an average score of (3.37). Marshall (2000) found that from managing their foreign exchange risk USA and Asia Pacific MNCs sought to minimize fluctuations in earning. For UK companies he found that achieving certainty of cash flow is the most important objective. Breeden and Viswanathan (1990) argued that financial managers may use risk management practices to build their reputation and to put themselves above the interest of the shareholders. Tran (1980), stated that the overall objective in foreign exchange risk management of many companies is defensive in an attempt to minimize foreign exchange losses. Other stated objectives of managing foreign exchange risk include: the volatility of cash flows (Copeland and Joshi, 1996, Thompson, 1996), minimizing the variability of accounting earnings (Bodnar and Gebhardt, 1998), minimizing any possible loss of shareholders' wealth (Joseph and Hewins, 1997). However, all these studies concerned themselves with identifying the companies' foreign exchange risk management objectives in general, without trying to explain which particular kind of currency risks these objectives related to.

1.4 Theoretical Framework

A combination of both finance theory (FT) and contingency theory is adopted as a framework for exploring and explaining the determinants of foreign exchange risk management in Saudi firms. Corporate hedging decision research is explained largely by the finance theory, indicating that the hedging increases a firm's value. On

determining the corporate hedging, most of the research has mainly concentrated on the possibility that hedging can increase a firm's value by reducing expected taxes, expected costs of financial distress, expected agency conflicts, and the increasing investment opportunities. Most of the previous empirical work has focused on the predictive power of theories that view risk management as a means to maximize shareholder value (see Tufano, 1996; Nance *et al.,* 1993; Geczy *et al.,* 1997; Berkman and Bradbury, 1996; and Gay and Nam, 1998). Froot *at al.,* (1993) argued that while finance theory provides managers with good instructions on the implementation of hedges, unfortunately, finance theory has had no complete clear cut guidance to offer an answer to the question as to hedge or not to hedge. This study points out that to allow for independent risk management policy choice, one would require specification of the determinants model of the decision. As current finance theory is not developed enough to describe adequately the structure of this determinants model, the field is open to further contribution. It seems that before attempting to build the firm's risk management strategy, the manager understands empirically the determinants of that strategy decision. This study will attempt to contribute in this area by documenting robust empirical relations between foreign exchange hedging policy parameters and the determinants variables before attempting to subdivide the relations into components effect.

In order to address this issue, this study presents the contingency approach to support the framework for the determinants of the hedging decision on the same line as finance theory. It argues that contingency theory offers a more useful theoretical framework for determining the currency exposure management policy. Contingency theorists argue that there is no such thing as 'one best model' of hedging decision and research is focused on identifying situational variables that could make one model more appropriate than others. Contingency theory would suggest that the different situational contexts of world and bricks and mortar organizations would dictate different sets of hedging decision. This study's general assumption is that the decision to hedge or not to hedge the foreign exchange exposure is contingent upon environmental, organizational, and managerial characteristics. Many studies believe that it is becoming more important that the firm's context actively affects the level of its foreign exchange exposure (Bradely and Moles, 2001). The underlying assumption is that the hedging decision requires a manager to use a model of a firm's characteristics that match the conditions in which the hedging decision is taken. Thus, in order for a manager to achieve an

effective decision, he needs to fit the decision to the contingency factors and financial factors of the organization and thus to the environment. The framework suggests that the hedging decision is determined not only by the interaction of a number of external contextual factors or by the extent of financial benefit from that decision, but critically also by factors such as the level of company ability, need, and understanding of how these impact on internal processes.

1.5 Objectives and Research Questions

To the best of the researcher's knowledge, nothing has been written regarding the risk management practice in Saudi firms, or the determinants that influence their decision to adopt risk management policy. This study will add to the risk management literature and specifically the foreign exchange exposure management behaviour in Arabic and developing countries. *The aim of this study is to explore and examine the determinants of currency hedging decision by Saudi firms.* The main question of this study is '*why do some firms hedge foreign exchange exposure while others don't*? The study's objective is to explore and examine the variables that improve our understanding of the rationale behind foreign exchange risk management. In this regard, special emphasis will be given to the valid reasons for corporate hedging of foreign exchange risk, and to the possible limitations impeding the effective operationalisation of the current practices as perceived by the people concerned i.e. the directors, the risk manager decision makers of the Saudi firms. The research is mainly concerned with firm-specific managerial, organizational, and environmental context factors, and the value maximization factors that influence the different firm responses to foreign exchange risk. In particular, the study will emphasise the following specific questions:

1. How serious is the problem of foreign exchange risk for Saudi firms?
2. How important is the impact of the hedging incentives on the hedging decision?
3. To what extent do management risk aversion factors influence the hedging decision?
4. To what extent the firm's 'need for hedging' factors affect the hedging decision?
5. To what extent the firm's 'ability to hedge' factors affect the hedging decision?

1.6 Guide to the Content of the Thesis

This thesis consists of eleven chapters. Chapters two, three, and four, review the theoretical and empirical literature which focuses on the nature and determinants of the foreign exchange exposure management. The aim of chapter two is to illustrate literature relating to the nature of foreign exchange risk problems and management and the context of this thesis (Saudi Arabia). The chapter's objective is to describe how serious foreign exchange risk might be and to define and analyse the forms of exchange rate risks, and review some of the important literature regarding the management of the foreign exchange risk. The chapter also highlights some of the important aspects in the research context, Saudi Arabia. The purpose of chapter three is to explore some of the optimal hedging theories (against and for), which explain the factors which determine the extent to which a firm should or should not hedge. Chapter four reviews the theoretical and empirical work on the determinants of corporate hedging and derivative use, which helps to link the theoretical and empirical to identify areas of agreement regarding corporate hedging motives. The chapter highlights the previous studies which have modelled the role that characteristics of firms' play as determinants of corporate hedging decision. The aims, methods, hypotheses, sources of data, limitations and findings are discussed. The aim of chapter five is to present the research design and methodology, and methods, which have been adopted in this study in order to describe the manner in which the research objectives stated in this chapter, are addressed. The chapter also presents the contingency and finance theory as theoretical framework for the study. The purpose of chapter six is to describe the responses from the interviews and to identify the determinants of currency exposure policy in Saudi firms. The objective of this chapter is to examine the role of contingency and the environmental context in corporate hedging decision, and to assist in building the study framework. The purpose of chapter seven is to set out the research theoretical framework (Model) and identify its use in this study. The procedures used for constructing the model, the dependent and independent variables are described and defined.

In chapters eight, and nine of the thesis, the findings of the surveys designed to examine the determinants of foreign exchange risk management policy are presented. Statistical analyses are undertaken in these chapters to analyse firms' specific characteristics which can be used as determinants for foreign exchange risk management decision.

These chapters aim to provide answers to the main research question as to why some firms hedge foreign exchange risk and others do not. The aim of chapter eight is to examine the relation between the determinants of hedging incentives and the foreign exchange risk management decision, and the relation between the determinants of managerial risk aversion and foreign exchange risk management decision to be discussed in section three. The aim of chapter nine is to analyse the effect of the firms' needs to hedge on their currency exposure management policy. Also the objective of chapter nine is to analyse the effect of a firm's ability to hedge in the hedging decision. The aim of chapter ten is to discuss the research findings. The final chapter concludes this thesis and identifies its contribution to knowledge. The chapter highlights the limitations of this study and offers suggestions for future research.

1.7 Conclusion

This chapter has introduced the subject of the thesis. The importance of this thesis is explained. The chapter has highlighted the foreign exchange risk management objectives. The thesis' aim and questions are presented and the theoretical framework is highlighted. The guide for the content of the thesis has been set out.

Chapter Two

The Definition and Management of Foreign Exchange Risk

2.1 Introduction

The aim of this chapter is to illustrate the literature relating to the nature of the foreign exchange risk problem and management. This chapter's objective is to describe how serious foreign exchange risk might be, to define and analyse the forms of exchange rate risks and review some of the important literature regarding the management of the foreign exchange risk. For these purposes, the chapter is divided into six sections. The next section provides a background to the foreign exchange risk problem and the volatility of the exchange rate. The third section presents the definition for the research subject. The fourth section illustrates foreign exchange risk management practice. Section five reviews some important aspects regarding the research context, Saudi Arabia. Section six outlines the main conclusion of this chapter.

2.2 Foreign Exchange Rate Volatility

In 1944, an international conference at Bretton Woods in New Hampshire accepted a US proposal for a return to a form of the Gold Standard. The Bretton Woods system was developed to provide some control in exchange rates between member countries, in that, each member set a parity value for its currency against the dollar and gold, and the US government undertook to buy or sell gold in exchange for dollars at the fixed value of $35 an ounce of gold. At that time the dollar became the principal currency for the settlement of international transactions and the regime of stable exchange rate was established. The Bretton Woods system was broadly successful until the end of the 1960s, when some currencies like the British sterling, guilder, franc and deutschemark started to increase or decrease against each other and other currencies. The Bretton Woods system of fixed but adjustable exchange rates collapsed when a loss of confidence in the dollar started. An alternative fixed rate system was needed and the Smithsonian Agreement (1971-1973) of fixed rates between major currencies attempted to provide this. However, as the US balance of payments increased, it became difficult to defend the fixed exchange rate system and industrialised countries were forced to a system of floating exchange rates. One of the main reasons causing the collapse of the

fixed exchange rates system in the early 1970s was the dramatic increase in oil prices (WTRG Economics, 1999). In the early 1970s, the international economic situation changed dramatically. Oil exports expanded substantially, royalty payments and taxes on foreign oil companies increased sharply, and oil exporting governments, including the Kingdom of Saudi Arabia, began setting and raising oil export prices. Saudi Arabia's revenues per barrel of oil (averaged from total production and oil revenues) quadrupled from US$0.22 in 1948 to US$0.89 in 1970. By 1973, the price had reached US$10 and higher in 1974 following the Arab oil embargo introduced to pressuring Western supporters of Israel during the October 1973 Yam Kippur War (WTRG Economics, 1999). The OPEC oil price increase caused an enormous increase in the import costs of many Western countries. Most of them faced up to this by making appropriate adjustments to their economic growth rates, which dramatically affected the Bretton Woods system.

Since 1973, the high volatility of exchange rates has become a fact of life faced by any company engaged in international business. When buying or selling products in a foreign currency, there is always a risk that the settlement price will differ from the invoice price after translation into Saudi riyals, which can pose a significant obstacle to effective cash flow management. Between 1990 and 2003, the Saudi riyal experienced dramatic swings in relation to major currencies such as the British pound, and the Deutschmark, see Figure 2.1. The figure also shows that the US dollar is fixed against the Saudi riyal, one dollar is equal to 3.75 riyal.

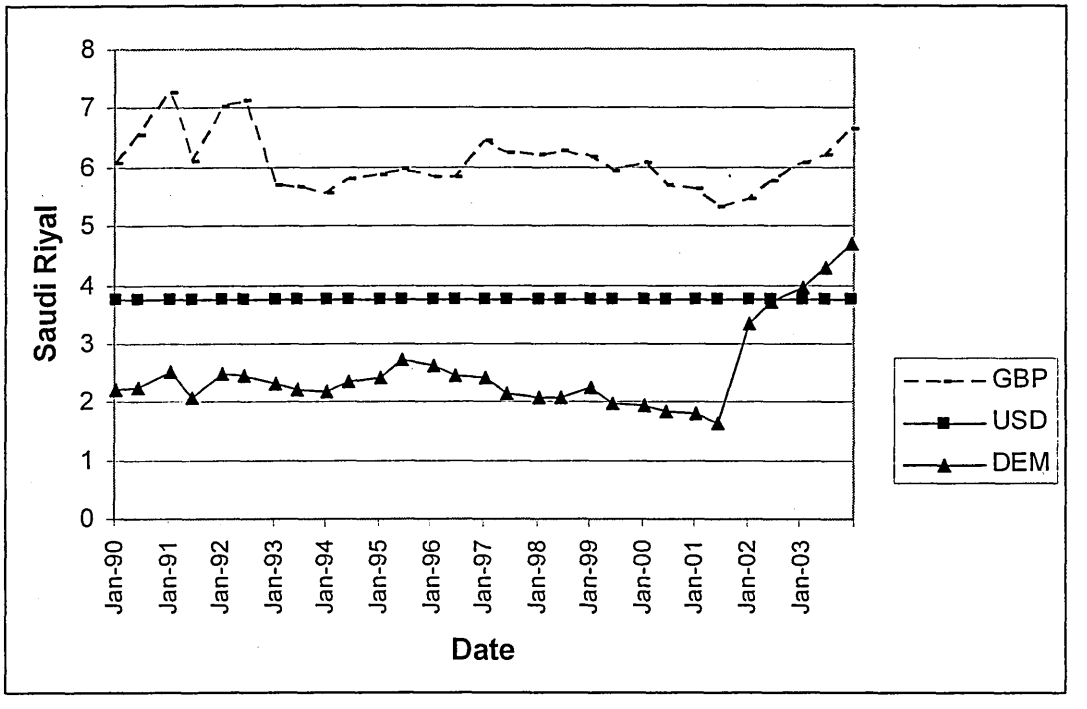
The effect of exchange rate volatility on a company's activities is one of the controversial issues in international economics. It is widely believed that exchange rate volatility increases risk and uncertainty in exporting and importing firms. For example, if a Saudi firm imports goods from UK, and the payment is in pounds, and the value of the pound rises against Saudi Riyal (SR), an exchange loss will be incurred. Arize and Shwiff (1998) examined the long-run relationship between imports and exchange rate volatility in G-7[1]. The period examined is 1973 to 1995 and they found that exchange

[1] G-7 or Group of Seven is seven major industrial nations whose ministers meet on a periodic basis to discuss and agree on economic and political issues; it comprises Germany, France, Italy, the United Kingdom, Canada, Japan and United States.

rate volatility had a significant negative effect on the volume of imports on most of G-7 countries.

Grobar (1993), in line with international trade theory under uncertainty assumptions, found empirically that there is a negative relationship between the volume of exports in developing countries and exchange rate volatility. Uncertainty in exchange rate forces risk averse firms to produce fewer exports than they would in a certain environment as lack of forward markets for foreign currencies in most developing countries means that exporting firms are unable to hedge their exchange rate risk (Quirk and Schoffs, 1988). The scenario of export price uncertainty attributable to exchange rate uncertainty is of particular interest for developing countries looking to manufacturing exports as a stimulus to economic growth, and a foundation for developing an industrial sector as a means for acquiring foreign currency (Lessard, 1995).

Figure 2.1: Exchange-rate movements, Saudi riyal to British Pound (GBP), Saudi riyal to US dollar (USD), and Saudi riyal to Deutschmark Mark (DEM)



Source: Currency Trading Platform, OANDA FXTrade, (http://www.oanda.com)

Arize and Osang (2000) found that there is a negative and statistically significant long-run relationship between export flows and exchange rate volatility in 13 LDC's[2]. Corbo (1989) found that there is a strong negative effect of exchange rate uncertainty on the exports of Chile, Colombia, Peru, Philippines, Thailand and Turkey. Lassard (1995) argues that since volatility of exchange rates seems more likely to rise than fall in coming years, the demand for risk management by developing countries is large, and it will continue to grow.

A company's asset, liability, profit or expected future cash flow stream, whether certain or not, is said to be exposed to exchange risk when a currency movement would change, for better or for worse, its parent or home currency value (Kenyon, 1990). Interest in defining and managing exposure to gains and losses caused by fluctuating exchange rates has increased dramatically in recent years (Copeland and Joshi, 1996). This concern is expected to become even more widespread if large and unpredictable currency movements continue to be an important part of the international business environment. At the same time some regard currency risk as a dispersion of outcomes which in the long-run must average out in gains and losses (Buckley, 1996). However, firms may not survive until these gains and losses are averaged out in the long run, and bankruptcy could result from shock movements of exchange rates. Kenyon (1990) found that many companies' annual reports highlighted currency movements as a major factor in their performance. Nowadays, currency risk management has became a very complex problem as a result of (1) the increasing size and variety of exposures which companies incur as they develop internationally (Holland, 1993), (2) the extent of competitive environment that the firm face internationally (Fooladi and Rumsey, 2002), (3) the volatility of currencies on the foreign exchange market, (4) the increase in companies investing overseas has meant that the performance of the new overseas subsidiaries, which will fluctuate with currency movements, has a significant impact on overall company results, in terms of both the profit and loss account and the balance sheet (Kenyon, 1990), and (5) evidence that insufficient guidelines are available to guide managers on whether to hedge their exposure or not, how to manage their

[2] These countries are: Ecuador, Indonesia, Korea, Malaysia, Malawi, Mauritius, Mexico, Morocco, Philippines, Sri Lanka, Taiwan, Thailand and Tunisia.

exposure and those they do employ as suspect (Froot, *et al.,* 1993). Lessard (1990) has observed that managers are unhappy with the ways they deal with their exposure. For treasurers, in order to decide whether foreign exchange risks should be managed or not, they should know how significant the potential currency risk is considered to be, the company's attitudes to currency risk and the benefit of their hedging decision.

2.3 The Definition of the Foreign Exchange Rate Risk

The term foreign exchange exposure and foreign exchange risk are frequently used and are interchangeable (Buckley, 1996). Before discussing the foreign exchange risk management and its determinants, it would be helpful to clarify what this study means by risk. It is important to distinguish between uncertainty and risk. Risk is concerned with situations in which probabilities can be attached to particular events occurring, whereas uncertainty defines situations in which probabilities cannot be attached and even the elements of the environment may not be predictable (Donaldson, 2001). In decisions associated with certainty, the decision maker has complete knowledge of the probability of the outcome of each alternative. In decisions associated with uncertainty, the decision maker has absolutely no knowledge of the probability of the outcome of each alternative (Donaldson, 2001). In decisions associated with risk, the decision maker has some probabilistic estimate of outcomes of each alternative. The risk profile facing firms can be assessed as; (a) unsystemic risk[3], and (b) systemic risks[4] which can be divided into, risks which the organization has very little control (e.g. political, economic, social and financial), and risks which the organization cannot control but can be influenced (e.g. competitive, interest rate and foreign exchange rate) (Williams, Smith, and Young, 1998). Glaum, (1990), defines risk in two ways. Firstly, the colloquial meaning is the "probability of the occurrence of unfavorable outcomes". Secondly, the natural meaning is "the spread of possible outcomes around some

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[3] Unsystematic risk defined by Buckley (1996, p. 763) as 'a part of a security's risk associated with random events which do not affect the economy as a whole. Also known as specific risk, this refers to such things as strikes, successful and unsuccessful marketing programmes, fire and other events that are unique to a particular firm. Such unsystematic events can be eliminated by portfolio diversification'.

[4] Systematic risk defined by Buckley (1996, p. 762) as 'the volatility of rates of return on stocks or portfolios to changes in rates of return on the whole market. Also known as market risk, it stems from such non-diversifiable factors as war, inflation, recessions and high interest rates. These factors affect all firms simultaneously; hence this type of risk cannot be eliminated by diversification.

expected value". The latter is to be preferred in the sense that exchange rate exposure can result in positive as well as negative outcomes. Arnold (1998, p. 1024) defined risk management as 'the selection of those risks a business should take and those which should be avoided or mitigated, followed by action to avoid or reduce risk'. Substantial attempts have been made to define FX exposure and its sources. Buckley, (1996, p. 141), defines FX exposure as; "An asset, liability, profit or expected future cash flow stream (whether certain or not) is said to be exposed to exchange risk when a currency movement would change for better or for worse, its parent or home currency value. Exposure arises because currency movements may alter home currency value". The general concept of exposure refers to the degree to which foreign operations are at risk from exchange rate changes (Demirage and Goddard, 1994). Hedging foreign exchange exposure (hedging foreign exchange risk or foreign exchange risk management) called hedging currency exposure (risk) is a practice of covering exposure designed to reduce the volatility of the firm's profit and/or cash generation, and it presumably follows that this will reduce the volatility of the value of the firm (Buckley, 1996, p. 174-175).

As previous literature suggests, if there is broad agreement as to the general nature of currency exposure, little agreement exists in attempts at detailed definitions of it, (Belk and Edelshain, 1997; and Kenyon, 1981). It is conventional to identify three elements in corporate currency exposure: translation exposure, transaction exposure, and economic exposure (see Buckley, 1996, p. 133-140; and Holland, 1993, p. 128-130). Ankrom (1974) is generally cited as the first writer to use the expression "translation, transaction, and economic risk". Surveys found that the amount of attention paid to the different exposures has changed over time to the benefit of a longer time view. At the beginning of the collapse of the Bretton Woods System, in 1970, when foreign exchange risk was seen mainly in accounting context, firms were able to deal with their foreign exchange rate risks using some accounting rules (Rodriguez, 1974). Moreover, empirical studies carried out at that period found that translation exposure was given primary emphasis and management by their survey respondents (Rodriguez, 1979; Jilling & Folks, 1977; Rodrigues, 1980; and Blin, Greenbaum and Jacobs, 1981). However, since 1980 the dominant objective of foreign exchange risk management has been to minimize transaction exposure (Khoury & Chan, 1988; Cenzairli, 1988; Lessard, 1990; and Soenen & Aggarwal, 1989). Economic risk also is seen to be important for the currency managers (Moffett and Karlsen, 1994; Kanas, 1996; Bradley,

1998; Marshall, 2000). Belk and Glaum (1990) found that economic risk was managed by two-third's of the UK companies interviewed. Whitaker (1994) found that 52 percent of the respondents reported that their companies try to hedge economic exposure fully or partially. Also Bradley (1998) found that 43% of the respondents stated that economic exposure was managed in their companies. One of the most controversial questions in foreign exchange management is the exact definition of what is at risk from exchange rate changes. The different types of exposure are determined using the corporate performance to foreign exchange rate.

2.3.1 Translation exposure

Translation (or accounting) exposure arises out of the consolidation of financial statements which involve foreign currency denominated assets and liabilities (balance sheet exposure) and gains and losses (income statement exposure). It has been defined by Eiteman, Stonehil & Moffet (1995, p.183) as "the potential for accounting-derived changes in owners' equity that occur because of the need to 'translate' foreign currency financial statements of foreign affiliates into a single reporting currency to prepare worldwide consolidated financial statements". Consolidation of foreign subsidiaries accounts (balance sheets & income statements) into the parent financial statements requires a rate or rates of exchange to translate the foreign subsidiaries' accounts into the parent currency. A number of empirical studies found that firms do manage their translation risk (Rodrguez,1974; Mathur, 1982; Belk & Glaum, 1990; and Boyle, 1998).

However, It has been argued that the profit and loss risk should not be hedged in external financial markets. Firstly, consistent with the view of Coppe, Graham, and Koller (1996), this risk is unlikely to cause financial distress to MNCs. Even though actual profit figures as translated in parent currency terms may differ from those budgeted as a result of a movement in the rate of translation, they will never become negative as a result of such a movement. Secondly, consistent with the view of Dhanani (1998), the problem of distorted performance evaluation systems can and should be avoided by evaluating subsidiaries in local currency terms, and / or parent currency terms adjusted for the budgeted exchange rate to stop using cash flow based instruments to manage a paper based risk. Thirdly, arguments concerning managing accounting exposure, confirms that firms should not hedge the accounting exposure as the balance sheets and profit and loss statements being translated from one currency into another do

not involve a cash movement, so no real gains or losses are being incurred in this operation (Dhanani, 1998). Buckley (1996) argued that while accounting exposure reflects the possibility that foreign currency denominated items which are consolidated into group published financial statements at current or average rates will show a translation loss or gain as a result, this kind of exposure does not give an indication of the true effects of currency fluctuations on a company's foreign operations. He continues that it has little to do with true value in an economic sense. Srinivasula (1983) argues that if the company attempts to manage translation exposure this evidently will alter the cash flows of the company for the non-relevance of the gains and losses from translation exposure. He gave an example of a U. S. MNC, which sold forward contract of $600 million foreign currencies to hedge its balance sheet exposure. At that time, these foreign currencies appreciated against the dollar and this resulted in translation gains which were unrealised, but the forward contract loss involved a cash loss in the order of $48 million. Finally, one may argue that a big company which has business in different countries does not have to hedge its translation exposure as long as losses in some currencies will be offset by gains in other currencies. Lessard, (1990), chose to measure currency risk exposure in terms of the importance corporations attached to managing the different exposures rather than to the perception of their impact on the corporation. He found that transaction exposure was given greater attention by management than was economic exposure, and that both these exposures were given more attention than translation exposure. Glaum (1988) stated that translation risk does not render useful information to shareholders and the attempt to manage it may lead to wrong and harmful decisions.

This means that the translation exposure is not an appropriate concept of foreign exchange exposure for currency risk management, as it is purely an accounting concept not directly related to cash flow. It can be concluded from these arguments that translation risk is no longer an important issue. The property of foreign assets and liabilities is largely a function of the international involvement of each company. Most of the Saudi companies in this study sample are international companies, defined in this thesis as importers or exporters (see Chapter 5, section 5.7). These companies differ from MNCs which have overseas operating subsidiaries, which will probably have a much more complicated network of foreign operations and hence translation risks. Consequently, the Saudi international companies would not be affected by translation

risks, both in income as well as balance sheet risks. It can be concluded that translation risk is excluded from further consideration in this thesis.

2.3.2 Transaction exposure

Transaction exposure refers to the gain or loss which arises when a change in exchange rates affects the value of anticipated foreign currency denominated cash flows, relating to transactions already entered into (Kenyon, 1990). Transaction risk is a cash flow risk resulting from the risk that the domestic currency value of a future payment or receipt denominated in a foreign currency varies as a direct result of changes in exchange rates. Cash flow sources which can be included in this type of risk are foreign currency denominated trade debtors, trade creditors, dividends and loan repayments, this means that transaction risk consists of both trading items (foreign currency invoiced trade receivables and payables) and capital items (foreign currency dividend and loan payments) (Levi,1990). Therefore, any increase or decrease in expected payable or receivable cash flow due to the change in exchange rate is defined as a foreign currency transaction gain or loss and is included in the net income for the period in which the exchange rate changed (Madura, 1992). The loss occurred by transaction risk will affect the financial gearing of the company. Surveys found that managers thought they should manage this risk (Soenen & Aggarwal, 1989; Dhanany, 1998). If export or import companies make large losses on foreign currency receivables or payables, it may cause the company financial distress (Smith and Stulz, 1985). However, hedging these risks can avoid financial distress and can add value to the company (Froot, *et al.*, 1993). Many studies about exchange rate risk management found that transaction risk is the most important form and the most likely to be hedged. Edelshain (1995, p. 156) observed that: "...Respondents rate transaction exposure as the most pervasive individual exposure in causing some degree of vulnerability". Belk and Glaum (1990) concluded that 14 of the 17 companies interviewed saw transaction exposure management as the centrepiece of their foreign exchange risk. Lessard (1990) surveyed U.S. corporations and found that respondents gave greater importance to manage transaction risk than to managing other forms. Marshall (2000) surveyed the foreign exchange practices of large UK, USA and Asia Pacific MNCs. He found that the majority of the respondents in each region placed transaction risk as highly important, particularly in the USA, where 59% of the respondents placed the most emphasis on

transaction risk. He suggested that the cause of the emphasis placed on transaction risk is understandable in view of immediate impact of transaction risk on cash flows and profitability. It could be suggested that Saudi export and import firms should hedge their foreign currency receivables or payables.

2.3.3 Economic exposure

Economic exposure refers to the possibility that the present value of future operating cash flows of a business, expressed in parent currency, may be affected by a change in foreign exchange rates (Shapiro,1992). The economic risk concerned with impact of changes in exchange rates on the corporation's competitive, and supply and demand positions (Edelshain, 1996; Bradley, 1998). Economic risk is not a conversion effect, like the other two risk forms, but a competitive, and supply and demand effect (Kenyon, 1990). It is important to stress that for economic risk both real and nominal exchange rate cause risks to the company. For example, if a company's product is quoted in a currency other than that of competitors, and that currency rises against the currencies in which competitors have quoted, the price may become less competitive (competitive risk) and the sale may be lost (demand risk). Both of these risks are economic risks and caused by the real exchange rate as it affects the price instead of the cost. Belk and Glaum (1990) found that 9 of the 17 companies interviewed, were managing their expected future cash flows (economic risk). However, they pointed out that this management of the expected future cash flows was closely interlinked with the management of actual transaction risk. Some surveys found that economic risk has had a greater adverse impact on corporation than transaction and translation risk (Belk and Glaum, 1992 and Edelshain, 1995). Most of these surveys employed a multi-dimensional definition of economic risk (e.g., economic risk, competitive risk, and demand risk). It could be argued that the way economic risk is divided into a number of separate forms is one way which increases the number of reported exposures and also if these surveys are divided into both transaction and translation risks and into different forms of economic risk this may affect the final result of the surveys. For example, Edelshain produced six different definitions for currency risks namely transaction risk, translation risk and four other different forms divided from the effect of the economic risks, which are: supply, value chain, revenue and competitive exposures (see

Edelshain, p. 107). Edelshain's results may not reflect the right picture of the companies' currency risk management, as he was comparing and asking companies to rank four forms of economic exposure against one form to each of the transaction and translation exposure. Edelshain (p. 158) himself said: "..it could be argued that the finding is an artefact of the way economic exposure is divided up into a number of separate elements which increases the number of reported exposures". However, a survey of foreign exchange risk management carried by Lessard (1990) which applied different definitions of economic risk in the questionnaire, found that transaction exposure is managed to a greater degree by firms than was economic exposure. Belk and Glaum (1992, p. 8) said: " a number of companies appeared not to be aware of the important longer term effects of exchange rate changes and the risk involved". However, no clear guidance emerges in the literature review on the importance of managing this kind of risk and how a company should managed it. Buckle and Thompson (1992) emphasise that companies experience difficulties in managing economic risk as it is difficult to find financial instruments which can be used to manage long-term risk. Furthermore, using financial hedging instruments may not be effective in reducing economic risk, in some cases they may even make the problem worse (Buckley and Thompson, 1992). Walsh (1986) argued that 70% of the treasurers interviewed had no understanding of the term economic risk, and saw foreign exchange rate management and the management of transaction exposure as synonymous terms without reference to the effects of exchange rate changes on prices, costs and volumes. He argued (p. 374) that: "The management of economic exposure was examined and it was posited that the management of economic exposure was less clear cut, since there was the added complexity of an exposure which was stochastic and difficult to measure". It is difficult for a company to measure its economic risk in order to manage it. This is because the degree to which the changes in future cash flows of a company which result from the changes in foreign exchange rates are not only dependent on the extent of its own international operations, but also on the nature of the markets in which it sells its output and purchases its inputs. Shapiro (1992) states that the measurement of economic exposure is made especially difficult because it is impossible to assess the effects of an exchange rate change without simultaneously considering the impact on cash flows of the underlying relative rates of inflation associated with each currency. If the company cannot easily define and measure the economic risk, it will be very difficult to manage it. Khoury and Chan (1988) commented that the positive and

negative effects of economic risk on a corporation's performance may well cancel each other and it can therefore be ignored. Some of the economic long term risks which arise from the effect of uncertainty in the exchange rate movements on the cash flow is in fact a pre-transaction risk, while the foreign cash flows that create economic risk (pre-transaction type) have not been contracted, but when they are contracted they will result in transaction risk. In addition, we should differentiate between the two different cases; first, when a company plans its hedging strategy to hedge its known cash flows for a long time period, which means a company hedges its expected transaction risks. Secondly, when a company plans to hedge its expected cash flows for a long time period, can be considered as hedging its expected pre-transaction risk, which will be expected to result in transaction risk. Consequently, it can be argued that company may plan its long-term foreign exchange risk management through a short term transaction management plan. It can be concluded that economic risk is considered to be an expected transaction risk or expected pre-transaction risk and will be excluded from further consideration in this thesis.

2.4 Foreign Exchange Risk Management

2.4.1 Risk attitude

The Middle East has attracted a lot of attention from global investors and academicians for the last decade to invest in these countries. This interest is affected by the foreign exchange risk and the way that this risk can be hedged. Hedging refers to all actions taken to protect a firm against the risks resulting from exposure to foreign currency exchange rate fluctuations (Kenyon, 1990). In order to manage exchange rate risk a treasury manager should first of all recognise the company's attitude to the risk arising from foreign exchange movements. There are three different attitude strategies against risk; risk neutral, risk averse and risk seeking (Buckley, 1996). **The risk neutral manager**, doesn't view hedging action as necessary whether the risk results in gains or losses. This strategy views currency risk as small and insignificant or that currency risks will offset each other in the long-term period (Kenyon, 1990). **The risk aversion manager** is normally looking for a certainty in money terms about the outcome of an exposure and tries to minimise or avoid this exposure where it is possible by hedging (Coyle, 2000, a). Davis, Coates, Collier and Longden (1991) found that there are organisations in the UK, which are risk averse in currency exposure terms and the

reasons given by companies generally refer to the view that the business was inherently profitable and therefore currency risk management is essentially defensive with the main objective the avoidance of significant losses. For example, the risk averse Saudi exporter would invoice the sales in Saudi riyal and if this is not possible, he will start to cover the sale revenues from the foreign exchange rate movements. In hedging their currency risk, risk averse treasury managers ignore the benefit of favourable exchange rate movements but at the same time provide stability to the companies' earnings and cash flow. **The risk taker manager** thinks that exchange rates will move in the company's favour and that currency exposure will result in gains rather than losses (Bennett, 1997). The risk taking company will only cover the currency when it expects to gain from the hedging position. For example, the risk taking Saudi exporter would choose to invoice his products in a currency that is hard or estimated to increase in the near future and before the settlement period. Different companies have different views toward currency risk and different attitudes, consequently, the hedging action which may be not acceptable in UK could be regarded as perfectly reasonable in Saudi Arabia.

Companies that select the *100% hedging policy* are hedging not only their cash flows but also reported earnings (Drury and Errunza, 1985). Companies follow this policy because they care about the negative impact of the foreign currency fluctuations. Using this policy is costly even for large corporations and ignores the basis for economic decision making; risk versus reward (Antl, 1980). This strategy seems not to be attractive to most of companies, as it does not compare the cost of hedging to the exchange loss risk. Companies may decide to *hedge selectively* their individual currency risks in line with unexpected unfavourable currency movements, when the currency risk exceeds the cost of hedging. Batten, Mellor and Wan (1993) carried out a study concentrating on the foreign exchange risk management practice and product usage of large Australian based firms. They found that forty-eight firms (70%) appear to take on some foreign exchange risk. Thirty-four of these firms hedged their foreign exchange risk selectively. However, a company may choose *not to hedge* its foreign exchange risk and remain open to the risk. The main reason for a company choosing this policy is that the gains or losses from exchange rate movements in the long term will roughly balance each other, thus making hedging action unnecessary (Dhanani, 1998). This policy ignores the impact of foreign currency fluctuations on consolidation statements, short-term cash flow and long-term cash flow. The problem with a never

hedge policy is that history is not insured to repeat itself and that every thing will be as normal over the long-term period. It seems that a company which never hedges will expose itself to too great potential loss and company which uses a hedging everything policy will expose itself to too much costs over the long term period (Buckley, 1996). An alternative to eliminating the costs associated with always hedging and the potential loss associated with never hedging will be to take sensible policy by hedging selectively. However, a company that decides to hedge selectively, by carefully comparing the risks and the cost, may make the wrong decision as it deals with unpredictable events, emotions and future spot rates (Riehl, 1999). It can be concluded that a manager's choice among the hedging strategies available depends on the financial and contingent factors that his company face.

2.4.2 Managing the foreign exchange risk

Since the inception of floating exchange rates, firms engaged in international operations have been highly interested in developing ways and means to protect themselves against exchange rate risk. For that reason hedging can be used with some effect, but the optimal hedging policy is still a matter of debate. This section will review the methods, which are commonly used and are likely to be most applicable to manage transaction and economic risks. Companies can hedge foreign exchange risk in different ways (Bodie and Merton, 2000). First, firms can simply ***ignore foreign exchange risk***. An exporting firm can simply decide that the risk they are exposed to is trivial. Firms may ignore currency risk because they may fail to appreciate the importance of their currency risk, believing that unexpected currency rate changes are offsetting, firms may be unable to measure their exposure, and firms may feel reluctant to enter large derivative positions. Secondly firms can ***avoid risk***. Saudi firms can simply decide to sell or buy in markets that are not exposed to currency risk. This can be achieved by trading in US dollar markets, since Saudi Arabia pegs its currency, the riyal, to the U.S. dollar, Saudi Arabia last devalued the riyal in June 1986 when it set the official selling rate at SR 3.75 = US$1. Thirdly firms can ***reduce the risk*** and the likelihood or the severity of losses; a Saudi company that imports from the UK can also sell to the UK in pounds. Finally, firms can ***transfer risk*** to others. There are basically three ways that company can follow, (a) firms can *hedge risk*. This means that firms cover losses from unfavourable changes by hedging. For example, Saudi exporter can enter into future

contract to sell French francs to cover the turnover from its French customer, (b) Firms can *insure risk.* This means that firms pay another party to insure itself against unfavourable changes in currency. Firms can do that by involving in currency option contracts, (c) Firms can *diversify risk.* It is by diversifying in the world markets that firms can theoretically eliminate all their unsystematic foreign exchange risk. For example, a Saudi importer can purchase materials from different countries paying in different currencies.

Prindl (1976) classifies the techniques, which can be used in currency risk management according to their basic origin into different groups. The first are internal to the company, come under the company's regulatory and financial management. The second group which are external to the company, such as the financial instruments which can be used to insure against the negative impact of the remains currency risk to which the internal techniques have not been able to eliminate. The next two sub-sections describe the internal and external methods which can be used to hedge the currency risk.

2.4.2.1 Internal methods

Companies can use a wide range of internal methods to hedge foreign exchange risk. These methods can be created internally as part of a company's regulatory, financial and operational management (Demirag and Goddard, 1994). In general using the internal techniques is usually not costly, but some of the techniques are costly, for example a company may decide to change its productions location as a result of facing high cost from exchange rate movements. Using internal methods may be a good way to hedge long term foreign exchange risk (Bradley, 1998). However, using these techniques may not be enough to reduce all the company's risk, and a company should hedge the residual risk using the external methods (Soenen and Madura, 1991). Internal techniques include structural hedging, netting, leading and lagging, operational hedging, and currency invoicing.

Firms can minimize foreign currency risk possibly by matching exposures that occur in opposite directions. This is called **structural hedging** and can be achieved in two ways: *transaction based structural hedging* and *strategic structural hedging* (Coyle, 2000, a). Using the structural hedging technique, a company should match its currency inflows with its currency outflows with reference to the amount and time (DeRosa, 1996).

However, any unexpected delays may consequently leave both output and input cash flows exposed to exchange risk. **Transaction based structural hedging** or offset hedging can be divided into a natural matching and cross matching (Coyle, 2000a). *Natural matching strategy* can be achieved by matching income against expenditure in the same currency (Bennett, 1997). Buckley (1992) estimates that sourcing and selling in the same currency is the common form of matching transaction risk. Exporter cash receives in foreign currency can be matched against cash payments, which should be made at the same time and in the same currency. Firms also can achieve *cross matching of currencies methods* with receipt and payment in different currencies, whereas these currencies are expected to move closely together (Madura, 1992). This method is based on the idea that there are group or bloc of currencies, which behave the same or more in the same direction or the exchange rate between these currencies are much more constant than exchange rates with other group currencies (Coyle, 2000a). When the assumption that stability of group of currencies is valid, the future of firms' incomes can be matched against payments in other currency on the same group.

Strategic structural hedging is a method of hedging economic risks or pre-transaction exposure. It is difficult for an international company to achieve complete hedging against economic risks but it is possible to eliminate these risks using strategic structural methods (Soenen and Madura, 1991). Firms in the long term can match their income currencies with their expenditure currencies and also try to match their cost currencies with those of their major competitors (Coyle, 2000a). The main problem associated with the structural matching method is that using this strategy may affect the company's strategies. For example, a Saudi firm can export products to its UK customer and decide to match the pound revenues with the corresponding level of UK payments. However, a decision to purchase particular materials from the UK to fulfil the concept of matching may affect a company's cost reduction strategy if it can buy the same materials cheaper from another country.

Netting can be used between a parent company and their subsidiaries or between affiliated companies, which trade with each other. The currency risk which should be hedged is the net amount of the output or input cash flows at regular periods (Arnold, 1998). For a company with a group of subsidiaries, each pair of subsidiaries net out their own positions with each other. Marshall (2000) found that netting is the most

popular internal method among the UK and USA MNCs, with 90% of USA and 88% of the UK MNCs using this method.

Leading and lagging technique concentrates on the adjustment of foreign denominated credit or debt cash flows. Leading refers to the payment or receiving in advance the foreign cash flows and lagging delayed payment or receiving (Watson and Head, 1998). This approach is difficult to apply as a clear conflict of interest between buyer and seller. Leading and lagging has its benefit in short term cash flow or balance sheet hedging as well as in long-term operation management. Leading and lagging are usually implemented on continuing basis rather than in response to a sudden shift in exchange rates.

Operational hedging is concerned with production, financial and marketing policies and can be used to manage long term currency risk (Soenen and Madura, 1991). The decision of using any operational hedging is the responsibility of the company's board. Soenen and Madura (1991) suggest that a company facing a high cost in sourcing its business due to exchange rate movements can move sourcing to countries that become low cost sourcing as a result of exchange rate movements. Aggarwal and Soenen (1989) and Moffett and Karlsen (1994) stated that production, financial and marketing policies can be adjusted to manage the foreign exchange risk. The foreign exchange risk management should be taken into account when the firm plans its corporate strategy (Ohmae, 1990). The treasury department responsibility lies only in dealing with short-term exposure but it can generally be proposed that some operating policies may help in operating natural hedging. *Departments like marketing, purchasing, production and planning* should be involved in the process of choosing operation hedging techniques (Bradley, 1998). When a company plans its policies it should consider the objective of minimising foreign exchange risk in a long-term period, then the residual risks are the responsibility of the treasury department (Dufey, 1972). If we accept this view, this means that treasury departments should take care of the short-term exchange rate movements, rather than the long-term economic exposure. As economic exposure is viewed as a strategic issue (Glaum, 1990), it is best managed through operational strategies and the foreign exchange risk is viewed as joint responsibility of treasury departments and the strategic planning level in the company.

Currency invoicing technique is concerned with altering the currency of invoice

(Arnold, 1998). An international company, which exports or imports goods or services is concerned with decisions relating to the currency in which goods and services are invoiced. Importing or exporting in a foreign currency gives rise to transactions and economic risk. For companies to minimize these risks they should trade in a home currency or the currency in which they incur cost. However, if for any reason an exporter elects to invoice in foreign currency, then he should choose only a major currency in which there is an active forward market for maturities at least as long as the payment period (Buckley, 1996).

2.4.2.2 External methods

The use of external techniques is one means of managing and controlling foreign exchange risk. In this regard, many different financial instruments can be used for hedging purposes. Generally, few companies will need to use the full range of hedging techniques or instruments. Each company should consider ones that are appropriate for the nature and extent of its foreign exchange risk activities, the skills and experience of management, and the capacity of foreign exchange rate risk reporting and control systems. Companies can use the external markets to hedge any residual exposure after cover from internal methods. Companies can use financial instruments like forward, option, future and swap contracts to hedge currency risks.

Geczy *et al.*, (1997) examine the use of currency derivatives by the Fortune 500 non-financial firms in 1990. They found that 41 percent of their sample used currency derivatives to minimize currency risks. They found that firms with greater growth opportunities and tighter financial constrains were more likely to use currency derivatives. The General Accounting Office in U.S.A reports that between 1989 and 1992 the use of derivatives, forwards, futures, options, and swaps, grew by 145% (Bodnar and Gebhardt, 1998). Fatemi and Glaum (2000) carried out a survey for all non-financial German firms listed on the Frankfurt Stock Exchange and found that 88% of the firms indicated that they used derivative instruments. From the firms which used derivatives, 89% did so solely for hedging purposes, whereas 11% used derivatives to profit from open positions. However, the main problem associated with using financial instruments to minimize company currency risks is that these financial instruments cannot be used to manage a long-term cash flow risk, such as competitive, supply and demand risks. Adkins (1991) stated that using financial instruments to eliminate the

long-term cash flow effects does not work effectively. He argued that forward contracts can only be used to manage the conversion effect of exchange rate risk rather than its strategic effect.

A forward exchange contract is a binding contract to exchange agreed amounts of two currencies on an agreed future date at a rate of exchange agreed (Winstone, 1997). The forward contract is a foreign exchange deal done at today's rate for a future date or maturity. When the forward contract is agreed, each party must deal at the contracted rate, irrespective of what the spot rate turns out to be at the future date. Forward foreign exchange has been a standard treasury tool for nearly 30 years. Many empirical studies found that the forward contract is the most frequently used financial instrument in companies (Drury and Errunza, 1985; Mathur, 1985; Khoury and Chan, 1988; Cezairli, 1988; Teoh and MengEr, 1988; Soenen and Aggrawal, 1989; Belk *et al.,* 1992; Jesswein, 1992; Batten *et al.,* 1993; Bodnar, Hayt, and Marston 1996; Phillips, 1997; Hakkarainen, *et al.,* 1998; Marshall, 2000; Fatemi and Glaum, 2000). Bodnar, Hayt *et al.,* (1996) found that 75% of firms in their study ranked the forward contract as one of their top three choices among foreign currency derivative instruments, with over 50% ranking it as their first choice. These companies prefer to use forward contract as it is easy to use, effective in hedging against short-term foreign exchange rate changes, provides flexibility in the size of contracts, has low transaction costs and is available in most currencies. Outside of forward market, the best-developed market for hedging exchange rate risk is the currency futures market.

Currency futures are a means of buying and selling exchange rate risk. A currency futures contract is a legally binding obligation, made on the trading floor of a future exchange, to buy or sell a particular currency against another at a specified rate of exchange for delivery at a specified time in the future (Hull, 1995). The advantage of using future contract is that a clearinghouse in a future market stands between the seller and the buyer of the contract. There are, however, disadvantages for a company in that a future contract contains administrative costs to be paid to a broker, margin requirements, is inflexible in size, and only available in a limited number of currencies. Marshall (2000) found that just 4% of USA and 3% of UK MNCs used future contract to hedge transaction risk. In addition, Glaum and Belk (1992) observed that none of the 17 UK firms interviewed used future contracts to hedge foreign exchange rate.

Currency option gives the holder the right but not the obligation to buy or sell a fixed amount of foreign currency at a specified price, the strike or exercise price, but is not required to do so (Winstone, 1997). The option seller receives the premium and is obliged to make (or take) delivery at the agreed-upon price if the buyer exercises his option. Chaudhry, Rohan, and Reichert (2000) investigate the relationship between market-based measures of risk and foreign currency contingent claims activity of US commercial banks. They found that banks use currency swaps as a hedging tool while currency options are viewed as playing a more speculative role. They suggest that the use of the instruments does affect risk, but these impacts vary over time. Marshall (2000) found that over half of the MNCs in Asia Pacific were using option contracts to manage the transaction risk. Kanas (1996) and Buckely (1992) also state that option contracts can be used in hedging economic risk in exporting firms. Unlike forward and future contracts, an option contract is better used by a company for hedging the foreign cash flow when the size and the time of occurrence of cash flows are uncertain such as pre-transaction risk (Giddy, 1983).

In a short space of time, **currency swaps** have become one of the most important and flexible instruments available to company treasurers for currency risk management. Like other hedging and treasury management products, swaps themselves are not debt instruments for raising new funds. Instead, they are tools which allow better management of existing funds (Kolb, 1997). A currency swap is a contract between two counter parties who agree to exchange obligations to pay interest and repay principal in one currency in exchange for receiving interest and principal in a second currency (Coyle, 2000b). A company can use currency swaps to minimize long term foreign exchange risk. Coyle (2000b, p. 98) state that "Currency swap can be arranged in currencies where long-dated forward contracts are not easily arranged. They can be used to hedge longer-dated transaction exposures and economic exposures, and might provide more favourable terms than a longer-dated forward contract. Swap spreads, being interest-rate driven, tend to be tighter than spreads for higher-risk FX forward contracts". Glume (1990) confirmed that swap contracts are better tools for managing long-term foreign exchange risk than other financial instruments, such as forward contracts in that the transaction costs in swap contracts do not increase along the years.

Government Exchange risk Guarantees can be used as external tool for hedging

foreign exchange risk. As a way of encouraging the exporters, government agencies in many countries, especially developing countries, offer the exporters insurance against export credit risks (Solnik, 1996). For example, an exporter protects himself from exchange movements by receiving export credit guarantees from the government for a small premium and handling all the exchange risk to the government agency.

Soenen and Aggarwal (1989) examine a variety of hedging methods in three European countries (Britain, Belgium and the Netherlands), and found that while a majority of the corporations surveyed used external hedging methods in hedging their foreign exchange exposure, they expressed the opinion that the exposure should first be minimized by other means before resorting to external hedging methods. They found that only 19% of U.K. companies, 26% of Netherlands companies, and none of the Belgian companies were hedging every thing. Joseph (2000) reported that large firms with scale economics are much greater users of external hedging techniques than internal techniques. However, the use of hedging instruments such as 'derivatives' may result in an unexpected impact on the firm's value (Srinivasula, 1983). Using derivatives to hedge foreign exchange risk without having enough experience may be difficult and generate some financial problems (Copeland and Joshi, 1996). Also, Feiger and Jacquillat (1981) state that forward exchange markets do not provide bargains, but only fair gambles. When a firm leaves its FX position unhedged, a firm may experience gains and losses which may in long term period be offset, and hedging or not become the same for a firm (Aliber, 1979). On a similar but more sophisticated level, Dufey and Srinivasulu (1983) argue that since FX markets are efficient in the sense that forward contracts are priced on the basis of all currency available information, one cannot earn excess returns in those markets, and hedging is of no value.

One of the interviewees argued that "*Our foreign exchange risk management strategy is to hedge only the significant exposures. However, there are not many hedging alternatives available in Saudi Arabia, and for that reason we sometimes take foreign exchange risks in the sense that we choose to leave part of our exposures unhedged. We make such decisions through a team, one that includes operating people with bottom line responsibility*". Another risk management decision maker stated that "*While derivatives have enabled the company to isolate and manage currency risk, they can actually enlarge existing exposures and create new financial risks*". Another risk

management decision maker said "*our management is fairly conservative, and our corporate policy is to avoid use of derivatives. We feel that derivatives are bad things to use*".

2.5 The Research Context

2.5.1 Introduction

Saudi Arabia is a large Middle Eastern nation that ranks as one of the world's leading producers of petroleum. Saudi Arabia is a country full of actual and potential business and investment opportunities. However, it should be noted that the Saudi Arabian market is highly competitive and business transactions take place on the basis of quality and cost. Saudi Arabia imposes no foreign exchange restrictions on capital receipts or payments by residents or non-residents.

The Saudi Arabian Monetary Agency (SAMA) which was founded in 1952 (1372 AH), is the Kingdom's central bank. The Agency's charter requires it to act as the central government bank, to issue currency (paper and coin), to support the value of the Saudi Riyal at home and abroad. Saudi Arabia pegs its currency, the riyal, to the U. S. dollar. A key element in the Saudi Arabian government's economic strategy is industrial diversification, a process which has as its primary objective the reduction of the Kingdom's dependence on oil revenues. To this end, the government has encouraged the development of a wide range of manufacturing industries. The government has provided a range of incentives to encourage the private sector to participate in the Kingdom's industrial effort. The financial, industrial and trade sectors of the economy have made rapid progress, enabling the private sector to play an increasingly important role in the development and diversification of the economy, especially in the fields of construction and farming.

When the Council of Saudi Chambers of Commerce and Industry issued its 13th Annual Report, 1999, it stated that the Saudi private sector continued its positive performance during 1999 by registering a rate of growth estimated at nearly 2.4 per cent. The report elaborated the activities of the private sector, noting that the non-oil industries registered 6.3 per cent growth, construction and building sector 2.1 per cent and the electricity sector 3.9 per cent. The report expected that the private sector would continue

its positive growth within the framework of the increase in governmental expenditure and the positive effects of various and continual economic reforms that were started by the government in 1998.

Saudi Arabia announced a significant new Kingdom-wide investment promotion and development system in April 2000. This new private sector focus is a key investment component of the official 2000-2005 Kingdom development plan. Over the past quarter century enormous growth occurred in the number of industrial plants operating in the Kingdom. In 1975, Saudi Arabia had about 470 industrial plants with overall investments estimated at $2.7 billion. By the end of 2001, the total number of factories in the Kingdom had reached 3,596, with a total capitalization of $66 billion (Central Dept, of Statistics, Ministry of Planning). The Saudi Arabian stock market has developed substantially over the past decade, and is now the largest in the Arab world, with a capitalization of $42.7 billion. The stock market operates through a computerized, order driven, continuous screen-based trading system which is supervised by SAMA. The system is transparent, efficient, and quick to settle. In the Kingdom, shares are settled on a same day basis. The number of joint stock companies which trade shares has climbed steadily with the implementation of the government's privatization policy. Presently, there are over 70 firms listed on the stock market. A major opening of the Saudi stock market to foreigners was initiated during 1997. Previously, only Saudi nationals could deal in or own shares, although Gulf Cooperation Council (GCC) nationals were also allowed to own Saudi equities (excluding banks) and certain other stocks.

Today, the Saudi economy has become increasingly exposed to international influences. This, together with the high volatility on foreign exchange markets, stresses the importance of foreign exchange risk management in Saudi firms.

2.5.2 Exports

The Kingdom's exports increased by 53 percent to SR 290,553 billion during 2000, from SR 190,084 billion in 1999 (Table 2.1) and decreased by 14 percent to SR 254,898 billion during 2001. As can be seen from Table 2.1, that most of the revenues in Saudi Arabia came from the oil exports (around 88%). Oil export revenues reached approximately SR 266 billion in 2000. It seems that the effect on the Saudi exports in

the currency exposure is low since most of the oil exports are priced in US dollar.

Table 2.1: Kingdom's exports by major items (Million Saudi Riyals)

	Section Title	1997	1998	1999	2000	2001
1	Animals & Animal Products	644	739	761	697	746
2	Vegetables & Vegetable Products	483	413	488	438	273
3	Fats & Oils	122	65	61	75	93
4	Prepared Foods, Tobacco Products	529	537	576	574	549
5	Mineral Products	200,264	122,466	168,735	266,226	224,740
6	Chemical Products	11,123	10,017	9,293	12,194	13,511
7	Plastics & Rubber	5,723	4,192	3,572	3,854	6,253
8	Leather Products	174	78	56	81	155
9	Wood Products	39	39	39	29	33
10	Paper Products	687	564	593	579	650
11	Textiles & Textile Products	768	748	645	567	747
12	Clothing Accessories	17	20	14	13	13
13	Stone & Glass Products	606	542	487	531	597
14	Precious Metals, Jewellery	8	127	83	36	249
15	Base Metals	3,157	2,342	2,358	2,145	2,302
16	Machinery & Electrical Equipment	1,505	1,489	1,343	1,454	1,629
17	Transportation Equipment	1,267	617	687	810	1,985
18	Miscellaneous Instruments	31	62	96	79	102
19	Arms & Ammunition	0	0	6	19	98
20	Miscellaneous Manufactured Items	295	328	193	151	167
21	Art Items and Others	1	2	1	1	7
	Total	227,443	145,388	190,084	290,553	254,898

Source: Central Dept, of Statistics, Ministry of Planning

Table 2.2 shows that most of the Saudi exports goes to countries other than U. S. A. The Kingdom's exports to U. S. A. decreased by 27 percent to SR 46,482 billion during 2001, from SR 58,832 billion in 2000. However, as most of these exports are oil exports, their exposure to currency exposure was probably low.

Table 2.2:Kingdom's exports to its major trading partners (Million Saudi Riyals)

Rank	Country	1997	1998	1999	2000	2001
1	U.S.A.	34,600	23,695	37,185	58,832	46,482
2	Japan	39,360	21,668	28,496	46,074	39,099
3	South Korea	23,150	13,886	20,429	31,273	24,621
4	Singapore	15,640	8,697	11,107	14,632	13,429

Rank	Country	1997	1998	1999	2000	2001
5	India	9,250	6,083	8,175	12,823	12,336
6	China Formosa	5,696	3,470	4,185	7,742	8,472
7	China Mainland	1,582	1,231	2,352	5,630	8,159
8	Holland	10,610	6,043	7,845	11,592	7,971
9	France	8,950	5,456	7,469	10,910	7,459
10	Italy	8,003	4,908	4,428	6,971	6,621
11	U. A. E.	7,375	4,912	4,710	5,886	6,576
12	Bahrain	6,270	4,387	5,560	7,158	5,304
13	South Africa	1,029	1,608	3,880	6,621	5,178
14	Spain	4,230	3,050	3,388	5,013	4,428
15	Pakistan	1,948	1,520	2,562	4,766	4,119
16	Thailand	2,980	1,607	2,100	3,578	4,042
17	Indonesia	1,650	2,280	3,318	4,071	3,802
18	Greece	2,640	2,127	2,321	3,964	3,554
19	Philippines	3,606	2,020	2,828	4,023	3,382
20	England	1,996	1,258	1,637	3,223	3,369

Source: Central Dept. of Statistics, Ministry of Planning

2.5.3 Imports

The Kingdom's imports increased by 8 percent to SR 113,240 billion during 2000, from SR 104,980 billion in 1999 (Table 2.3) and by 3 percent to SR 116.931 billion during 2001.

Table 2.3: Kingdom's imports by major items(Million Saudi Riyal)

	SECTION	1997	1998	1999	2000	2001
1	Animals & Animal Products	4,891	5,107	5,312	5,675	5,137
2	Vegetables & Vegetable Products	7,905	6,868	7,637	8,278	6,557
3	Fats & Oils	654	880	927	784	601
4	Prepared Foods, Tobacco Products	5,298	4,761	4,191	5,531	5,630
5	Mineral Products	1,092	1,055	1,274	1,062	1,490
6	Chemical Products	8,712	9,249	9,496	9,512	9,864
7	Plastics & Rubber	3,453	3,753	3,488	4,130	4,255
8	Leather Products	371	381	381	394	344
9	Wood Products	1,332	1,434	1,259	1,444	1,376
10	Paper Products	1,915	2,305	2,087	2,356	2,211

	SECTION	1997	1998	1999	2000	2001
11	Textiles & Textile Products	7,093	7,464	6,494	6,674	6,557
12	Clothing Accessories	1,025	1,082	935	899	965
13	Stone & Glass Products	1,472	1,460	1,392	1,931	2,139
14	Precious Metals, Jewelry	8,237	6,263	5,113	4,575	3,563
15	Base Metals	9,717	10,743	8,808	8,895	9,535
16	Machinery & Electrical Equipment	21,267	22,486	25,187	24,982	24,062
17	Transportation Equipment	16,737	20,705	15,201	19,996	25,356
18	Miscellaneous Instruments	3,039	2,950	3,102	3,048	3,489
19	Arms & Ammunition	1,001	987	636	788	1,648
20	Miscellaneous Manufactured Items	2,038	2,133	1,929	2,260	2,127
21	Art Items and Others	393	330	127	23	24
	Total	107,643	112,397	104,980	113,240	116,931

Source: Central Department of Statistics, Ministry of Planning.

Table 2.4 shows that most of the Saudi imports came from countries other than US. This probably increases the currency exposure of Saudi firms.

Table 2.4: Kingdom's imports from its major trading partners (Million Saudi Riyals)

Rank	Country	1997	1998	1999	2000	2001
1	U.S.A.	23,933	23,984	19,882	21,802	20,770
2	JAPAN	7,124	9,666	9,650	11,837	13,042
3	GERMANY	5,830	7,052	7,648	9,164	9,403
4	ENGLAND	11,281	9,535	8,456	7,308	8,037
5	CHINA MAINLAND	3,369	3,593	3,677	4,485	5,403
6	AUSTRALIA	1,751	1,978	2,273	2,907	4,733
7	ITALY	4,962	4,667	4,424	4,698	4,543
8	FRANCE	4,837	5,862	4,421	4,675	4,473
9	SOUTH KOREA	2,619	3,884	3,801	3,846	3,831
10	SWITZERLAND	6,221	4,828	3,523	3,693	2,832
11	INDIA	2,584	3,058	2,770	3,132	2,811
12	BRAZIL	2,132	1,658	1,650	2,314	2,431
13	UNITED ARAB EMIRATES	1,610	1,842	2,213	2,206	2,375
14	HOLLAND	2,067	1,829	1,971	2,387	2,190
15	BELGIUM	1,635	1,386	1,558	1,707	1,892
16	SPAIN	1,415	1,813	1,962	1,607	1,666
17	SWEDEN	189	1,373	1,441	1,813	1,645
18	CANADA	1,635	1,176	1,321	1,082	1,408

19	INDONESIA	1,608	1,696	1,508	1,699	1,407
20	TURKEY	1,209	1,316	985	832	1,319

Source: Central Department of Statistics, Ministry of Planning.

2.5.4 Islamic Shariah

To understand the history of the Kingdom and its political, economic and social development, it is necessary to realize that Islam, which permeates every aspect of a Muslim's life, also permeates every aspect of the Saudi Arabian state.Islam is a unified way of life. It is not a political system, or nor it is an Economic System. But, being a unitary way of life it does have aspects upon which an Economic System can be built. Just as Islam regulates and influences all other spheres of life, so it also governs the conduct of business and commerce. The influence of religion upon business is not an issue that has been explored to a great extent in the conventional literature. Islamic law, the *shariah*[5], claims to regulate all aspects of life, ethical and social, and to encompass criminal as well as civil jurisdiction. Every act of believers must conform with Islamic law and observe ethical standards derived from Islamic principles (Lewis, 2001). Managers, like any other adherent, must perform their duties in accordance with the rules and regulations of Islam and base their actions on Islamic ethical norms. The Islamic economic and financial principles have direct impact upon risk management practices and policies. Managers should not allow their business activities to dominate so that making money becomes a first priority and they neglect religious duties.

The Shariah developed through different schools of law. Nowadays, four schools of law still exist (Al-Malekiah, Al-Hanbaliah, Al-Shafeaiah and Al-Hanafiah). They agree on the main subjects, and mutually recognize each other. The Shariah is based on four main sources of law: the Quran, the Traditions of Prophet and his most faithful companions, the consensus of all Islamic scholars, and deduction by analogy. For a further discussion of these sources of law, see Schacht (1964).

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[5] Shariah is Islamic law as contained in the divine guidance of the Quran and Sunnah. Sunnah is the teaching and exemplary conduct of the Prophet Muhammad *(sallah alih wasallam)*.

The Islamic values are reflected in Islamic economic principles. Schaik (2001)select six of the most important of these economic principles;

- justice, equality and solidarity. Business should be conducted in an honest way. This precludes, for example, monopolization, or abusing of an inexperienced partner. Solidarity is encouraged by promoting almsgiving as a noble deed, and by duty of each Muslim to pay zakat, a tax on wealth (usually about 2.5% of personal wealth).

- Acquisition of property rights. Property may be acquired in the following three ways; (1) new rights can only be legally created by combining one's labor with natural resources, old rights can be transferred, either (2) in exchange for a counter value of the same worth, or (3) as a voluntary gift/inheritance. Interest is not a legal form of property, because it is not acquired in one of the three legal ways.

- Property (wealth) should be used in a rational but fair way. Islam rejects unproductive hoarding as wasting money. It should be spent, but always in a responsible way.

- No gain without either effort or liability. Receiving a monetary advantage without giving a counter value is forbidden. Islam is not opposed to profit or financial gain as long as, (1) an effort is performed, or (partial) liability is accepted for the financial result of result of a venture, (2) the effort or venture was productive, i.e. it led to an increase of value, and (3) the profit was made in an honest manner, in line with the Shariah.

- General conditions of credit. Debtors in financial distress should be treated leniently. If the debtor is not able to pay back the principal, he should be given a delay without a penalty. Opponents claim that the difference between credit and spot prices is nothing more than an implicit interest rate.

- The duality of risk. Islam has a dual conception of risk. On the one hand, it considers the partial acceptance of liability (for risk) in a productive venture as a legitimating for a share in profit. On the other hand, risk should always be taken cautiously. Excessive, uncontrollable risks or uncontrollable obligations should

be avoided. For example, the sale of an object, which the seller does not yet possesses, is illegal. Furthermore, gambling or speculations are forbidden.

2.6 Conclusion

This chapter has highlighted that there are three different company attitude strategies against risk, which are risk neutral, risk averse and risk seeking. These different attitudes can be used to explain that companies usually hedge foreign exchange risk in different ways. This chapter has explained the internal methods which can be used to manage exchange rate risk and argued that long term exposure is better managed through the internal method and the residual exposure can be minimized through the external methods. An understanding of the role to be played by portfolio theory in managing foreign exchange risk requires a careful description of the importance of the hedging or not to hedge decision. It should be noted that not all of the external techniques described previously are available for all companies. For example, the limitations of financial instruments and markets available in Saudi Arabia. Academic literature has argued that external hedging methods are inappropriate for the management of long-term economic risk. External methods are used usually to eliminate the conversion effect of transaction risk and leave the strategic effect of economic risk open. The hedging methods which are available to the exporting or importing company are limited, while a much further range is open to the true multinationals. Large companies increasingly turn to external methods to reduce their currency risks.

The motives for smaller export and import companies using these methods are not well understood. The foreign exchange risk management literature abounds with empirical studies which concentrate on "multinational companies". A MNC is defined as that which has overseas operating subsidiaries. However, the focus of this study is largely concentrated on what we have defined as "international companies", those which are mainly importers or exporters, and have a fairly limited range of internal and external currency risk management techniques available. MNCs have access to a much broader range of internal and external techniques than are available to the international firms, which may offset the impact of currency risks in both samples. In addition, the MNCs trade in many countries and have subsidiaries, which give the companies natural

hedging against foreign exchange risk by diversifying their business.

The chapter has considered transaction risk to be straightforward to evaluate and hedge, whereas economic risk effects of exchange rate changes are difficult to ascertain so that economic risk is not easily hedged. As a result, it is more costly to hedge economic risk than transaction risk because the cost of implementing financial hedge, which in most cases is sufficient for hedging transaction exposure, is less than that of implementing real hedge, which usually necessitates rearranging sourcing, manufacturing and marketing operations. The chapter has shown that translation risk is often dismissed in the literature as illusionary, since it has no impact on earnings or cash flows. The absence of foreign operating subsidiaries in most of the Saudi's companies (as the study sample consists of exporting and importing firms only) and the apparent lack of interest in managing the translation risk through the literature reviewed, translation risk will be ignored in the remainder of this thesis. For the company, which trades in international businesses, economic exposures are so fundamental and cannot be ignored (Donaldson, 1987). However, what most companies in the literature reviewed consider an economic risk would be considered by many academics as more typical of a transaction risk. It seems that economic risk should be managed at a strategic level (board) rather than using the day to day currency management by treasury management. The contribution of the treasury management in managing currency risk is to manage the short period risk and to help the Board in building a strategic decision to manage the long period and future risks.

Chapter Three

The Potential Rationales for Hedging: Literature Review

3.1 Introduction

The purpose of this chapter is to describe some of the optimal hedging theories. Finance theory suggests that hedging can increase firm's value by reducing the expected costs of financial distress, reducing agency costs, increase the firms' investment opportunities, and reducing tax costs. Finance theory suggests that corporate hedging is attributable to managerial risk aversion. This chapter outlines the explanation for currency hedging policy among others and offers empirical evidence on the relative importance of these corporate hedging motives. The chapter will be divided into four sections. The next section highlights the arguments against hedging decision. Section three reviews the determinants of corporate hedging decision. The final section outlines the main conclusion of this chapter.

3.2 Why Not to Hedge

What some firms describe as hedging is in fact taking a position on the prospects for a particular financial or commodity market that may increase the firms exposure to risk rather than reduce it (Copeland and Joshi, 1996). As a result, some literature and theory argue that top managers should not hedge, they say that shareholders can lay off these risks more cheaply themselves by holding a diversified portfolio of shares in a variety of companies. Clup and Miller, (1995), found that most value maximising firms do not hedge risk. The Modigliani and Miller (M&M), (1958), theory argues that anything a firm can do, its owners can do for themselves. They have assumed that corporate FX management is superfluous. As a result, managers cannot increase a firm's value by doing something shareholders can do for themselves at the same or at a lower cost. Shareholders themselves can hedge corporate exchange exposure by taking out forward contracts in accordance with their ownership in a firm. Managers do not serve them by second-guessing what risk shareholders want to hedge. By hedging for their own account, investors can obtain "home-made hedging". M&M theory suggests that buying and selling currency options contracts cannot alter the a firm's value, since shareholders can always buy and sell such contracts themselves if they care to adjust their exposure to currency risk. In the basic M&M world, hedging does not alter a firm's value. The

M&M assumption includes the absence of agency costs, financial distress cost, contracting costs, information costs and capital market imperfections. The framework used in this study assumes that relaxing one or more of the M&M assumptions can derive the demand for corporate hedging. In addition, hedging by shareholders may not be efficient as a firm's hedging which means that it may be in the shareholders interest to let the firm manage the exchange risk (Solomon, 1997).

Dufey and Srinivasulu (1983) state that several obstacles to shareholders hedging are: (a) Size barriers, which are caused by the fact that certain markets impose minimum size requirements for transactions of goods and services. For example, the bank-based forward, option and the Eurocurrency markets are wholesale in nature and deal in minimum amounts that tend to be too large for individual investors. (b) Structural barriers, which are the result of the way different economic entities can structure their activities. Firms also can use some of internal methods like netting, lagging and leading, and invoicing to minimize currency exposure, which are usually not available to the individuals. (c) Information gaps, in that to achieve efficient diversification, an investor needs to know the level and time of FX risk for all the companies in the portfolio. Investors should collect information not only on companies operations but also on the financial side for today and the future. However, in the absence of this information the individual cannot make an optimal exposure decision in a company. Transaction costs are typically greater for individual investors than for firms. Operating managers can make such estimates with much more precision than shareholders who typically lack the detailed knowledge of competition, markets and the relevant technologies. Furthermore, in all but the most perfect financial markets, the firm has considerable advantages over shareholders in obtaining relatively inexpensive debt at home and abroad, taking maximum advantage of interest subsidies and minimising the effect of taxes and political risk (Stulz, 1984). The managers may have more ability to use some financial instruments than the shareholders.

According to the Capital Asset Pricing Model (CAPM), the risk is the essential factor that has to be taken into account. If exchange rate risk can be considered as unsystematic, it can be diversified away by investors in the process of holding a diversified portfolio of shares (Eckl and Robinson, 1990). When the same exchange rate fluctuations affect these shares, gains on some shares would be offset by losses on other shares. If, however, FX risk is considered as a systematic risk and if hedging

instruments are priced according to CAPM, a firm which hedges just moves along the security market line and there will be no added value from hedging, and indeed the cost of hedging will reduce shareholder value. When hedging instruments are priced in a rational way, the market can be said to be "efficient". Modern capital market theory argues that under certain assumptions of market efficiency, FX risk management is totally superfluous (Eckl and Robinson, 1990). Logue and Oldfield, (1977), point out that a firm's risk prospects are valued directly by the market on the basis of its expected profitability and its systematic risk. It should make no difference to the valuation of either the total market portfolio or the individual firm whether exchange risks are passed through to the capital market as part of the risk of the firm's shares, or laid off or transferred directly to the market through forward exchange or foreign currency debt contracts. Looking further ahead in CAPM, as Cowdell (1998), contends that if considered valid with regard to FX exposure, and if accepted that FX markets are efficient, there could still be adverse changes in exchange rates coinciding with the receipt or payment of large sums of foreign currency. Then the exchange rate movement could give rise to serious liquidity problems. Although any gains or losses in the long run should cancel out, that would be of little consolation to shareholders, managers and creditors if the liquidity crisis happened to force a corporation to go into liquidation.

According to the Purchasing Power Parity (PPP) argument, movements in FX rates will be offset by changes in relative price levels (Eckl and Robinson, 1990). For example, if the rates of inflation in the U.S and the U.K are 20% and 15% respectively, the U.S dollar will depreciate against the sterling by 5%. PPP theory suggests that corporations have no FX exposure and therefore have no need to hedge. If the PPP works effectively in practice, without any time lags, there is no relative price risk and there wouldn't be FX exposure since any loss due to FX rate movements will be offset by a gain in price and vice-versa. The implication of PPP is that gains and losses from exchange rate changes tend over time to be offset by differences in relative inflation rates. It matters little in which currency the firm buys its inputs or sells its products, since any devaluation (revaluation) of a foreign currency will sooner or later be offset by a correspondingly higher (lower) rate of inflation in that currency (Giddy, 1977). However, evidence shows that for long periods, currencies deviate form their PPP values and thus lead to exposure. Even if currencies moved exactly in line with the PPP theory, they will always reflect only the price movements in a "bundle" of goods and services making up the relevant national price index. Many of the empirical tests have

confirmed that the adjustment between changes in prices and exchange rates is not instantaneous and that there are lags in this relationship (Dufey and Srinivasulu, 1983). For some periods, there are deviations from PPP which create price risks for at least some goods, implying the presence of exchange risk. Empirical evidence shows that forward market is not efficient and may create some collapse for companies (Quirk and Schoffs, 1988).

According to the Fisher effect, the difference between the interest rates of two currencies should equal the expected rate of change during the appropriate maturity period (Giddy, 1977). Hence, it would not matter in which currency the firm borrowed or loaned funds, given a sufficiently long time horizon, since any exchange loss (gain) would eventually be offset by an interest rate advantage (disadvantage)(Giddy, 1977). The question here is "does exchange risk matter?".

If these theories hold then it will not matter in which currencies a firm buys/sells or borrows/lends, since the effects of currency movements will be offset by countervailing changes inflation and interest rates. Unfortunately, however, both the PPP theorem and the Fisher effect fail a crucial test- they do not hold in the short run. When the theorems are tested on an annual basis there are significant deviations from the projected exchange rate path, and the correlations are much worse for quarterly tests (McRae and Walker, 1980). In other words, whilst the long term trend is accurately reflected in the PPP and Fisher paths, in the short run actual exchange rates will deviate around these paths. Hence, exchange risk stems from deviations from the expected rate (indicated by the forward rate or interest rate differential). These unexpected exchange rate changes cause variability in cash flow, and it is this which constitutes the firm's exchange risk. In short, exchange risk stems from unexpected changes in exchange rates. Yes this not surprising that FX rate changes are very dramatic.

3.3 The Determinants of Corporate Hedging Activity

This section reviews expected relations between hedging decision and the determinants of the corporate hedging decision. Some papers find limited evidence of relationships between a firm's value and changes in exchange rates (e.g. Jorion, 1990, 1991; Amihud, 1994), while others (e.g., Bartov and Bodnar, 1994; Booth and Rotenberg, 1990) document a significant relationship for MNCs. There are several possible reasons for finding weak evidence of a relationship between a firm's value and changes in exchange

rates. One possible reason, reported by Bartov and Bodnar (1994), is that there are potential drawbacks in the sample selection procedures in these studies. Choi and Prasad (1995) and Gao (2000) stated that most of the previous studies sample were MNCs, with various exchange rate exposures which offset one another causing the firm's exposure as a whole to vary with time. In addition, Chen and So (2002) argued that most of these studies had limitations in exposure measurement, which may be due to the selection of the exchange rate index to capture fluctuations in FX values. They argue that the findings of insignificant relationships between exchange rate changes and the value of multinational firms may also be the manifestation of superior FX exposure management through the use of various hedging instruments.

However, finance theories offer several hypotheses to explain why corporate hedging can be rational or value enhancing, each of which relies on some form of market imperfection. This section tries to explain these hypotheses and their effect on the firm's value. Indeed, if we consider the arguments that maintain that it is pointless for a corporate to hedge its position, some of them seem too theoretic and can be seen as theories of an imagined world. On the corporate hedging literature, two different hypotheses have been advanced to explain why risk should be managed: shareholder value maximization and managerial risk aversion. According to the shareholder value maximization hypothesis, a firm will engage in hedging activities if, and only if, they enhance the firm's value and thus its shareholders' value. Finance theory suggests that hedging activity reduces the financial distress costs, reduces agency costs, increases the growth opportunities, reduces tax costs, and reduces the corporate finance costs (Smith and Stulz, 1985; Bessembinder, 1991; Nance, *et al.*, 1993; Froot, *et al.*, 1993; Mian, 1996; Berkman and Bradbury, 1996; Gay and Nam, 1998; Howton and Perfect, 1998; and Joseph, 1999).

Based on an agency argument, the managerial risk aversion hypothesis suggests that managers will seek to maximize their personal wealth at the expense of shareholders. Particularly, when managers' interests are not perfectly associated with those of the shareholders, the managers may insulate their own personal wealth from the effect of exchange rate movements through hedging activities. In that hedging activity is positively associated with managerial ownership in the firm, a manager's ability, managerial compensation, age, and diversification may explain hedging(Breeden and Viswanathan, 1990; Francis and Stephan, 1990; Tufano, 1996; Fok, Carroll, and Chiou,

1997; and Haushalter, 2000). However, the extent and the intensity of hedging activity will not only depend on maximizing managers and shareholders value, since previous studies showed that hedging decision may depend on a firm's size, FX exposure magnitude, and the cost of implementing hedging strategy (Geczy, Minton and Schrand, 1997; and Hardwick and Adams, 1999).

Finally, we should clarify that all the studies mentioned above were about the determinants of corporate hedging in general or the derivative use. Only the studies by Mian (1996), Geczy et al., (1997), and Joseph, (1999) highlighted the determinants of the derivative currency use.

3.3.1 Financial distress costs

When a firm wants to borrow from the bank, accounting information has to be provided to define states where the firm's activities are restricted. A firm that wants to decrease the probability of financial distress must manage its accounting numbers so that the borrowing process does not require higher returns to compensate. Logue and Oldfield (1977, p. 21) state that "Creditors may be concerned with total variability of cash flows where default is possible. The realized yet unanticipated capital gains and losses that a firm experiences due to random currency fluctuations may influence valuation through the effect on debt capacity. When total variability is important, hedging in the FX markets may add to the firm's debt capacity". Thus, if financial distress is costly and if there is an advantage to have debt in the capital structure, (say due to taxes or agency problems associated with "free cash flow"), hedging may be used as a means to increase debt capacity (DeRosa, 1996). Lower risk should result in a lower cost of capital. Smith and Stulz (1985) developed the financial distress arguments for risk management in that risk management reduces the probability of financial distress which increases the expected value of the firms. Joseph (2000) argued that if foreign currency borrowing can increase the probability of financial distress, firms with greater variability in their leverage measures are expected to make greater use of internal techniques for hedging. Froot *et al.*, (1993), state that for a given level of debt, hedging can reduce the probability that a firm will find itself in a situation where it is unable to repay the debt. Jia and Lilian, (1998), find that Japanese MNCs with weak short-term liquidity positions, or firms with high financial leverage have more incentive to hedge and hence have smaller exchange rate exposures. Also, Howton and Perfect (1998) found that derivative use is directly related to financial distress.

Perhaps the best way to determine whether the observed hedging activity reflects a cost or benefit of financial distress is to examine the effect of **leverage** on a firm's value. While Opler and Titman (1994) have focused in their study on the effect that leverage may have on the performance of firms. They found that more highly leverage firms tend to lose market share and experience lower operating profits than their competitors during an industry downturn evidence of significant business distress costs. Nance *et al.,* (1993) suggest that the probability of the firm encountering financial distress is directly related to the firm's debt size ratio. Managers usually favour to extend their firms' investment and financing policies by reducing the probability of financial distress. They will seek to reduce the effect of corporate risks on their operating cash flows by managing these risks (Froot et al, 1993). If the hedging activities are FX exposure driven, indicating that financial distress is costly, then we would expect to observe the more highly leverage firms hedge more relatively to less leverage firms. Smith and Stulz (1985) and Mayers and Smith (1987) argued that hedging can be used to reduce the probability of bankruptcy resulting in a decline in expected bankruptcy costs.

3.3.2 Agency costs and shareholder motives

Many theoretical discussions and empirical research have been carried out to explain the role that agency theory plays in managerial and financial decision making and external/internal monitoring. Agency theory attempts to explain the relationship between the manager and shareholders in two ways. First, by monitoring devices to ensure that managers are attempting to maximise the companies' share price. Secondly, by incentive schemes for management so that it is in the manager's own interest to pursue share price maximisation.

Most of the theoretical corporate hedging studies argue that hedging activity reduces agency costs, Smith and Stulz (1985) and Mayers and Smith (1987) argued that hedging can be used to reduce the agency costs associated with outside finance. Shareholders interested in the value of shares in their investee company, see hedging as a means to protect the firm's value from the effect of FX rates (Smith and Stulz, 1985). Using a questionnaire survey posted to a large sample of UK institutional investors, Almohaimeed (1999) found that institutional investors are concerned with the effects of FX rate fluctuations on both the values of their investee companies and on their wealth. He conclude that institutional investors prefer and require that investee companies to

hedge for them. This means that hedging is of particular interest to shareholders. When managers hedge FX risk it means they work on shareholders satisfaction and general feeling of well being.

As it is difficult for shareholders to obtain full information on the FX position of all the companies in their portfolios, they prefer that managers make hedging decisions on their behalf. In DeMarzo and Duffie (1995), corporate hedging is optimal where managers have private information on the firm's expected payoff despite shareholders' ability to hedge by themselves. For an individual investor, using hedging techniques is very costly and needs some experience (Solomon, 1997). Dobson and Soenen, (1993), suggest three reasons based on agency costs to explain why management should hedge exchange risk. Firstly, hedging reduces uncertainty by smoothing the cash flow stream thereby lowering the firms cost of debt. Since the agency cost is borne by management, assuming informational asymmetry between management and bondholders, hedging will drastically increase the value of the firm. Therefore, management will rationally choose to hedge. Secondly, given the existence of debt financing, cash flow smoothing through exchange risk hedging tends to reduce the risk of shifting agency problems. Finally, hedging reduces the probability of financial distress and thereby increases the duration of contractual relations between shareholders. By fostering corporate reputation acquisition, hedging contributes directly to the amelioration of the moral hazard agency problem. Agency costs start when management owns less than 100 percent of the firm's equity. In that if the board of directors have the responsibility for both making hedging decisions and monitoring those decisions. This means that the board who does not have the ability to reasonably monitor the managers' activities which may increase the conflicts associated with agency cost, resulting in firms needing to reduce these conflicts by hedging.

The results related to the effect of hedging activity to reduce agency costs are mixed. While, Fok, *et al.,* (1997) found that hedging reduces the agency costs of debt, and reduce some agency costs of equity, Tufano (1996) found little empirical support for the predictive power of theories that view risk management as a means to maximize shareholder value. He found little empirical support for the predictive power of theories that view risk management as a means to maximize shareholder value.

3.3.3 Firm's size

The relation between a firm's size and risk management activities has been extensively analysed in the international trade literature. A firm's size is thought to be a useful and manageable approximation of a firm's resources which are held to affect risk management activities. The relationship between a firm's size and corporate hedging activity remains one of the most important analyzed hedging determinants (Francis and Stephen, 1990; Fok, *et al.,* 1997). Francis and Stephen (1990) found that the primary important factor distinguishing hedger versus non-hedger firms is their size, and that over time, hedger firms increase their size differential. Several previous empirical studies (e.g., Nance et al, 1993; Smith and Stulz, 1985; and Geczy *et al.,* 1997) found that large firm are more likely to hedge, as there is a relation between a firm's size and economies of scales. Firms need specialized information to manage a hedging problem and to use the financial instrument (forward, swap, future, option .e.g.) and large firms are more likely to provide managers with this information (Booth, Smith and Stolz, 1984). It is too costly for small firms to use the financial instruments for hedging, which means that large firms are more likely to hedge using these financial instruments (Geczy *et al.,* 1997).

The implementation of the foreign exchange risk management needs sufficient resources for training and/or the employment of an expert (Breeden and Viswanathan, 1990). Large firms are more likely to have the required resources than small firms (Hoyt, 1989). It seems that large firms are likely to employ more skilled managers, who are consequently wealthier, suggesting a higher level of managerial ownership. Firms with widespread foreign operations are likely to be able to hedge potential exchange rate exposure at low cost, just, as firms with inherently large exposures such as heavy exporters, will undertake hedging activities. More explanation regarding the extent of hedging activity in large size firms lies with the firm's growth life cycle. Most of firms at the beginning of their life cycle will start growth in their domestic market first (Buckley, 1996). This means that small firms are less likely to engage in international market with less FX impact. Growth in size enables firms to improve efficiency, providing them with more power in controlling their operating environment. Size also can provide a firm with resources to expand its operations in global markets. Sometimes small firms may have limited choice to trade in domestic market and start early in international trade.

However, Czinkota and Johnston (1985) found that small and medium size firms are quite similar in their export behaviour. They argued that there is a wide range of literature according to which small international firms face serious risks in their international activity in comparison with large ones. They argued that large firms are less risk-averse, due to a large size of operations combined with a greater spread (less correlation) of risks. In addition, Warner (1977) found a weak relationship between the direct costs of financial distress and firm size. This may mean that the direct costs of financial distress is similar in a large and small firms, implying that small firm are more likely to hedge to reduce these direct costs of financial distress. Small firms are more at risk of bankruptcy than large firms are which means that small firms prefer hedging to large firms (Smith and Stulz, 1985). Theories linking risk management to financial costs suggest that hedging can benefit firms with fewer assets more than those with greater assets (Haushalter, 2000). The empirical support in the firm size effect in hedging decision is somewhat introductory and that an important question remain regarding the extent to which the firm size may affect the FX risk management

3.3.4 Manager ownership

For managers, the primary goal in hedging FX exposure is to shelter corporate profits from the negative impact of exchange rate fluctuations. The secondary goal is to possibly profit from exchange exposure management. In managing FX risks, managers can either be risk averters or risk takers. Risk aversion managers seek to protect the returns of their primary business operations when engaging in FX transactions. Risk seekers, on the other hand, engage in FX transactions with the intention to profit from their currency hedging activities. According to the profit maximisation theory, managers of firms are interested in hedging because they feel that hedging will protect the volatility of profits, cash flows and firm value. Adler and Dumas, (1983), argue that the object of hedging is to minimise covariance between the future firm value and the exchange rates. To minimise variance, a firm should continuously hedge the present value of its foreign currency cash flows, (Kaplanis and Schaefer, 1991), and indeed, managers commonly employ a discrete version of this strategy. With regard to the different decisions which managers take, they are usually concerned about their jobs, promotions, portfolios, reputations and rewards, and are controlled by their degree of abilities. Smith and Stulz, demonstrate how risk-averse managers who hold a high percentage of shares are affected by the FX risk. In that, their expected utilities of

wealth are significantly affected by the variance of the firms' expected profits. The managers will hedge when they believe that its less costly for a firm to hedge the risk than it is for them to hedge the risk on their own account. Eales, (1995), suggests that "job risk" is one of the important reasons that encourage managers to hedge. A manager who feels worried about his job and wealth may decide to reduce the volatility of the firms' cash flow by hedging. Hedging activity may be used by poorly diversified managers who might have private interests in managing risk to maximise their own utility (Stulz, 1984). Smith and Stulz (1985) and Breeden & Viswanathan (1990) predicted a positive relationship between the percentage of managerial wealth in the firm and the use of derivatives. Berkman and Bradbury (1996) found that a firm's use of commodity derivatives is likely to increase when the value of stocks their managers and directors hold increase. Also, Tufano (1996) tested whether firms whose managers collectively own greater equity interests in firms tend to be more extensive managers of risk. He found that the probability of hedging increased with when managers' wealth increases. He stated that corporate hedging choices might be the product of managers' risk aversion and their exposure to the success of the firm, as provided by their compensation contracts and investment. Tufano (1996, p. 1109) argued that "Managers whose human capital and wealth are poorly diversified strongly prefer to reduce the risk to which they are exposed. If managers judge that it will be less costly for the firm to manage this risk than to manage it on their own account, they will direct their firms to engage in risk management". In addition, Schrand and Unal (1995), and May (1995) found that firms whose managers have more wealth invested in the firm's stock manage more financial risk. Treynor and Black (1976, p. 53) noted that "there is some difference between the stockholders' and managers' points of view on the question of risk. If the corporation undertakes a risky new venture, the stockholders may not be very concerned, because they can balance this new risk against other risk that they hold in their portfolios. The managers, however, do not have a portfolio of employers. If the corporation does badly because the new venture fails, they do not have any risks except those taken by the same corporation to balance against it. They are hurt by a failure more than the stockholders, who also hold stocks in other corporations". Assuming that managers are utility maximizers, we can expect them to engage in risk-reduction activities to diversify their employment risk. Managers' attitude against risk should change as a manager's ownership level is changed.

However, Haushalter (2000) found no evidence that the extent of hedging is increasing in the degree of managerial stock ownership. Fok, *et al.,* (1997) found that firms with high managerial ownership are less likely to hedge. Fama and Jensen (1983) argue that a manager who owns a great proportion of the firm's equity, controls the firm, and the board of directors and may expropriate the firm wealth. Colquitt and Hoyt (1996) argue that the owners' decision, to minimize risks through the use of hedging financial instrument, is different from one firm to the other. It could be suggested that when a manager holds some equities in a firm, the hedging activities will cause an increase in transaction costs, hence the manager may think to decrease hedging activities in the firm as hedging decreases the manager's expected wealth. Understanding the relationship between managers wealth and currency risk management will make it easier to compare the managers' incentives and arrangements with those of shareholders interest. The hypothesis that firms with more managerial ownership have a greater incentive to hedge depends on the firm's agency costs being small. In other words, which one is more related to currency risk management decision; the agency cost or managerial ownership?

3.3.5 Managers' ability

Firm managers have differing abilities as to their financial decisions. Manager can hedge FX risk by using financial instruments. If managers force to hedge the FX risk, the hedging activities would be more related to the abilities of the managers. It has been suggested that high ability managers always hedge, and when the difference in ability between high and low ability managers is small, low ability managers also hedge. It seems that when the differences in learning, training and experience level is high, the profit level is very different when both agents hedge. Breeden and Viswanathan (1990) in their model where managers care only for their reputations, found that when the ability difference is high, the higher ability manager hedges while the lower ability manager does not hedge. They found that it is more costly for the lower ability manager to hedge as his probability of going bankrupt is higher. Some managers are only concerned about their reputations and hedging for them is important when it becomes an observable activity.

Dufey and Srinivasulu (1983) suggest that a treasurer wants to hedge not because of his desire for excess returns, but to achieve a level of risk return with which his management feels comfortable. DeMarzo and Duffie (1995) suggest that it is difficult

for investors to observe managerial quality and they cannot disentangle profits due to managerial quality as compared to exogenous market shocks. This may lead managers to prefer to engage in risk management to present their skills to the labour market. Gay and Nam (1998) argue that poor managers could be motivated to hide their low quality by spending more capital on long-term projects such as research and development expenditures (R&D) or by mimicking the hedging strategies of good managers. That is, as poor managers spend more capital on R&D, they might engage in greater hedging activities, thus masking their managerial ability and the quality of their projects.

3.3.6 Managerial compensation

Theory predicts that firms will use different compensation schemes to reflect heterogeneity on a number of dimensions, including firm size, managerial ability, and how informative shareholders interest is about managerial performance. Jensen and Meckling (1976) point out that stockholders in a widely held firm rationally seek to avoid the deleterious effects of the owner-manager conflict by the choice of compensation system, by instituting contracts that bind managers' performance with shareholder interests, or by using some combination of monitoring and bonding. To the extent that the contract contains some managerial compensation that is tied to good performance measures, the owner manager conflict is reduced. Schmid (1997) found some evidence that the compensation of a management board is affected by performance and by the firm's shareholder structures. There are many studies focusing on the effects of managerial incentives on the hedging decision.

The empirical studies by Haushalter (2000) and Joseph (1999) are the only studies which focused on the effect of managerial compensation on the hedging decision. Haushalter examined the extent to which options (long-term compensation) are used in managers' compensation using four variables. The first variable is the number of options held by officers and directors. The second measure is the number of options held by officers and directors divided by the number of officers and directors. A third proxy is the ratio of the sum of exercisable and unexercisable options to the number of officers for whom this information is provided. The fourth proxy is the ratio of the value of stock options awarded to the CEO in 1993 to the CEO's 1993 salary plus bonuses. The specification used by Haushalter to explain the relationship between management compensation and hedging decision includes long-term compensation, but does not include proxy for a short-term compensation. This study extends Haushalter study by

adding variables designed to proxy for the short-term and long-term management compensation. Haushalter (2000) found a negative correlation between the extent of hedging and the compensation of officers and directors. Joseph (1999) stated that hedging increases the firm's value by reducing the amount of compensation required by managers, employees, suppliers and customers for bearing non-diversified risk. This result is opposite to that predicted by theory, Smith and Stulz (1985) suggest that stock options awarded to managers reduce their incentive to hedge. Smith and Stulz argued that if manager's compensation system depend on accounting earnings, one would expect the firm to hedge to increase the variance of the firm's economic value.

3.3.7 Manager age

As it is mentioned before, the manager's attitude to currency risk management is different depending on the firm's objective regarding risk management. However, there is no direct measure of the degree of risk attitude by managers. It may be argued that age might serve as a proxy for risk attitude, in that an older manager will be more sensitive to currency risk effects and therefore strongly adopt currency risk management (Tufano and Headley, 1994). It could be argued that an old manager would feel more hesitant in adopting new currency risk management technologies such as financial derivatives instruments as they may feel it is risky and costly (Tufano and Headley, 1994). In addition, the period that managers spend in their job may affect their currency risk management decision, managers who have shorter periods on the job would be more sensitive from fluctuations in a firm's earning and more likely to manage currency risk (Tufano, 1996). This study examines the impact of managers' age and period on the job on the hedging decision. However, Tufano (1996) found no relationship between managers' age and the extent of risk management activity. He explains that the lack of association between age and risk management might be the result of age action as a factor that influences both risk aversion and predilection to use sophisticated financial instruments.

3.2.8 Growth opportunities

Froot *et al.,* (1993) considering the relationship between the growth opportunities and hedging decision, argued that to develop a coherent risk management strategy, companies must carefully articulate the nature of their cash flows and their investment opportunities. This means that firms should ensure that the role of potential investments

is included when reaching hedging decisions. Currency risk hedging increases value by increasing the incentives to under-invest. This occurs because the hedge decreases the sensitivity of senior claim value to incremental investment, allowing equity holders to capture a larger portion of the incremental benefit from new investments (Froot *et al.,* 1993). Hedging also allows the firm to credibly commit to meet obligations in states where it otherwise could not, which improves contract terms and the firm can negotiate with customers, creditors and managers. Individual hedging cannot duplicate these benefits. Shortfalls in cash may be met with increases in outside financing, but also some decreases in investment. Thus, variability in cash flows disturbs both investing and financing plans in a way that is costly to the firm. To the extent that hedging can reduce this variability in cash flows, it can also increase the value of the firm. Lessard, (1990), argued that the most compelling arguments for hedging lie in ensuring the firm's ability to meet two critical sets of cash flow commitments; 1) The exercise prices of their operating options reflected in their growth opportunities, (for example, the R & D or promotions budgets), and 2) Their dividends, the growth options argument, hinges on the observation that, in the case of a funding shortfall relative to investment opportunities, raising external capital will be costly. Firms with high growth opportunities derive a larger risk from future investments than from existing assets. The hedging decision of high growth firms is very important to be considered since efficient currency risk management of future investment is important for continuous progress. While the outcomes of these future investments and perhaps even the amount of currency risk and management that will need to be made are uncertain, high growth firms should use hedging activity in order to encourage managers to maximize shareholder wealth. Froot *et al.,* (1993) argue that corporate risk management allows firms to take on more attractive growth opportunities.

There are some empirical studies which consider the growth opportunities as a determinant for hedging firms. For example, Geczy *et al.,* (1997) use three variables as proxies for the growth opportunities available to a firm: the ratio of a firm's research and development expenditures to its sales; the ratio of a firm's capital expenditures for property, plant, and equipment to firm size; and the book value of a firm's common equity scaled by its market value. They found that the users of derivatives have significantly greater ratios of research and development expenditures to sales, and smaller book-to-market ratio, than do nonusers of derivatives. Fok, *et al.,* (1997) found that hedged firms had significantly more growth opportunities. Also Berkman and

Bradbury (1996) examine the relationship between hedging firms and the level of earning price ratio in these firms they found that the earnings price ratio is higher for the firms with derivatives and the ability to finance short term asset growth, lower for firms with derivatives. However, Mian (1996) found that hedgers and non-hedgers of currency price risk have no significant difference in market to book ratio, and that the correlation between market to book and currency price hedging is insignificant as well. Mian explains that one possible reason for not finding a positive association between hedging and market to book ratio is the constraints imposed by the mandated reporting requirements on hedging of anticipated exposures. Also Nance *et al.,* (1993) examine a survey sample of 169 Fortune 500/ Standard & Poors 400 firms for the year 1986 comprising 104 hedgers and 65 non hedgers. They found the probability of hedging to be unrelated to the ratio of book-to-market value of the firm's assets.

3.3.9 Corporate finance costs

If firms do not generate sufficient cash flow, they may tend to cut investment below the optimal level because of costly external financing. Lessard (1990) posit a strong link between cash flow and investment due to capital market imperfections, typically information asymmetries. The internally generated cash flow, which is important to the investment process, can be affected by external factors such as movements in exchange rates. When the external sources of finance become more costly to firms than internally generated funds, firms are likely to hedge (Smith and Stulze, 1985). Hedging helps firms to ensure that exchange rate movement will not affect their internal cash flow levels and they have as expected internal funds available to carry on in their activities. Many studies suggest that exchange rate movements will affect the firms' internal cash flows and the firm's need to use external sources to raise money (Gay and Nam, 1998; Jia and Lilian, 1998).

The firm's reason for hedging cash flows is to protect their internal cash flows to meet their optimal investment needs so as to avoid having to bear the deadweight costs of external finance. Froot *et al.,* (1993) stated that the supply of internally generated funds dose not always equal the investment demand for funds. Sometimes there is excess supply, sometimes there is a shortage. Because external financing is costly, this imbalance shifts investment away from the optimal level. They argued that risk management can reduce this imbalance and the resulting investment distortion, it enables companies to better align their demand for funds with internal supply of funds.

Their view is that the purpose of corporate hedging is to ensure that the firm has enough internal cash flows for future investment. Hedging may help firms in reducing the volatility on their internal cash flow to avoid having to bear the deadweight costs of external finance. Gay and Nam (1998, p. 55) state that 'since good managers know that they might be forced to reduce investment below the optimal level because of costly external financing, they are more likely to hedge market risks to ensure that the firm has sufficient funds for investment'. Haushalter (2000) argued that the firm is more likely to hedge when a company has difficulty in obtaining outside financing. Hedging can be used to reduce the underinvestment problem which results when firms find that the cost of external financing would limit desirable investment spending during times when internally generated cash flows are not sufficient to fund new investment. Howton and Perfect (1998) found that derivative use is directly related to the external financing costs. However, Geczy *et al.,* (1997) and Berkman and Bradbury (1996) found no relation between hedging activity and the ability of the firm to finance its current investment program. One possible reason, for the contradictory results, is that there are potential drawbacks in the sample selection procedures in these studies as it was collected from different countries. Also the way that theses studies measure the corporate finance costs was different, see section 7.3.2.1.

3.3.10 Industry

Some studies consider the effect of industrial versus service oriented firms on hedging decision. For example, Roberts (1996) found that industrial firms are more likely than non financial service firms to hedge their FX risk. Belk and Glaume (1990) note that in some firms the decision on whether to hedge or not to hedge currency exposures is strongly influenced by what their competitors do. Many firms are more concerned about their relative market position. This is important in markets with many competitors when it is difficult to decide whether competitors experience unfavourable or favourable exchange rate change. Froot, *et al.,* (1993) argue that the optimal hedging strategy for a given firm will depend on both the nature of product market competition and on the hedging strategies adopted by its competitors. Most of the previous studies concentrated on the relationship between the firm's competitive situation and the magnitude of a firm's currency exposure (Shapiro, 1992; Bradley, 1998; and Bradley and Moles, 2001). As proposed by Pringle and Connolly (1993), Bradley and Moles (2001) found that exchange rate movements lead to the indirect competitive effects. Williamson (2001)

found that industry competition play vital roles in the exposure to exchange rate exposure to firm-value relation. Different industries have different competitive positions which means that exchange rates movements affect these industries differently. Geczy *et al.,* (1997) found that firms in the electronics and consumer goods industries are the most frequent users of hedging activities in their sample. The reason for this as presented by He and Ng (1998) who examined the FX exposure in Japanese firms, is that electrical equipment, precision machinery and transport sectors had the highest FX exposure in their firms sample.

3.3.11 The magnitude of the exposure

Firms will face FX risk if their international trade payments or revenues are denominated in foreign currencies. This includes the payment or receipt of dividends, receiving the foreign currency borrowings and payments of interest and repayments of principal and owning foreign assets, foreign liabilities and overseas subsidiaries. It is obvious that the greater the proportion of foreign operations the higher is the degree of exposure to unanticipated exchange rate movements. As a result, firms that are involved in international trade will have greater need to engage in FX risk management.

Adler and Dumas (1984) and Hodder (1982) found that exchange rate fluctuations did not cause changes in firms' values. More recent research by (Jorion, 1990; Amihud, 1994; and Bodnar and Gentry, 1993) found that US MNCs. exporters, and manufacturing industries are not significantly affected by exchange rate movements. However, these studies consider the idea that exchange rate exposure is measured by the percentage change in the rate of return on a firm's common stock against a 1% change in the exchange rate. The surprising result of these studies is easily explained by the fact that they ignore the effect of hedging strategies adopted by these firms on their level of exposure. In that, with more hedging activities carried out by exporters and importers to cover their exposure to exchange rate movements little effect should be expected from exchange rate movements on a firm's value[1]. It is accepted that exchange rate movements affect expected future cash flows, and therefore the value of the exporter (importer) firms (Smith and Stulz, 1985; Froot, *et al.,* 1993). Almohaimeed (1999)

[1] A recent study by Jia & lilian (1998) showed that FX has positive impact on stock returns.

found that investors' investment decision to invest in companies were affected by the level of sales generated in foreign markets, the level of foreign export, and the particular countries in which MNC operate.

Firms which generate a larger percentage of total sales or costs from overseas tend to have more formalised FX decisions. An increase in costs or revenues from foreign operations should increase exposure. Hence the hypothesis in previous literature suggest that exchange rate exposure should be positively and significantly related to the ratio of foreign sales to total sales and foreign costs to total costs (e.g., Geczy *et al.*, 1997). In that any increase in costs from foreign operations should increase firms' exposure. Flood and Lessard (1986) found a significant relationship between foreign sales and FX exposure. Ceglowski (1989) using a sample of US industries found that there is a significant relationship between their imports and exports and their FX exposure. In addition, Hakkarainen, et al., (1998) carried out a questionnaire survey and used financial accounting data to explain the FX exposure management practices of Finnish industrial firms. They found that firms with formalised FX policies tend to have higher levels of total export.

There is no single measurement that is generally accepted and can be used to identify the degree of foreign operation involvement of the firm. Different studies use different measurements, for example, they sometimes use the number of countries in which a firm's operations are located, or an accounting ratio like the proportion of foreign earning, foreign sales and foreign assets. The decision to hedge should depend on the total foreign trade (imports plus exports) if they are in uncorrected currencies or firm hedge them separately. The exposure factors (foreign sales, foreign costs and foreign trade) should be significantly and positively related to a firm's decision to hedge and the hedging level, indicating that firms with higher exposure are more likely to hedge. Exposure factors not only direct the decision to hedge but also the extent of the hedging level. For example, we can use the firm size as an indicator for the firm's decision to hedge but not on the level of hedging, which may depend on the exposure factors and the hedging costs. Allayannis and Ofek (2001, p. 276) state that "Exposure factors (foreign sales and foreign trade) are the sole determinants of the degree of hedging activity. In other words, given that a firm decides to hedge, the decision of how much to hedge is affected solely by its exposure to foreign currency movements through foreign sales and trade". For example, a firm which uses forward contracts to minimise its

exchange rate exposure, will find that exposure through foreign currency exposure is positively related to its decision to enter forward contracts. Allayannis and Ofek (2001), found evidence that a firm's exposure through foreign sales and foreign trade is a very important factor that both prompts corporations to hedge and guide their decision on how much to hedge. Allayannis and Ofek (2001) found evidence that exchange rate exposure increases with the percentage of foreign sales and decreases with the percentage of foreign currency derivatives. However, Jorion (1991) found no evidence that exchange rate risk is priced in stock market. He feels that reasons other than exposure must explain why firms decide to hedge exchange rate risk.

The effect of exchange rate movements on the Saudi firm's cash flows might be more significant than the case considered in previous studies. The reason is that many of the firms in Saudi Arabia are exporting or importing companies, with only sales or costs arising in foreign currencies. This means that these companies are not able to achieve a natural hedge from the effects of movements in FX rates as multinational companies can do with both sales and costs arising in foreign currencies.

3.3.12 Diversification

Diversification is one of the most successful ways of controlling currency risk (Aliber, 1978; Solnik, 1996). The way in which trade is allocated to the many foreign countries determines the riskiness and the expected profitability of the firm. The basic arguments in favour of international diversification are that foreign exports and imports offer additional profit potentials while reducing the total risk of their business. In other words, international diversification helps to improve the risk-adjusted performance of a firm. Exporters can eliminate their FX risk by exporting to customers located in different countries. A manufacturing firm may take steps to reduce its FX exposure by diversifying its manufacturing base around the world in order to match the currency of costs and revenues. This manufacturing firm may achieve a lower-cost decision, with high probability of ensuring that FX rates movements would not take away the cost advantage. Haushalter (2000) found that production hedged is positively related to the location of the firm's products. However, exchange rate volatility made foreign investment very risky, thus, it is not surprising that the optimum level of foreign investment varied directly with the firm's willingness to accept risk. Goldberg (1993) argues that increasing the degree of international involvement decreases systematic risk but increases total risk.

3.3.13 The cost of implementing hedging policy

Firms are different regarding their ability to bear the cost of implementing a hedging strategy. To manage their FX exposure, firms can use either operational or financial hedging approaches, or a combination of both. However, using the operational method or the financial contracts for hedging purpose is costly (Aggarwal and Soenen, 1989). Joseph (2000) found that only a small minority of firms are fully covered with respect to their FX position due to the reason of high transaction costs on the derivatives markets. The cost of hedging, inherent in reducing foreign currency exposure, must be measured against the foreseen loss due to a given exchange rate change. It is important for companies when considering whether to hedge or not to compare the cost of currency risk and the cost of hedging. The difficulty that companies face is that it is not easy to measure the effect of some forms of currency risk and to compute the cost of hedging properly. For example, companies using forward contracts for hedging may believe that the cost of hedging is the discount in the forward market. However, the gain or loss depends not on the forward premium or discount at the time the contract was made but rather on the difference between the contract forward rate and the spot rate at the time the contract matures. Since it is impossible for a company to define the cost or the benefit of using forward contract in hedging, a company may predict that by comparing the forward rate with its forecast of the future spot rate. Geczy *et al.,* (1997), and Shanker (2000) considered the cost of hedging as a determinant for hedging strategy. However, these studies used a poorly defined proxy for the cost of hedging implementation. They used firm size as a proxy as economc of scale to measure the firm's ability to carry hedging costs. They found that large firms were more likely to bear the cost of implementing hedging policy. Inconsistent with Geczy *et al.*, Tufano (1996) and Gay and Nam, (1998) found an indeterminate relation between the use of hedging instruments and firm size. Soenen and Aggrawal (1989), Belk et al (1992), Marshall, (2000), Fatemi and Glaum, (2000) found that forward contracts are the most frequently used financial instrument in companies. The main explanation for that finding is that forward contracts provide a relatively low-cost method (Bodnar, Hayt and Marston, 1996).

3.3.14 Taxes

Theoretical research predicted that firms with a convex tax schedule will hedge to minimize expected taxes (Mayers and Smith, 1982; Smith and Stulz, 1985). They suggested that the tax benefit of hedging is greater if the firm has more tax preference items. Nance *et al.,* (1993) found that firms with more convex tax schedules hedge more. The corporate hedge increases the shareholder's wealth by reducing the effect of the tax payment on the firm's profit. However, Francis and Stephan (1990) and Fok *et al.,* (1997) found no support for the hypothesis that hedging increases firm value by reducing expected tax liability. Also Mian (1996), and Haushalter (2000) did not find a clear relationship between a firm's risk management policy and its tax function. It seems that the effect of the hedging activity in reducing the expected taxes is not strongly supported by empirical evidence.

3.4 Conclusion

This chapter has showed that there is no accepted framework, which can be used to guide hedging decision. This chapter has illustrated how hedging determinations framework can be designed in a variety of settings. Finance theory indicates that hedging activity increases a firm's value. For example, this chapter has described how hedging can create value for the shareholders through lower expected costs of financial distress (Smith and Stulz, 1985), improving the firm's expected investment opportunities (Froot *et al.,* 1993), reducing the volatility of pre-tax income, to decrease expected tax liability (Mayers and Smith, 1982), and by reducing the agency costs associated with outside financing (Bessembinder, 1991). Other finance theories suggest that managerial risk aversion may affect corporate risk management. For example, Tufano (1996) found that firms whose managers hold more stock will be more likely to hedge. The chapter has revealed that hedging decision might be affected by the manager ability, age, compensation system (Breeden and Viswanathan, 1990; Tufano, 1996; Haushalter, 2000).

However, empirical support of FX risk activity determinants is somewhat limited. Almost all the research on the relationship between hedging activity and firm characteristics have concentrated in the corporate hedging activities in general (Nance, *et al.,* 1993; Gay and Nam, 1998; Hardwick and Adams, 1999; Berkman and Bradbury, 1996; Froot, *et al.,* 1993; and Fok, *et al.,* 1997) or hedging commodity risk (Tufano,

1996, Haushalter, 2000), or hedging interest rate risk (Mian, 1996), but few studies have examined the determinants of FX risk hedging (Geczy *et al.,* 1997; and Joseph, 1999). In order to identify the hedging determinants of FX risk activity, this study will test whether cross sectional differences in FX risk management activity can be explained by theory. For example, theory predicts more extensive currency risk management by firms more likely to face bankruptcy. Other theories posit that corporate risk management activities might be linked to the firm. These theories would predict that a large firm's size would be more inclined to manage corporate risk. However, most of these theories are most related to corporate hedging activity in general, and the question is whether these theories help in describing the choices made by corporations to manage their FX risk. Also theories that explain currency risk management as a means to reduce the costs of financial distress, to reduce agency costs, or to increase the growth opportunities for the firm are not supported strongly. Important questions remain regarding the determinants of the extent to which a firm hedges, and the interaction between a firm's hedging policy ant its other policy decisions.

Chapter Four

A Critical Review for the Determinants of Corporate Hedging Literature

4.1 Introduction

Over the last twenty years, the studies in corporate hedging decision were focused in both the theoretical and empirical issues. Previous theoretical studies continued to develop new rationales for corporate risk management, and empirical studies sought to test these rationales in order to confirm or reject their predictions. This chapter reviews *the theoretical and practical works* on corporate hedging motives, in order to link the theoretical and empirical work to identify areas of agreement in corporate hedging motives. This chapter highlights the previous studies which have modelled the role that firms' characteristics play as determinants of corporate hedging decision. The previous research aims, methodological issues, hypotheses, sources of data, limitations and findings are discussed. To achieve these purposes, the chapter is divided into five sections. The next section (section two) reviews theoretical literature relating to the determinants of corporate hedging decision. The third section highlights the main empirical literature on the determinants of corporate hedging and derivatives use. The aim of the fourth section is to critically evaluate the literature of relative corporate hedging decision determinants. The final section outlines the main conclusion of the chapter.

Table 4.1, on the theoretical studies section (4.2), summarizes the predictions of the theoretical studies. Table 4.2 and 4.3, at the end of this chapter, summarize the two groups of studies in terms of countries surveyed, the period of the study, type of companies in the sample, and method of collecting data and main findings.

4.2 Review of the Theoretical Studies

The aim of this section is to highlight some of the theoretical studies in the area of the determinants of corporate hedging. **Smith and Stulz (1985)** highlighted the hedging behaviour of firms that differ fundamentally from the existing literature. They assumed that according to the finance theory, the incentives exist within the contracting process to maximize the market value of the firm. Smith and Stulz (1985) developed a positive theory of the hedging behaviour of value-maximizing corporations to provide theoretical explanations of the relation between hedging decision and firm value. These explanations suggest firms hedge to lower non-diversifiable costs that are associated with market frictions, such as taxes, financial distress costs, and external financial costs. They pointed out that a value-maximizing firm can hedge to reduce the costs of financial distress, to reduce the conflict of interest between the equity holders and senior claim holders, and when risk-averse agents who contract with the firm cannot fully diversify their claims. Hedging reduces the probability that the firm encounters financial distress by reducing the variance of firm value. Exogenous bankruptcy costs create incentives for bondholders to support optimal hedging. By reducing the variance of a firm's cash flow (or accounting profits), hedging decreases the probability, and thus the expected costs, of financial distress. When a risk-averse manager owns a large number of a firm's shares, his expected utility of wealth is significantly affected by the variance of the firm's expected profit, and a positive relation between managerial wealth invested in the firm and the hedging activity, is predicted.

Smith and Stulz (1985) show that progressive tax rates cause the firm's expected tax liability to rise with variance of taxable income, indicating that hedging increases firm value by reducing the present value of future tax liabilities. They argued that hedging can be used to reduce the volatility of pre-tax income to decrease expected tax liability, to reduce the probability of bankruptcy resulting in a decline in expected bankruptcy costs, and to reduce the agency costs associated with outside financing. Hedges also can reduce the compensating differential necessary to induce risk-averse agents who cannot fully diversify their claims to contract with the firm. The Smith and Stulz (1985) model predicts that managers with greater option holding will prefer less hedging if the option payoff function is convex.

Table 4.1: Summary of the predicted result on the theoretical studies

Predicted signs of coefficient estimates for incentives to hedging decision based on the testable implications of Smith and Stulz (1985, S&S), Froot, Scharfstein, and Stein (1993, FSS), and Breeden and Viswanathan (1990, B&V). and Bessembinder (1991, B).

Received theory suggested that a firm is more likely to hedge	Prediction			
	S&S (1985)	FSS (1993)	B&V (1990)	B (1991)
To reduce expected costs associated with of financial distress	Yes	Yes	na	Yes
To increase the investment opportunities	na	Yes	na	Yes
To reduce expected tax	Yes	Yes	na	Yes
To reduce agency costs	Yes	na	na	Yes
Due to managerial risk avers	Yes	Yes	Yes	na
To increase manager wealth	Yes	na	Yes	na
Due to manager compensation	Yes	na	na	Yes
Transaction costs	Yes	na	na	na
Due to managerial ownership	Yes	na	Yes	na
To increase the internal funds	na	Yes	na	na
Due to management ability	na	na	Yes	na
Due to management reputation	na	na	Yes	na

Note: "na" refers to non predicted sign

Breeden and Viswanathan (1990) developed an asymmetric information model in which managerial reputation and ability provide incentives for managers to hedge. They have presented a model wherein managers use hedging as an indirect vehicle to communicate their abilities. Their hedging model posits that some managers hedge to communicate their higher ability and reputation to the market. They posited that high ability managers hedge to indirectly communicate their higher ability to the market. They argue that by hedging interest rate risk using the financial instruments, bank managers reduce noise in the earning process, and thereby provide investors with a more informative measure of profits that depicts their ability.

Bessembinder (1991) built a model to examine the effect of hedging on the agency costs and financial contracts. He identified two reasons why risk hedging by corporations can increase firm value: hedges reduce agency costs, and hedging increases value by improving contracting terms. The model showed that hedging activities are predicted to be greater in firms that enter valuable deferred obligations such as service contracts, warranties, deferred compensation obligations, and borrowing, and for firms

that enter long-term operating contracts involving firm-specific investment by contracting parties. Also, Bessembinder predicted that hedging activities are to be greater at firms where growth opportunities constitute a large proportion of firm value.

Froot, Scharfstein, and Stein (1993) developed a general framework for analysing corporate risk management in the presence of costly external financing. They argued that firms can support good investments by internally generating a sufficient cash flows to fund those investments, and these internally generated cash flows can be disrupted by external factors such as movements in exchange rates, interest rate, or commodity prices. Under this framework, they show that hedging activities can be used to ensure that a firm has sufficient cash flow available to make value enhancing investments. In that framework, they identified four determinants that might give rise to the hedging decision: (a) increased financial distress costs, (b) increased corporate tax, (c) increased conflict of interest between the equity holders and senior claim holders, (d) when risk-averse agents who contract with the firm cannot fully diversify their claims. Froot, *et al.,* (1993) argued that hedging activities can be used to reduce the underinvestment problem that would result when cash flow is volatile and access to external financing is costly. When external finance is more costly than internally generated sources of funds, it can make sense for firms to hedge. They argued that without hedging, firms are more likely to pursue sub optimal investment projects. They predict a negative association between liquidity and hedging, resulting from treating the liquidity available for the firms not as a substitute for long-term debt, but as a measure of the availability of internal funds.

4.3 The Previous Empirical Studies

There are two types of related empirical studies of corporate risk management. The first type classifies firms into two groups on the basis of their use of particular types of derivatives, and then examines the rationales for derivative use (Nance, *et al.,* 1993; Berkman and Bradbury, 1996; Fok, *et al.,* 1997; Geczy, *et al.,* 1997; Howton and Perfect, 1998; Gay and Nam, 1998; Hardwick and Adams, 1999). In these studies researchers asked respondents firms whether their firm used selected derivative instruments (Nance, *et al.,* 1993;), or researchers searched financial statements or some public database (or published data) and defined a risk management firm as one whose financial reports included references to terms including 'hedge' or to particular

derivative instruments (Berkman and Bradbury, 1996; Fok, *et al.,* 1997; Geczy, *et al.,* 1997; Howton and Perfect, 1998; Gay and Nam, 1998; Hardwick and Adams, 1999). The second type classifies firms into two groups on the basis of their use of hedging activity, hedging and non-hedging firms, and then examines the rationales for the hedging decision (Francis and Stephan, 1990; Mian 1996, Tufano, 1996; Joseph, 1999; Haushalter, 2000). The Mian (1996), Geczy, *et al.,* (1997) and Joseph (1999) studies are the only studies which consider *the determinants of currency derivatives use*. Geczy, *et al.,* examined the determinants of the interest and currency derivatives use separately.

4.3.1 The previous studies on the determinants of derivative use

Nance, Smith, and Smithson (1993) used survey data combined with COMPUTSTAT data on firm characteristics, on 169 firms' use of forwards, futures, swaps, and options in 1986, to examine the determinants of the firm's off-balance sheet financial instrument use, (as public data were not available on the corporate use of off-balance-sheet hedging instruments in 1986). However, they used a questionnaire only to ask if firms use any of the derivatives such as forwards, futures, swaps, and options. They offered empirical evidence on several hypotheses that explain the corporate purchase of hedging instruments and suggest that hedging can increase firm value by reducing expected taxes, by reducing the expected costs of financial distress, and by reducing other agency costs. Nance, *et al.,* restricted the hedging activities to include only the use of financial instruments; they said "corporate hedging refers to the use off-balance-sheet instruments, future, swap, forward, and option contracts, to reduce the volatility of a firms value" p 267. They stated that their paper takes the firm's investment and on-balance-sheet financing strategies as predetermined and focus only on off-balance-sheet financial hedging. They found that firms which use derivatives face more convex tax functions, have less coverage of fixed claims, are larger, have more growth options in their investment opportunity set, less liquid assets, higher dividends and employ fewer hedging substitutes. They also found that firms that use the hedging instruments have significantly higher R&D expenditures and that firms with more investment options have both lower leverage and more hedging suggests that firms that use the hedging instruments have more growth options in their investment opportunity set. However, Nance, *et al.,* (1993) found that the findings for certain hypothesized relationships are often weak in both univariate and multivariate statistical tests.

Berkman & Bradbury (1996) examined the determinants of hedging which can be used as indicator to increase firm value by reducing expected taxes, expected costs of financial distress, and other agency costs. This study provided non-survey evidence on the use of derivative financial instruments. They test the management risk-aversion hypothesis, the relation between the use of derivative and level of foreign activities, and the need to coordinate investing and financing policies. Berkman & Bradbury paper is the first study to use a continuous measure to examine derivatives-use determination from the 1994 audited financial statements of 116 firms in New Zealand. Their results are generally in line with theoretical models of corporate risk management. Using non-survey data, they found that derivative use increases with leverage, size, the existence of tax losses, the proportion of shares held by directors, and the payout ratio and decreases with interest coverage and liquidity.

Fok, Carrol, and Chiou (1997) used public available data to examine how off-balance sheet corporate hedging activities might increase firm value. They examined the firms' financial distress, agency costs, tax liability, size, and growth opportunities as determinants of corporate hedging and derivatives. Their determinants model was built on the assumption that the primary purpose of hedging is to increase firm value. They examined the determinants of derivatives use to hedge the interest rate risk and FX rate risk. Fok, *et al.,* stated that firms hedge with both on-balance sheet as well as off-balance sheet activities. However, Fok, *et al.,* argued that it is very difficult to identify and measure on-balance sheet hedging, hence, they only use publicly available data. In order to examine the relationship between the hedging decision and firm value, they used measures of diversification, the convexity of the tax function, the probability of financial distress, firm size, the agency costs of debt, and the agency cost of equity, as well as an indication of whether or not a firm is a multinational corporation. They defined hedgers as the firms which used at least one of interest rate swaps, interest rate caps, floors, collars and swaption, future and forward rate agreements, futures, currency caps, FX forward, and FX options. They found that hedging reduces the probability of financial distress, reduces the agency costs of debt, and reduces some agency costs of equity. Also, large firms and firms with more growth opportunities are more likely to hedge. However, they found no support that hedging reduces the expected tax liability. The most important result is that, Fok, *et al.,* found that operational hedging (as one kind of internal hedging) and derivative hedging are *complements* rather than

substitutes.

A paper by **Geczy, Minton, and Schrand (1997)** is one of several cross-section studies to examine the determinants of corporate derivatives used by employing annual report disclosures required by the Financial Accounting Standards Board, rather than survey data. They examined *the currency derivatives* use for 372 of the Fortune 500 non-financial firms in 1990. All the firms in the sample have potential exposure to foreign currency risk from foreign operations, foreign-denominated debt, or a high concentration of foreign competitors in their industries. Geczy, *et al.,* empirical tests include a set of hypotheses that are more comprehensive than those of other empirical studies that use large cross-section samples. They "organize the various theories into a single framework by discussing *the incentives for derivatives use* from the perspectives of managers, bondholders, and equityholders" p1325. The Geczy, *et al.,* study was mainly concentrated on the determinants of the incentives for hedging use. However, unlike other empirical studies, Geczy, *et al.,* extended the testable implication of existing theories on derivatives use by considering how the cost of using derivatives affects the decision to use them. They used indirect measurements to measure the cost of using derivatives by suggesting that firms with economies of scale in implementing and maintaining a risk management program are more likely to use currency derivatives. For example, they used a firm's size as a measure of economic scale. However, Nance, *et al.,* (1993) who measured firm size by the sum of the book value of its debt plus the market value of its equity, argued that since the direct costs of financial distress are less than proportional to firm size, it seems that smaller firms are more likely to use hedging techniques than larger firms. Inconsistent with Geczy, *et al.,* suggestion, Tufano (1996) found an indeterminate relation between the use of hedging instruments and firm size.

Geczy, *et al.,* built a framework for optimal derivatives using decision for three factors affecting a firm's derivatives decision: the incentives to use derivatives, the exposure to FX rate risk, and the cost of implementing a derivatives strategy. This framework is one of the most comprehensive frameworks in the literature as it opened a new dimension on considering the decision of derivatives use, see the diagram in section (7.3.1). While these three dimensions are important for the derivative use decision, they are not sufficient conditions to control the derivative use decision. To obtain data about the use of currency derivatives Geczy, *et al.,* used the firms' accounting footnotes in their

annual reports and/or 10-K filings for the fiscal year-end 1991. Because they observed derivatives use, not "hedging", their dependent variable might measure speculation rather than hedging, for that reason, currency derivatives use can not be used as a direct measure of hedging. They found that firms with greater growth opportunities and tighter financial constraints are more likely to use currency derivatives to reduce cash flow variation. The firm size also has positive relationship with derivative use, and firms with more FX rate exposure will use currency derivatives.

The purpose of Howton & Perfect (1998) paper is to study the patterns and determinants of derivatives use by examining a sample of large, and smaller, randomly selected, US firms. This study examined derivatives use in samples of 451 Fortune 500/S&P 500 (FSP) firms (where 60% of them use derivatives) and 461 randomly selected firms (where 36% of them use derivatives). Howton and Perfect (1998) stated that 'the theoretical determinants can be grouped into four categories: external financing, financial distress, tax-related costs, and risk exposure. Howton & Perfect extended Berkman & Bradbury work by using several continuous measures of US derivatives use as the dependent variable. Howton and Perfect found that 60% of FSP firms and only 36% of the randomly selected firms use derivatives. Derivatives use in FSP sample were directly related to financial distress, external financing costs, tax costs, currency risk exposure, and inversely related to hedging substitutes. They found that the determinants of derivatives use differ across samples and are largely consistent with theory. One exception is that the random firms' derivatives use and the theoretical determinants are not strongly related. Howton & Perfect stated that "the results for the random sample imply that the relation between derivatives use in the random sample and the theoretical hedging determinant proxies is not as strong as that found in the FSP sample." P116-117. It seemed that there were some firms in the random sample that do not have any currency or interest rate exposure and did not use derivatives and this may have affected the study results.

Gay and Nam's (1998), paper extended the previous findings on the determinants of corporate derivatives use by examining more closely the underinvestment hypothesis modelled by Froot, *et al.,* (1993). Specifically, they studied the interactional effects among a firm's investment opportunities, cash stock, and internally generated funds, to more clearly distinguish the role of the underinvestment hypothesis in the determination of corporate hedging policy. They construct their sample both by combining

all corporations in the 1996 Swaps Monitor database published by Swaps Monitor Publications, Inc. and the listing of Business Week 1000 firms. They had a common sample of 325 derivatives users and 161 non-derivatives users (interest-rate, currency, and commodity derivatives). They found consistent evidence that supported the role of potential underinvestment problems and a positive relationship between derivatives use and the firms' growth opportunities. Firms with more investment opportunities and low level of cash flow, are more likely to hedge. Also their results show that firms can and do use derivatives as one strategy to maximize shareholder value.

Hardwick and Adams (1999) examined the determinants of financial derivatives use in U.K. life insurance firms (financial services sector). They examined the relation between derivatives use and firm's size, leverage, international links, organizational form, and the extent of reinsurance. Sample data of U.K. based life insurance firms (n = 88) were obtained at random from the insurance company database for 1995. The lack of appropriate data prevented them from including a suitable proxy for some determinants variables such as the duration of assets and liabilities. Hardwick and Adams results indicate that the propensity to use derivative instruments is positively related to a farm's size, leverage and international links, and negatively related to the extent of reinsurance. They argued that the positive relation with leverage and the negative relation with reinsurance support the hypothesis that U.K. life insurers use derivatives to offset risk, rather than as a speculative means of income generation.

4.3.2 The previous studies on the determinants of corporate hedging decision.

Francis and Stephan (1990) examined systematic differences in the characteristics of hedging and non-hedging firms using cross-sectional and time-series tests. Using a set of proxy variables, they examined five theories explaining why firms hedge: restrictive debt covenants, bankruptcy costs, political costs, taxes, and managerial incentives. In order to assess the cross-sectional determinants of hedging firms, they examined whether the five explanations are consistent with time series changes in the proxy variables of hedging versus non-hedging firms. The hypotheses of the research were examined using a sample of 434 U.S. firms, for the period over 1972-82 and 1983-87. Using univariate tests, they found that the debt covenant and political cost were supported, but do not provide strong evidence consistent with tax motivations to hedge

or the theory that firms hedge to avoid bankruptcy costs. Whereas, the multivariate tests, which assess each hypothesis separately, do not support the debt covenant or bankruptcy cost explanations, but provide strong evidence favouring the political cost explanation. The time series analysis shows some evidence that over time hedger firms experience reductions in the restrictiveness of debt covenants, the probability of bankruptcy and tax rates; and increases in size and managerial ability. They found that the most important variables affecting a firm's decision to hedge are its size, dividend policy and average tax rate. However, they used The National Automated Accounting Research System (NAARS) data base between 1972 to 1982 and between 1983 to 1987 but firms at that time were not required to disclose any hedging activities, which might have affected their result as hedging companies which hedged but did not disclose their hedging activities were classified as non-hedging firms in the study.

Using a new database that details corporate risk management activity in North American, **Tufano (1996)** examined commodity-hedging activities in the gold mining industry. He discuses the implications of managers' self-interest for derivatives use determination. Rather than analysing the determinants of the hedging decision, Tufano analysed the differences among firms employing different levels of risk management, none hedge, hedge between 0-40%, and hedge over that 40% of the risk (see page, 1112). Tufano's study concentrated only on the rationales of the commodity hedging activities. The study used data of 48 firms from the gold mining industry. Tufano stated that 'theorists have constructed two classes of explanations for managers' choice or risk management activities on behalf of their firms. One class of explanations focuses on risk management as a means to maximize shareholder value, and the second focuses on risk management as a means to maximize managers' private utility. He stated that "there are no firms that used financial transactions to increase gold price exposure; thus, it appears that the financial risk management programs produce risk reduction, rather than risk enhancement (or speculation)." P1105. He found that gold mining firms' risk management decisions are consistent with some of the existing theory. Managerial risk aversion seems particularly relevant and to have been supported, for example, theory predicts that firms whose managers hold greater equity stakes as a fraction of their private wealth would be more inclined to manage gold price risk, but those whose managers hold options might be less inclined to manage gold price risk. He found little empirical support for the predictive power of theories that view risk management as a

means to maximize shareholder value. In other words, theories that explain risk management as a means to reduce the costs of financial distress, and to lessen the firm's dependence on external financing are not supported strongly in the study. He also found that firm risk management levels appear to be higher for firms with smaller outside block holdings and lower cash balances, and whose senior financial managers have shorter job tenures. However, a study which only concentrate on a specific industry, such as the gold mining industry in Tufano's study, while providing greater detail on industry practices, typically lacks generalization of the study results of the existing theories.

Mian (1996) provided further empirical evidence on the determinants of corporate hedging decisions. Mian obtained data on hedging from 1992 annual reports for a sample of 3,022 firms. Out of the 771 firms classified as hedgers, 543 firms disclosed information in their annual reports on their hedging activities; the remaining 228 firms' reported the use of derivatives but gave no information on hedging activities. Mian in his study had three different comparative samples for each financial characteristic, 771 hedgers vs. 2,251 non-hedgers, 439 interest-rate hedgers vs. 2,583 non-hedgers of interest-rate risk, and 440 currency-price hedgers vs. 2582 non-hedgers of currency-price risk. He reported correlations between financial characteristics and hedging, interest-rate hedging, and currency-price hedging. He found that hedgers and non-hedgers of currency-price risk have no significant difference in market-to-book and the correlation between market-to-book and currency-price hedging is insignificant as well. He found that currency-price hedgers are larger in size than non-hedgers of currency-price risk (mean: $8,355 million vs. $1,015 million). The evidence in the study is inconsistent with financial distress cost models; evidence is mixed with respect to contracting cost, capital market imperfections, and tax-based models. He also found that currency-price hedgers have lower leverage, shorter-term debt, lower liquidity, higher dividend yield, and higher dividend payout as compared to non-hedgers of currency-price risk.

There is a problem in the methodology adopted by Mian. Mian grouped the sample firms of 3,022 into two groups, currency-price hedgers (440 firms) vs. non-hedgers of currency-price risk (2582 firms) and examined the firms' characteristics and differences between these two groups in order to find the hedging motivations. While this method was used to report the differences in financial characteristics between currency-

price hedgers vs. non-hedgers of currency-price risk, a high percentage of non-hedger firms did not hedge because they did not have any currency-price exposure. In order to find the determinants of the currency-price hedging decision, both groups have to face currency-price exposure.

Joseph (1999) presented a brief discussion on the motives for hedging strategic exposure and related the theoretical work to a practical situation. The study focused on two important aspects; the theoretical motives for hedging strategic exposure, and the relevance of corporate hedging motives in practice. The study was built on the suggestion that strategic exposure management can have a favourable impact on the firm's value. Joseph argued that the academic literature lacks both a practical framework for implementing corporate hedging decisions and clarity about the potential impact of hedging on the firm's value. He thought that the reason behind this deficiency was due to the lack of understanding of exactly how exposure is measured within firms and the strategies firms pursue in practical hedging situations. Joseph used a case study of a manufacture of computer and electronic office equipment in the U. S. and three European countries, as a method of collecting primary data. Using the case study, Joseph was the only one from the previous studies who has focused on the relevance of corporate hedging motives in practice. He examined *the determinants of the FX hedging decision*. He found that the main hedging motives of the U. S. firm under consideration was to reduce the impact of the FX rate fluctuations on its future cash flows and net financial asset and to maximize shareholders' wealth. He also found that when exposure information is generated locally, it is essential to establish an exposure strategy which does not adversely affect measures used to evaluate managers' performance. Also, the corporate hedging can only be effective if all the organizational units agree on the hedging strategy.

Haushalter (2000) examined the hedging policies of 100 firms in oil and gas producers between 1992 and 1994. He examined the effect of several independent variables as determinants of corporate hedging, these are: external financing costs, investment opportunities, operating characteristics, convexity of tax function, compensation structure, ownership structure, basis risk (the risk a company encounters when the settlement price if the hedging instrument is different from the price of underling asset being hedged). He conducts tests in both the determinants of a company's decision to hedge and the determinants of the extent of hedging by companies that do hedge.

These tests found substantial differences between the determinants of these decisions.

He argued that to examine the relation between hedging policy and a company's characteristics, the fraction of production hedged was regressed on variables pertaining to the financing policy, size, and ownership structure, as well as a number of control variables. Results from this study support several explanations for corporate risk management. First, the positive correlation between the extent of hedging and financial leverage supports theories that corporate risk management is used to alleviate financial contracting costs. This result is consistent with studies carried by, Smith and Stulz, (1985); Bessembinder, (1991); and Froot, *et al.*, (1993). Secondly, the positive correlation between the decision to hedge and total assets is consistent with the notion that companies can face significant economies of scale in hedging, particularly in setting up a hedging program. This result is consistent with studies carried by, Mian, 1996; and Geczy, *et al.*, 1997. Thirdly, the association between basis risk and both the decision to hedge and the decision of the extent to hedge supports the view that the extent to which a firm should hedge to reduce risks is decreasing in the basis risk it faces in using instruments available for hedging. This result consistent with studies carried by, Ederington, 1979. Finally, he found a negative correlation between the extent of hedging and the compensation of officers and directors. Opposite to that predicted by theory, Haushalter (2000) found some evidence that the likelihood that a firm hedges is negatively correlated with the fraction of shares owned by managers. Rather than analysing the determinants of hedging decision in his univariate analysis, Haushalter analysed the determinants of the extent of hedging among firms that used different levels of risk management (to three levels: zero, minor, and extensive hedgers, see page 126).

4.4 Critical Evaluation for the Previous Studies

This section critically evaluates the previous studies of the determinants of corporate hedging decision. The aim is not to evaluate the weakness and the strength of these studies with a view to lessen the value of the other studies, but to help this study in building an alternative methodology and method to analyse the determinants of the hedging decision.

4.4.1 Data collection method

The twelve studies under review made use of four types of data sources: original financial statements (Nance, *et al.,* 1993; Berkman and Bradbury, 1996; Tufano, 1996; Mian, 1996; Geczy, *et al.,* 1997; Fok, *et al.,* 1997; Howton and Perfect, 1998; Gay and Nam, 1998; Haushalter, 2000), national databases (Francis and Stephan, 1990; Howton and Perfect, 1998; Hardwick and Adams, 1999), surveys (Nance, *et al.,* 1993; Tufano, 1996; Haushalter, 2000) and case study (Joseph, 1999). The choice of data source is important for the overall research design, as each different source of data has its own advantages and disadvantages. Most of the previous studies argued that empirical examination of hedging theories had been difficult due to the general unavailability of data on hedging activities. Benston and Mian (1995) documented that only 7 percent of currency-price hedgers disclose hedging of anticipated exposures in the published data. The lack of the publicly available information about the firms' hedging activities severely limited previous empirical studies of the determinants of corporate hedging decisions as firms have seen the risk management activity as competitive advantage and will not publicly disclose any of their hedging activities. Even when Nance et al., (1993) and Haushalter (2000) used the questionnaire they only asked one question in these surveys regarding the fraction of the financial contracts that been used for hedging purpose. Also Haushalter included in his sample the firms that responded and those who did not respond but provide hem with financial statements.

However, at the beginning of 1990s, firms in countries such as the UK, U. S. A, and New Zealand, were required to disclose their financial hedging activities in their annual reports. Allayannis and Ofek (2001, p. 288) stated that "until the beginning of the 1990s, a firm's exact position in derivatives was privately held information, and was considered a very important component of strategic competitiveness. It is only recently that corporations have been required to disclose in footnotes in their annual reports, the notional amount of derivatives they are using". Main (1996, p. 420) also stated that 'recent changes in financial accounting standards have mandated that all entities disclose off-balance-sheet financial instruments in financial statement footnotes'. As a result of this new disclosure, most of the studies from that date relied primarily on the annual reports or public database. For that reason most of the studies concentrated on the determinants of derivatives use, as the information about the firms derivatives use

can be found in the annual reports and in other data bases (Fok, *et al.,* 1997; Howton and Perfect, 1998; Bessembinder, 1991; Hardwick and Adams, 1999; Gay and Nam, 1998; Berkman and Bradbury, 1996; Geczy, *et al.,* 1997). In the absence of reported information on financial and operational hedging activities, it is very difficult to analyse and identify the hedging determinants from only the footnotes in the firm's annual reports. Using financial statements data in corporate hedging studies may give the researcher the advantage to use these data on the way that he prefers. However, the use of financial statements or the company's financial reports is not without limitations. The advantage of using national database is that this kind of information source has already been collected by someone else and usually related to a large number of companies, covering a wide range of accounting and financial information. The main problem associated with national database is that it may not be presented in the way in which the researcher needs them and that national database may not contain sufficient detail. This is a particular problem when a researcher uses data about derivatives use in general and specifies its use for hedging purpose only, ignoring the possibility that these derivatives contracts can also be used for speculation purpose. From these financial activities which are disclosed in firms' annual reports and public database it is difficult for researchers to define which financial risks these hedging activities are intended to manage, and as a result studies mainly focus on the determinants of derivatives use and specific instruments or corporate hedge in general, but not the determinants of hedging specific risk. Using the firm's annual reports or financial information to divide the firms to hedgers and non- hedgers (derivatives user and non-users) or to analyse the determinants of hedging activity or derivative use, may be affected by the degree of disclosure in different firms and countries. For example, theoretical and empirical studies on the relation between hedging decision and leverage, found or suggested that leverage is positively and significantly related to the decision to hedge (Haushalter, 2000; Smith and Stulz, 1985; Berkman and Bradbury, 1996; Howton and Perfect, 1998). Nance, *et al.,* (1993) using a sample of 169 U. S. firms on firm's use of forwards, futures, swaps, and options, measured leverage using two different measures: the firm's debt-size ratio, and the coverage of its fixed claims, found no evidence to support a positive linkage between hedging and leverage. The negative link with leverage in Allayannis *et al.,* the positive link with leverage in Berkman *et al.,* and Howton *et al.,* studies, and the failure to find any evidence to support the positive relationship between derivatives use and leverage in Nance, *et al.,* (1993) study, which is the opposite of

what theories of optimal hedging would predict, may be affected by the degree of disclosure applied by different firms sample. It would also be used as support for the argument that firms can hedge their financial risk not only using derivative instruments (an external method) but also using internal methods. Another possible explanation for these mixed findings is that the accounting ratios for firms' may have significantly changed from one year to another. A further possible limitation in these studies (e.g., Nance, *et al.,* 1993; Geczy, *et al.,* 1997; Allayannis, et al., 2001; Berkman, 1996; Howton, *et al.,* 1998) is that the data used to define the derivative users cover only a single year and may therefore be affected by short-term fluctuations in derivatives usage. As more data becomes available, panel data studies of derivatives use may provide more robust evidence (Hardwick and Adams, 1999). Further, looking at hedging or derivatives use in general, rather than FX hedging in particular, may result in apparently interdictory results because of model misdirection.

4.4.2 The corporate hedging method

Some of the previous studies classified the firms into hedging and non-hedging firms with no clear definition for hedging activity. As suggested in chapter 2, FX risk can be managed using two alternative methods. Firstly, the use of external methods such as financial instruments. Secondly, the use of internal methods such as making adjustments in the operating policies and strategies of the firm or using price policies such as invoicing in the domestic currency of the firm. Firms, which have corporate risk, will try to use all the internal hedging strategies available to them before using the financial instruments (derivatives). Berkman and Bradbury (1996) argue that a firm has much more flexibility in adjusting size, maturity, and or denomination of its financial instruments than in adjusting its operating and financing strategies. However, other researchers oppose the use of financial instruments as hedging methods. Moffet and Karlsen (1994) argued that while the use of financial instruments in hedging may be able to replace earnings or losses, it does not replace actual market share. Copeland and Joshi (1996) examined the potential benefits of using the financial instruments to hedge FX risk and found that less than 10 per cent of the firms in their sample, which used derivatives for hedging, could reduce the volatility of their cash flows by 20 per cent. It can also be argued that using financial instruments for corporate hedging may increase over all corporate risk. Joseph (1999) stated that 'the use of derivatives in corporate

hedging decision has not always resulted in the expected (favourable) impact on the firm's value. He gave as an example the Metallgesellschaft Company which used derivatives in hedging and this resulted in substantial economic losses. Metallgesellschaft used future and swap contracts to hedge its oil contracts and this strategy resulted in losses of over U.S. $1 billion and the need for an emergency line of credit (Financial Times, 16th November, 1994). While, the FX risk could be managed using internal methods and external methods or both, it may become difficult for the researcher to analyse the determinants of FX risk management decision only using a publicly available information as most firms' did not disclose most of the details of their internal hedging methods.

Hence most of the previous studies state that it is very difficult to identify and measure the internal hedging activities (on-balance sheet hedging), and they only examined off-balance sheet financial instruments. Allayannis, *et al.,* (2001, p. 276) stated that "SFAS 105 requires firms to report information on financial instruments with off-balance sheet risk (e.g., futures, forwards, option, and swaps) for fiscal years ending after June 15, 1990. In particular, firms must report the face, contract, or notional amount of the financial instrument, and information on the credit and market risk of those instruments, the cash requirements, and the related accounting policy. With the exception of futures contracts, disclosure was very limited for other off-balance sheet risk financial instruments prior to SFAS 105". Nance, *et al.,* (1993, p. 267) stated that "corporate hedging refers to the use of off-balance-sheet instruments-forward, future, swaps, and options-to reduce the volatility of firm value". This definition ignored the role of the in-balance sheet hedging activities and the operational strategies as a way of hedging the FX exposure. We can say that restricting the hedging activity to include only the off-balance sheet financing strategies hedging activities has its limitations, in that the difficulty of determining whether an on-balance sheet item is for hedging purpose, ignorance of the operating hedging strategies (such as smoothing, matching, netting, leading and lagging, e.g.), and not all of the on-balance sheet hedging items are publicly available. However, in some of the previous studies, mentioned above the internal hedging activities are identified as 'on-balance sheet activity'. For example, Tufano examined on-balance sheet hedging activities, also Nance, *et al.,* (1993) and Fok, *et al.,* (1997) highlighted on-balance sheet hedging activities. However, these studies did not use on-balance sheet activities to divide the firms in the sample to the user and non user

and to examine the motives of using these activities. The on-balance sheet hedging activities in these studies recognized as financial policies which are 'substitutes for hedging' and they test them as a determinant and substitute for derivatives use. However, Fok *et al.,* (1997), found that operational hedging (as one kind of internal hedging) and derivatives hedging are *complements* rather than substitutes. Fok, *et al.,* p. 573, stated that "including on –balance sheet hedging production hedging activities is difficult. These activities include the decision to locate production facilities in major foreign markets to minimize FX exposure, and choosing a technology to minimize exposure to commodity price risk. Two problems preclude a detailed analysis of this type of on-balance sheet hedging: (1) determining whether an on-balance sheet item is for hedging purposes, and (2) availability of data". Unfortunately, researchers cannot directly distinguish between derivatives use and risk management. For instance, two firms may differently manage their FX risk, one using forward or future contracts, while the other one uses currency invoicing or leading and lagging strategies. By only restricting the risk management concept to derivatives use, the first firm would be characterized as a hedging firm, and the second one as a non-hedging firm. Firms reveal only a small amount of details of their risk management activities and while they disclose their use of derivatives they do not disclose that they engage in hedging activities. For that reason, the studies which did not use survey to collect details about the firms' risk management activities will only get details of the firms that do or do not use specific types of derivatives instruments without presenting a correct idea about the purpose of that use. Using a survey is generally more detailed than the other sources of data, simply because the researcher can ask firms related and updated questions for related and additional information. This method might also be necessary since the national database about firms' financial and accounting figures is not available in many countries, such as Saudi Arabia. Further, the only kind of firms which are required to disclose their financial and accounting information are the ones that are registered on stock Exchange. In Saudi Arabia there are only 60 non-financial firms, of these 60 firms there are only 43 that can be categorised under this study sample conditions. Private or family firms in Saudi Arabia are not in the practice of sending their annual reports to anyone apart from their owners.

All of the empirical studies in the first group have examined factors which could be associated with the probability that a firm uses derivatives, none of these studies have

looked for the factors that are associated with the hedging decision (e.g., internal and external hedging activities). As these studies observe derivatives use, not "hedging", their dependent variables might measure speculation rather than hedging. These studies considered the determinants of hedging and speculating in financial markets, and reflected the implications of hedging and speculating using the financial instruments for their results. Because most of these studies report empirical relations between the firm's demands for risk transfer or risk taker through derivatives and firm-specific characteristics, speculative motives are likely to be substitute to the hedging incentives in these studies. In fact, these studies provided evidence on the motivations for decisions to use derivatives for both hedging and income enhancement purposes through speculation. There is no direct evidence that derivatives are actually used only to hedge rather than speculate. Hentschel and Kothari (1997) and Simkins and Laux (1997) examine directly firms' use of currency derivatives, but the former do not find any evidence and the latter find only weak evidence that their use influences exposure. Mian (1996) separated his sample into two group, hedging firms (771 firms) and non-hedging firms (2251 firms), however 228 of the hedging firms where only recognized as hedging firm as they disclose their use of derivatives but do not disclose that they engage in hedging activities. Mian (1996, p. 425-426) stated that "under current general accepted accounting principles (GAAP), hedging activities are either classified as "hedging" or "speculative" activities...., one problem with classifying derivative users as hedgers is that these firms could potentially use derivative financial instruments for speculation and not for hedging". He "conclude that the association between hedging and its determinants is robust with respect to inclusion or exclusion of derivative users as hedgers" p 433. Joseph (2000, p. 161-162 and 179) argues that "most theoretical studies seek to explain why industrial firms hedge exposure focus on differences in the financial characteristics of users and non-users of hedging techniques. The empirical work, which seeks to test the theoretical predictions, takes a similar focus.... Previous empirical studies which focus on the usual set of derivatives to identify hedgers and non-hedgers can capture some of the effects they seek to measure". Joseph argued that since the firms are only required to disclose exposure information, if such information is material, this latter approach may not fully capture the hedging activities of firms. This problem may cause the discrepancies between corporate risk management theory and the results of these previous empirical studies that only address the decision of using derivatives as a means of hedging. Geczy, *et al.,* (1997, p. 1324) who examined the use

of currency derivatives in order to differentiate among existing theories of hedging behaviour, stated that "because we observe derivatives use, not hedging, our dependent variable might measure speculation rather than hedging. Therefore, we consider firms' motives in using currency derivatives to speculate and the implications of speculation for our results.". Nonetheless, the fact that derivatives can be used for both hedging and income enhancement purposes further underscores the need for academics, industry regulators, practitioners and others to obtain deeper insights into what motivates the decision to use derivatives for a hedging purpose and for speculating purpose.

4.4.3 The unit of analysis

Some studies' samples were not restricted to those firms with FX exposure and contained firms that do not have any exposure (Francis and Stephan, 1990; Mian, 1996; and Howton and Perfect, 1998). Because they do not eliminate firms with no exposure, these studies are not able to concentrate on the major cross-sectional differences that affect the incentives for hedging. Also some firms in their sample may not hedge because they simply have no exposure or have small amounts of exposure. The researcher should be aware of the sample on which the data required are based, in that selecting unrelated samples may affect the suitability of the data in reaching the research purposes. Most of the previous studies samples consisted of different kind of companies such as domestic, export and import, and MNC firms (such as, Mian, 1996; France and Stephan, 1990). The domestic firms may not have any FX exposure, and the MNCs only face a small amount of FX exposure as most of these firms are well diversified and have foreign subsidiaries. Flood and Lessard (1986) postulated that MNCs that both buy and sell in the foreign markets, even within competitive international markets, will be less sensitive to changes in FX rates than those firms engaged solely in importing or exporting. In addition, the empirical studies reviewed in this chapter either used industrial specific sample (Tufano,1996; and Haushalter, 2000), broad but unrestricted samples (Francis and Stephan. 1990; Mian, 1996; Howton and perfect; 1998 and Gay and Nam, 1998), or the largest group of firms in a country (Berkman and Bradbury, 1996; Geczy, *et al.,* 1997; Nance, *et al.,* 1993; and Fok, *et al.,* 1997), or was based on case study (Joseph, 1999). This study contributes to the empirical literature through its sample of exporting and importing firms and adopting a new empirical methodology. This study's sample of Saudi firms was chosen on the

basis that they were heavily engaged in trading in foreign markets.

4.4.4 The underling assumption in the previous studies

The previous studies focus on two main considerations to analyse both the hedging decision and the derivatives use determinants. First, most of the previous studies presented in this chapter used a finance theory framework based on firm value maximization. The theory assumes that the economic behaviour of individuals and firms aim at maximizing economic utility. The behaviour of the decision maker is facilitated by the predicted return as rational for the decision. Most of the previous studies evaluate hypothetical outcomes in hedging decision situations, and mainly focused on too narrow an aspect of the risk and benefit relationship. These previous studies argue that hedging can increase firm value (e.g. Froot, *et al.,* 1993; Nance, *et al.,* 1993; Berkman, et al., 1996; Fok, *et al.,* 1997; Joseph, 1999). In order to build their model most of the theoretical explanations of the determinants of the hedging decision in these studies mainly concentrated on the incentives for hedging which are likely to benefit contracting parties. Most of the debates on the determinants of corporate hedging decisions have been mainly concentrated on the finance theory which argues that hedging increases the firm's value. Most of these studies used firms' annual reports or public database which only provide numerical information such as accounting ratios, and most of the previous researchers when they examined the determinants of hedging decisions found themselves mainly and unconsciously critically evaluating that decision using accounting ratios.

The finance theory offers another explanation for why hedge. Most of the previous studies argued that corporate hedging and derivative use are attributable to managerial risk aversion (e.g. Tufano, 1996; Mian, 1996; Geczy, *et al.,* 1997; Haushalter, 2000). These studies focus on the managerial differences in risk taking, so that these studies ascribe some of the firm's risk behaviour to the link between corporate risk management activities and the risk aversion of corporate managers, their utility, and the form in which they hold a stock in the firm. According to this explanation, the main purpose of corporate hedging is to maximize the manager's private utility and reduce the likelihood that managers will suffer adverse consequences (Hausalter, 2000). However, this explanation may contradictory with corporate hedging as a measure to maximize shareholder value. In that Haushalter, (2000, p. 87) argued that "if the

maximization of the manager private utility is primary corporate motive for hedging, the benefits for shareholders not entirely clear, and to the extent there are costs associate with corporate hedging, for example, transaction costs- risk management may end up reducing shareholder value. From that point it is worth will to consider which one is more related to risk management decision, maximizing shareholders wealth or maximizing managers' private utility. This question has not yet been clearly discussed except in the study of Tufano (1996). However, Tufano study has some limitations, in that, (a) it was focused only in the gold mining industry with typically lack generalization of the study results, (b) the sample of the study was small 48 firms and this small number may affect the results of the regression analysis (as the sample was divided into two groups from 0-40 and more than 40%), (c) Tufano only considered the determinants of the commodity hedging activities, (d) he used a national survey of the derivative use.

Most of the previous studies adopted both views and tried to present considerable empirical support for them. They proposed a two-factor theory that 'uses both increasing managerial wealth and a firm's value factor to explain the hedging decision choice. To them the managerial difference factor describes the possibility that the hedging decision may affect the manager's wealth and suggests that managerial risk aversion may affect corporate risk management policy. The firm value maximization factor refers to the view that the hedging decision can be used as a means to maximize shareholder value. Using the publicly available data divorces a currency exposure problem from its context so that attention can be focused on a few variables. However, while many studies used the same data method (publicly available data) different studies ended up with different conclusions, see Table 4.2. Also all these studies concentrated only in the accounting ratio differences as a determinant of the corporate hedging decision. The studies were mainly analyzing the same determinant variables using different representative samples. The problem in corporate hedging decision determinants is not only that of selecting a representative sample, the philosophy upon which the strategy is based is also important. Making profit might not be the sole motive for the firm. Most of the previous studies focused on whether the hedging decision in firms was adopted according to the shareholders' or managers' interest. Most of the determinant variables were examined to infer a relationship between managers' and shareholders' wealth and the hedging decision.

All the above considerations have their impact on the classification of the previous studies and the findings of these studies. However, these studies report evidence which provided some useful insights to this researcher in building the theoretical model of the determinants of the hedging decision.

4.5 Conclusion

This chapter has shown that insufficient research has been undertaken to date on the analysis of hedging decision determinants. The concepts involved have not been clearly defined, and this may explain the evidence of confusion in the methodology of some studies, and the inconsistent results between studies. All of the previous studies reviewed in this chapter have examined which determinants could be associated with the probability that a firm hedges or derivatives use. However, none of the previous studies reviewed involved a comprehensive model of corporate hedging decision determinants or a model which reflects the effect of the firm's context in the hedging decision.

This chapter has reviewed research that studies the relationship between risk management or derivative use and firm's characteristics. It is concluded that our knowledge of the corporate hedging determinants is limited, providing considerable scope for future research. It can be seen from the previous review that research evidence about the determinants of corporate hedging covers a limited range of perspectives and methods. Unfortunately, this limitation means that our body of knowledge remains in its early stages. In particular, in most of the previous studies certain aspects of the research design hamper the integration of the available evidence. This chapter has argued that, while the objective of most of the previous empirical studies were to analyze the determinants of corporate hedging, the hypotheses tested assume that firms pursued a shareholder value maximization strategy or a managerial risk aversion strategy when they consider a hedging decision. Most of the previous studies which examined the determinants of hedging decision were mainly focused on testing theories which assumed a potential gain from risk management, including reduction of financial distress costs, minimization of tax payments, protection of potential investment programs, minimizing the agency conflicts, and reducing the external financing costs. Most of the previous studies reviewed in this chapter adopted a hypothetic deductive approach to test these determinants. While, managers may use the hedging motivations

argument to direct hedging decision, they may also consider other factors. The chapter has showed that these studies focus on the reasons underlying value maximization and the issue of agency conflicts and pay little attention to the other factors which may influence the corporate hedging strategy. There are some problems with investigating these factors. The data which can be used to do so is firm-specific and cannot be obtained through the annual report or published data. Also the absence of the additional theory which can explain to some extent the different aspect of factors which may influence the decision makers is incomplete.

This chapter pointed out that most of the previous empirical studies were mainly focused on the hedging activity in general, commodity risk management, or on interest rate risk management. Most of the previous studies on the determinants of the hedging decision ignored the idea of alternative solutions to the use of derivatives for risk management, those involve making adjustments in the firms' operational and financial policies. For example, Soenen and Madura (1991) pointed out that long term FX risk should be managed by making adjustments in the firms' operating and financial policies and strategies. Although these studies did not specifically include more variables to capture all internal and external hedging methods, it might be argued that firms with foreign operations may be more likely to engage in internal hedging activities. To summarize, despite increasingly sophisticated research designs, the reviewed studies of the corporate hedging decision determinations have not resolved the debate. In fact, a number of methodological and conceptual issues remain problematic.

Table 4.2: Comparison among the studies of the derivatives use determinants.

The study	Country	Period of analysis	The sample	Methods of collecting data	Main results
Nance, Smith & Smithson (1993)	U. S.	1986	169 non-financial Firms from Fortune 500 and the S&P 400 firms	Questionnaire & COMBUTSTAT database	They found that firms with convex tax schedules, more growth options, and more financial distress costs hedge more. Firms that use hedging instruments have less liquid assets and higher dividends.
Berkman & Bradbury (1996)	New Zealand	1994	116 non-financial firms	Financial Statements	They found that corporate derivative use increases with leverage, size, the existence of tax losses, the proportion of shares held by directors, and the payout ratio and decreases with interest coverage and liquidity.
Geczy, Minton and Schrand (1997)	US	1990	372 non-financial firms from Fortune 500	The annual reports	They found that firms with a combination of high growth opportunities but low accessibility to internal and external financing are most likely to use currency derivatives. Currency derivative users are large in size with high percentage of institutional ownership and greater managerial option holdings.
Fok, Carroll and Chiou (1997)	US	1990 to 1992	396 non-financial firms from S&P 500	Handbook of Users of Off-Balance Sheet Instruments, 1993 edition published by Swaps Monitor Publications and COMPUSTAT database	Hedging increases value by reducing the probability of financial distress, by reducing the agency costs of debt, and by reducing some agency costs of equity. Both the institutional owners and managerial ownership influence the likelihood of hedging. Large size firms and firms with growth opportunities have strong tendency to hedge.
Gay & Nam (1998)	US	1995	486 non-financial firms	Swaps Monitor database Published by Swaps Monitor Publications & Business Week 1000 firms	They found consistent evidence that supported the role of potential underinvestment problems and a positive relationship between derivatives use and the firms' growth opportunities. They found a negative correlation between internally generated cash flows and derivatives use.

Howton & Perfect (1998)	US	1994	451 Fortune 500/S&P 500 firms & 461 randomly selected firms	The annual reports & The Compustat Tapes.	They found that derivatives use is directly related to financial distress and external financing costs, tax considerations, and currency-risk exposure.
Hardwick & Adams (1999)	UK	1995	88 firms from life insurance	Thesys Insurance Company Database	They found that the propensity to use derivative instruments is positively related to a farm's size, leverage and international links, and negatively related to the extent of reinsurance.

Table 4.3: Comparison among previous studies of the corporate hedging determinants.

The study	Country	Period of analysis	The sample	Methods of collecting data	Main results
Francis & Stephan (1990)	US	Over 1972-82 & 1983-87	434 firms	The National Automated Accounting Research System	They show some evidence that over time hedger firms experience reductions in the restrictiveness of debt covenants, the probability of bankruptcy and tax rates; and increases in size and managerial ability. They found that the most important variables affecting a firm's decision to hedge are its size, dividend policy and average tax rate.
Mian 1996	US	1992	3022 firms	Annual reports	He also found that currency-price hedgers have lower leverage, shorter-term debt, lower liquidity, higher dividend yield, and higher dividend payout as compared to non-hedgers of currency-price risk. He found that currency-price hedgers are larger in size than non-hedgers
Tufano (1996)	North America	Over 1990-93	48 firms from gold mining industry	The Reeve Survey on 1991 & Annual report	He found that firms whose managers hold greater equity stakes as a fraction of their private wealth would be more inclined to manage gold price risk, but those whose managers hold options might be less inclined to manage gold price risk. He found little empirical support for the predictive power of theories that view risk management as a means to maximize shareholder value.

Joseph (1999)	US	Not specified	One U.S. MNC in computer and electronic industry	Case study	He found that the main hedging motives of the U. S. firm under consideration was to reduce the impact of the foreign exchange rate fluctuations on its future cash flows and net financial asset and to maximize shareholders' wealth. The corporate hedging can only be effective if all the organizational units agree on the hedging strategy. He also found that when exposure information is generated locally, it is essential to establish an exposure strategy which does not adversely affect measures used to evaluate managers' performance.
Haushalter (2000)	US	Over 1992-94	100 firms oil and gas industry	Survey & Financial Statements	He found positive correlation between the extent of hedging and financial leverage and total assets. He found a negative correlation between the extent of hedging and the compensation of officers and directors. He found some evidence that the likelihood that a firm hedges is negatively correlated with the fraction of shares owned by managers.

Chapter Five

Research Methodology and Methods

5.1 Introduction

The aim of this chapter is to present the research design, methodology, and methods, adopted in this study in order to describe the manner in which the research objectives stated in the first chapter are addressed. At the end of this research, the outcomes should be relevant, understandable and of benefit for both academics and practitioners. The choice of research methods and methodology should reflect these outcomes. All these objectives have been reflected in the research design and the choice of research methodology. In order to help in the process of the research design and methodology, this chapter will try to answer several important questions. What theoretical perspective- philosophical stance- informs the research and can be used to achieve objectives and questions of this research? What philosophical assumptions and implications lie behind the methodology? What research design and methodological objectives link methods to outcomes- governs our choice and use of methods? What methods- techniques and procedures- does this research propose to use? Answers to these questions stem from the research objectives and the nature of the investigation.

Following this brief introduction, this chapter is divided into ten main sections. Section two presents the aim of the study process. Section three outlines the theoretical paradigm. Section four considers the positivism and interpretive assumptions and implications that this research intends to adopt and the rationale for choosing them. Section five outlines the research design that the study intends to follow and the rationale for choosing it. In section six the purpose of the survey study is presented. Section seven outlines the unit analysis which will be used in the study. Section eight presents the research methodological theories "finance theory" and "contingency theory". Section nine outlines the research methods, and explains why this research uses different data collection methods to those employed in most other studies. In the final section, a short summary is presented.

5.2 The Aim of the Study Process

As stated in chapter 1, the research aim is to explore and examine the determinants of the currency risk management decision in Saudi firms. In order to achieve this aim, the exploration and explanation of the determinants, this study is divided into two stages. The first stage is the exploratory study (chapter 6) and consists of the analysis of the interviews followed by the pre-test study and the pilot study to prepare the questionnaire. The second stage is the explanatory study (chapters 8 and 9) and consists of testing and analyzing the study questionnaire. To achieve the objectives from these two stages the study adopted the triangulation approach as the methodological approach for this study. Denzin (1978, p. 291) defines triangulation as 'the combination of methodologies in the study of the same phenomenon'. Using a multiple approach to research permits a wider and richer understanding of risk management practice than methodologically a singular approach. Sieber (1973) stated that the triangulation approach can provide the researcher with comprehensive and multiple viewpoints of the phenomena under study. In order to achieve the research aim, the triangulation approach offers the study with the use of multiple stages, multi theoretical perspectives, multi theories, multi methods, multiple research purposes, and different analysis approaches. The rationale of using this approach is that different theories or methodologies are complementary to each other; weaknesses of one theory or methodology can be overcome by strengths of another, and vice versa (Cunningham, Young, and Lee, 2000). This study adopted various types of triangulation that can be used in combination to study the determinants of currency exposure management decision such as, data-triangulation (documents, questionnaire, semi-structured interviewed), and theory-triangulation (contingency, finance, positivistic and interpretive approach).

5.3 Theoretical Perspective

The term theoretical perspective refers to the progress of scientific practice based on people's philosophies and assumptions about the world and the nature of knowledge; in this context, about how research should be conducted (Hussey and Hussey, 1997). This section describes the philosophical stance that lies behind the research assumptions and methodology. Crotty (1998) attempts to list a representative sample of theoretical perspectives; positivism, interpretivism (symbolic interactionism, phenomenology, and hermeneutics), critical inquiry, feminism, and postmodernism. Although each one of

these positions have lists of assumptions and methodological implications associated with each position, it is not possible to identify any one researcher who ascribes to all aspects of one particular view. Indeed, occasionally an author from one position produces ideas which belong more neatly to those of the other position. The choice of any one of the alternative theoretical perspectives (paradigms) seems to be based on personal judgment. Chua (1986: p606) states that "the criteria for paradigm comparison and evaluation are essentially judgmental, open to change and grounded in social and historical practices". However, this personal choice must be based on an acceptable justification and be sensitive to the nature of the research subject itself. The aim of this study is to explore and analyse the FX risk management determinants in Saudi firms. The research, therefore, needs an approach that enables us to obtain a better understanding of FX risk management activity and the relationship between hedging decision and these determinants.

5.3.1 Choosing an appropriate theoretical perspective

Hussey and Hussey (1997) and Easterby-Smith, Thorpe and Lowe (1991) state that there are two main research paradigms or philosophies in business research and management research respectively. These two paradigms can be labelled as **positivist** and **phenomenology** (interpretivist). This section will try to draw up attention to the assumptions and methodological implications associated with each position, in order to compare the two possible alternatives of research paradigms and choose the one which is more appropriate to each stage in this research. This comparison will serve as a justification for our final selection of our research methodology. The difference between positivism and phenomenology may be very clear at the theoretical perspective level, but when it comes to the use of qualitative or quantitative methods and to the issues of research design the distinction breaks down (Burrel and Morgan, 1979). The ***phenomenological paradigm*** developed as a result of criticisms of the positivistic paradigm. Hussey and Hussey (1997) stated that some authors prefer to use the term **interpretive** rather than phenomenological because it suggests a broader philosophical perspective and prevents confusion with a methodology known as phenomenology. Hussey, *et al.*, (1997, p. 52-53) stated that "the phenomenological paradigm is concerned with *understanding human behaviour from the participant's own frame* of reference. A reaction to the positivistic paradigm, it is assumed that social reality is

within us; therefore the act of investigating reality has an effect on the reality. Considerable regard is paid to *the subjective state of the individual.* This philosophy stresses the subjective aspects of human activity by focusing on the meaning, rather than the measurement, of social phenomena. To varying degrees, a phenomenologist believes that social reality is dependent on the mind. There is no reality independent of the mind; therefore, what is researched cannot be unaffected by the process of the research".

The idea of phenomenology is that reality is socially constructed rather than objectively determined (Babbie, 1998). Hence the task of the social scientist should not be to gather facts and measure how often certain patterns occur, but to appreciate the different constructions and meanings that people place upon their experience (Burrel and Morgan, 1979). One should therefore try to understand and explain why people have different experiences, rather than search for external causes and fundamental laws to explain their behaviour (Easterby-Smith, Thorpe, and Lowe, 1991). The phenomenological paradigm (interpretive approach) has strengths in its ability to look at change processes over time, *to understand people's meaning, to adjust to new issues and ideas as they emerge, and to contribute to the evolution of new theories* (Easterby-Smith *et al.,* 1991). Many researchers have referred to the limitations and drawbacks of applying interpretive approach to social sciences. One major limitation is the issue of theory validation (Chua, 1986). For instance, how does one judge the validity of an interpretation if actors cannot entirely be trusted, and interpretations are incomplete and dependent on the researcher's subjectivity? Every thing is interpreted by the author and as such may be subject to his biases and influences and therefore may not be free of human values. Another related problem associated with interpretive approach is the use of actor agreement as the standard for judging the adequacy of an explanation (Chua, 1986). Chua posts the following questions: How does one reconcile fundamental differences between the researcher and the actors? How does one choose between alternative explanations? One of the key features of phenomenology is to concentrate the study on a small sample investigated in depth or over time, this could limit the general pertinence of the study conclusions. Data collection also can take up a great deal of time and resources, and the analysis and interpretation of data may be very difficult. As stated before, part of the research aim is to explore the relationship between the hedging decision and the firm's internal and external environment. One of the

phenomenology variant, the **interpretive approach,** will be adopted in the first stage of this study, the exploratory study. The rationale for choosing this approach is because the objective of the exploratory study is to discover new contingent factors that the research process identifies as important. To address the limitation of both finance and traditional contingency theories, the interpretive approach is adopted (see section 5.8). To better make sense of the financial, organizational, managerial, and environmental aspects of risk management policy the interpretive approach will be supplemented by the finance and contingency theories. An interpretive approach is attractive in terms of identifying what factors are important in determining risk management policy according to the understanding and beliefs of the practitioners. The unit of analysis in this study is a firm (see section, 5.7) and will be studied through its manager's perceptions. While all the studies on the literature which analyse the determinants of the hedging decision were concentrating on the positivism point of view, this study uses the interpretive approach to improve our understanding of corporate hedging behaviour.

In view of the applicability of the interpretive approach to the first stage of this study (exploratory study, chapter 6, interviews), another approach has been suggested to be adopted in the second stage of this study (the explanatory study, chapters 8 and 9, the survey). This philosophy may offer research methods that can potentially enrich and extend our understanding of organizational practices. This is the ***positivistic philosophy***. Positivist social science which is the approach of the natural science, is "a philosophical concept, and refers to a particular set of assumptions about the world and about appropriate ways of studying it" (McNeil, 1990, p116). The positivist point of view seeks *to provide rational explanation* and exploration to what is going on in the social world by searching for correlation and causal relationships between its elements. The purpose of the second stage of this research is *to examine the determinants* of currency exposure management decision which are identified in the first stage. The second stage of this study adopts positivist approach, in that it seeks to test a research hypothesis and produce a predictive model. Hypothesis is an idea or proposition which this research will test using statistical analysis. Another rationale for choosing this philosophy is that because it can provide wide coverage of range of situations the research findings can be generalized, particularly when statistics are aggregated from large samples. This may be of considerable relevance to policy decisions, and can be used for studying cause and effect relationships. Following from the discussion above, this study sees the generated

theories from the exploratory study and the existing theories of the corporate hedging decision determinants as primary positive theories that explain why hedging decisions exist, and why and how firms are different in their attitude towards FX exposure. Hussey and Hussey (1997, p. 50) stated that "If you are a positivist, you are likely to be concerned with ensuring that any concepts you use can be operationalised; that is, described in such a way that they can be measured. Perhaps you are investigating a topic which includes the concept of intelligence, and you want to find a way of measuring the particular aspect of intelligence you are interested in. You will probably use large samples and reduce the phenomena you are examining into their simplest parts. You will focus on what you regard are objective facts and formulate hypotheses. In your analysis you will be seeking associations or causality". Positivists essentially attempt to produce general results through practical solutions to practical problems. As this research follows a positivistic philosophy in the second stage, it will be interested in determining how confident the research is in stating that the final findings in the sample will be present in the population from which the sample has been drawn. Furthermore, this philosophy assumes that researchers should specify means not ends which are left to decision makers to decide based on their needs and goals (Chua, 1986). In order to look at the impact of the positivistic and interpretive approach on the research design and methodology, we should focus on the positivistic and interpretive paradigm assumptions and implications.

5.4 The Positivist and Interpretive Approach Assumptions and Implications

Both the positivist and interpretive approach consist of four assumptions which are, ontological, epistemological, axiological, and methodological assumptions (Creswell, 1994) see Table 5.1. These assumptions affect the type of methodology that has been adopted in this research.

Table 5.1: Assumptions of the positivistic and interpretive Approach

Assumptions	Question	Positivistic paradigm	Interpretive paradigm
Ontological	What is the nature of reality?	Reality is objective and singular, apart from the researcher.	Reality is subjective and multiple as seen by participations in a study
Epistemological	What is the relationship of the researcher to that researched	Researcher is independent from that being researched.	Researcher interacts with that being researched
Axiological (human nature)	What is the role of values?	Value-free and unbiased.	Value-laden and biased
Methodological	What is the process of research?	Deductive process, cause and effect, static design-categories isolated before study, generalizations leading to prediction, explanation and understanding, accurate and reliable through validity and reliability.	Inductive process, mutual simultaneous shaping of factors. Emerging design categories identified during research process, context-bound, patterns and theories developed for understanding, accurate and reliable through verification

Source: Adopted from Creswell (1994) p. 5.

Ontological assumptions raise basic questions about the nature of reality. A basic question in this respect is: whether the 'reality' is given 'out there' in the world, or the product of one's mind; whether 'reality' is of an objective nature or the product of individual cognition; whether the 'reality' to be investigated is external to the individual or the product of individual consciousness (Creswell, 1994). The choice here is whether the reality is objective and singular, apart from the researcher (realism and objectivism) or that reality is subjective and multiple as seen by participants in a study (nominalism or subjectivism). The nominalist assumes that the social world external to individual cognition is made up of nothing more than names, concepts and labels which are used to structure reality, Burrell and Morgan (1979). Nominalist researchers assume that the phenomena are not independent of prior knowledge and the respondent's mind. For example, within this research the nominalist would assume that the hedging decision could not be examined independently from the firm context effect and the manager perspective. On the other hand, the realist postulates that the social world is external to the individual cognition and the real world is made up of hard, tangible and relatively immutable structures. On the ontological assumption, there is an objective reality out there to be known. Realism assumes that the phenomena exist in their own right, external and independent of the observer's mind. It assumes that the respondent's action against the phenomena is unaffected by his/her beliefs and prior knowledge. For

example, within this research the realist researcher would assume that the hedging decision can be explained by factors separate from the financial manager, and that both the financial manager and the hedging decision would be directed by some determinants.

This study has adopted a nominalist view in the first stage of this study (exploratory study, interviews). The rationale for choosing a nominal approach is due to the assumption that the hedging decision could not be examined independently from the manager and the firm context effect. This research also has adopted a realism view in the second stage (the explanatory study, questionnaires). The rationale for choosing this view came from the ontological stand point that the positive approach is based on the assumption that reality is an objective phenomenon 'out there'. It assumes that a material world, which exists, is independent from the observer. People are not characterised as active makers of their social reality (Chua, 1986). Therefore, individuals should attempt to discover a knowledgeable objective world as independent from themselves. Crotty (1998) stated that realism is often taken to imply objectivism and in some cases we even find realism identified with objectivism. Guda and Lincoln (1994, p. 108) stated a link between the two when they claim that 'if, for example, "real" or reality is assumed, the posture of the knower must be one of objective detachment or value freedom in order to be able to discover "how things really are" and "how things really work". Objectivism holds that meaning, and therefore meaningful reality, exists as such apart from the operation of any consciousness. Objectivism may be described as consisting of, formulating a problem, developing a hypothesis, making predictions based on the hypothesis, devising a set of hypothesis, conducting the test, and rejecting or failing to reject the hypothesis based on the test result (Tull & Albaum, 1973).

Epistemological assumptions are concerned with how one can understand the world and communicate this knowledge to others. Epistemology raises basic questions such as: how do we know the world? What is the relationship of the researcher to that researched? (Hussey *et al.,* 1997). One of the important epistemological assumptions is to determine the relationship between the researcher and that researched. The choice here is whether the risk management decision makers should remain distanced from (independent), or get involved with (dependent), the material that is being researched. It seems that the philosophical view adopted by this research will affect the choice

about whether or not it is possible for the observer to remain independent from or interacts with the phenomena being observed. The first stage of this research is based on the belief that the risk manager is involved in risk management policy. The rationale for this choice is that one of the exploratory study aims is to identify the factors that affect the hedging decision according to the understandings of the risk management decision makers. The second stage of this research is based on the belief that the risk management decision makers should be independent from that being researched as far as possible. The risk manager and the researcher are chosen to be independent from the phenomena being researched, since we are looking to the reality which assumes that the phenomena exist in their own right, external and independent of the observer's and practitioner's mind. The rationale for this choice is that the traditional positivist assumption in science assumes that the researcher must maintain complete independence if there is to be any validity in the results produced.

Axiological assumptions are concerned with the relationship between individuals and their environment. Two extreme views have been advocated to explain how individuals respond to their external world: value-free (deterministic) and value-laden (voluntaristic) views (Burrel and Morgan, 1979). The value –free view regards people and their experiences as products of their environment; in other words, people are conditioned by their external circumstances (Burrel and Morgan, 1979). The value-laden view, on the other hand, gives humans a much more creative role. Individuals are regarded as the creator and the controller of their environment (Creswell, 1994). The first stage of this research has adopted a value-laden view. The rationale for choosing a value-laden approach is that some of the corporate hedging determinants can be identified according to the value and beliefs of the actors involved with the risk management strategy. Using the value-laden view may help the study to make a balance between the degree of determinism of the hedging decision by contingency factors and the fact that managers exercise a free choice over the decisions in the organisation. The study has some tendency for the hedging decision to be associated with the contingency factors but the actual decision adopted depends on a managerial decision and is therefore affected by managerial perceptions, values and interests. The first stage of this study aims to explore the environmental conditions (the independent variables) as managers see these environmental conditions from their perceptions. The second stage of this research has adopted a value-free view that risk managers action is affected by

their environment; in other words, the risk manager's decision to hedge or not to hedge was conditioned by the financial and contingent factors. The rationale for choosing a value-free approach is because positivism assumes people are being completely determined by the situation or environment in which they are located. People are a product of the external forces in the world to which they are exposed (Morgan and Smircich, 1980). Positivism assumes that people behave and respond to events passively in predictable and determinate ways. Hussey and Hussey (1997, p. 52) stated that "the positivistic approach seeks the facts or causes of social phenomena, with little regard to the subjective state of the individual. Thus, logical reasoning is applied to the research so that precision, objectivity and rigour replace hunches, experience and intuition as the means of investigating research problems."

The methodological assumptions are concerned with the process of the research. The term methodology refers to the overall procedures and methods to the research process (Creswell, 1994). The main focus here, from the methodological philosophy, is between inductive and deductive approach (Burrel and Morgan, 1979). Inductive research is a study in which the observation of empirical reality is used to develop theory. Inductive approach is used when the research aim is to move from the specific to the general, to help the researcher moving from individual observation to statements of general patterns. The inductive approach process starts with generating a set of observations and moves on to develop theories (theory building approach, see DeVaus, 1996). Deductive research begins by formulating theories (hypothesis), and goes to test them by empirical observation (theory testing approach or hypothetico-deductive approach, see Blaikie, 1995). Deductive approach is used when the researcher wants to move from the general to the particular. For example, the researcher may have read about theories of the firm size effect on the risk management decision and wish to test them in the FX risk management decision. In a deductive approach one should start with a theory, or hypothesis, about the nature of the world, and then seek data that will confirm or disconfirm that theory. The main practical advantage of the deductive approach 'hypothesis testing approach' is that there is initial clarity about what is to be investigated, and hence information can be collected speedily and efficiently (Easterby-Smith, 1991).

This study adopted a hybrid approach, focusing on the inductive approach in the first stage and on the deductive approach in the second stage of this research. The

rationale for choosing this mixed approach is because the study's objectives are to *explore* the FX risk management determinants, and to *find associations or causality* between the hedging decision and the predicted hedging determinants. In order to achieve these objectives the study involved both inductive and deductive methods. Easterby-Smith, Thorpe and Lowe (1991, p. 22) state that 'when one looks at the practice of research, even self-confessed extremists do not hold consistently to one position or the other. Although there has been a trend away from positivism towards phenomenology over the last few years, there are many researchers, especially in the management field, who adopt a pragmatic view by deliberately combining methods drawn from both traditions'. Using a mixture of deductive and inductive approaches, might help the researcher, first, to gain a wide understanding of the FX risk management and the rationale of the hedging decision in each firm. Second, to explore the specific determinants that may affect the hedging decision. Third, to highlight financial managers' and shareholders' perceptions against FX risk. Fourth, to explore the specific reasons that may affect the preference for hedging activities. Fifth, to highlight further factors that might affect the manager's decision against FX risk (other than those mentioned on the interview guidance). Finally, to highlight and get feedback from issues explored in both interviews and questionnaires.

5.5 The Research Design

Research design is different from the method by which data are collected, the research needs a design or a structure before data is collected. "The function of a research design is to ensure that the evidence obtained enables us to answer the initial question as unambiguously as possible" (DeVaus, 2001, p.9). DeVaus presented four broad types of design which are: experimental, longitudinal, case study, and cross-sectional (social survey design).

The experimental design is "a research that rules out alternative explanations of findings deriving from it by having at least (a) an experimental group, which is exposed to a treatment, and a control group, which is not, and (b) random assignment to the two groups" (Bryman, 2001, p. 503). Experiments include true experiments, with the random assignment of subjects to treatment conditions, as well as quasi-experiments that use nonrandomized designs (Keppel, 1991). The experimental research extends over time so that data are collected at least two points in time (before and after), and

between time one (before) and time two (after) the experimental group is exposed to an experimental intervention (DeVaus, 1996). At both times one and time two the experimental and control groups are measured in relation to the key dependent variable that is of interest in the study. There are some problems associated with experimental design such as it is not possible to obtain repeated measures for the same group, thus making it impossible to get measures at both times one and two, and sometimes it is difficult to obtain a control group. Also practical and ethical considerations often make it impossible to introduce experimental interventions (DeVaus, 1996, p. 36). The experimental designs are very much hard to conduct within real organizations, or where it is important to draw volunteers from the population (Easterby-Smith, Thorpe, and Lowe, 1997). It seems that experimental design is not appropriate for this research since realism assumes that the phenomena exist in their own right, external and independent of the observer's mind. Also the epistemological assumption adopted in this study is based on the belief that the researcher should be independent from that being researched as far as possible.

Longitudinal survey 'is a study that involving the collection of data over period of time in order to examine changes that occur in the intervening periods' (Jones, 1996, p.334). This research design is similar to the experimental except that there is no control group only one experimental group. DeVaus (2000, p.50) argued that 'the absence of a randomized control group makes it difficult to know whether the intervention or some other factor produces any change'. Also Hussey *et al.,* (1997) argued that this research design is very time-consuming and expensive to conduct. The longitudinal design is not appropriate for this research since the pre-eminent technique used in this research to study the correlation and causal relationship is not based on variations in variables over time. Indeed, one motivation for remaining private could be to avoid regulatory mandates to publish such information. In this study, nearly 70% of the study population was owned by individual or family and none of which make a practice of distributing their financial statements to external parties. The limited availability of financial statement data effectively may preclude time-series analysis as a meaningful exercise. While, the traditional focus of time-series financial analysis is at one firm over time, the cross-sectional financial analysis focuses at firms at a point in time. However, a researcher can use cross-sectional survey in order to approximate the study of process or change. For example, a researcher may ask the respondents to identify their income

improvement during the last five years or using a sample of different level of employees to achieve the same objective.

The case study design is described as a comprehensive description and explanation of the many components of a given social situation (Babbie, 1998). Using the case study method the researcher seeks to collect and examine as many data as possible regarding the subject of the study. DeVaus (2000, p.51) stated that 'case study design might consist of a single case study (e.g. a community study, a study of an organization) or a series of case studies with perhaps each case testing a theory from a different angle. There are some problems associated with this research design: the costs and timetables for case study designs thus vary enormously, the choice of research staff with appropriate experience and skills, the ethical issue may arise when the case study is carried out by an active participant (in an organization), more limited considerations of case study design, their implementation and the analysis of non-quantitive data produced by this type of study (Hakim, 2000). Babbie (1998) argued that while most research aims directly at generalized understanding, the case study aims initially at the comprehensive understanding of a single, idiosyncratic case. The case study design is not appropriate for this research since the purpose of the case study design is theoretical rather than statistical generalisation to a wider sample of cases and that there is a little point in trying to find a typical case for a case study (DeVaus, 2001). Also the difficulty of getting access to the organization may reduce the acceptance of this research design.

The cross-sectional design is often called a social survey design (Bryman, 2001, p.40). A cross-sectional study is a research study for which data are gathered just once (maybe stretching over a period of days, weeks, or months) to answer the research question and are analysed by examining the extent to which variation in the outcome variable is linked with group differences (Easterby-Smith *et al.,* 1991). The survey is not synonymous with a particular technique of collecting information: questionnaires are widely used but other techniques such as structures, semi-structured, and in-depth interviews, observation, content analysis and so forth are also appropriate (Marsh, 1982; DeVaus, 1996). Surveys seem to assume that human action are determined by external forces and neglect the role of human consciousness, goals, intentions and values as important sources of action (DeVaus, 1996, p.8). This study adopts the cross-sectional design (survey design). Some of the important rationales for using the survey design in this research were presented by Babbie (1998, p 40-44). He stated that survey

research, (a) can be used profitably in the examination of many social topics and can be especially effective when combined with other methods, (b) Survey data facilitate the careful implementation of logical understanding, (c) the fact that the survey format permits a clear and rigorous elaboration of a logical model clarifies the deterministic system of reasons for and sources of observed events, characteristics, correlations, cause and effect, (d) sample survey is never conducted for purposes of describing the particular sample under study, rather it is conducted for purposes of understanding the larger population from which the sample was initially selected, and (e) because survey researchers have a larger number of variables at their disposal, they are in an excellent position to carefully examine the relative importance of each and obtain the greatest amount of understanding from the fewest number of variables.

Comparing to the experimental design, the cross-sectional design to relies on comparing groups, where the groups are constructed on the basis of existing differences in the sample. The sample is divided up into groups according to the category of dependent variables to which they happen to belong. In this study the comparison groups would be those firms who hedge their currency exposure and those firms who did not hedge their currency exposure. The critical point is that the cross-sectional design allows the researcher to rely on real existing differences between groups and allows the researcher to be independent from that being researched as far as possible. This study is cross-sectional, with the data collected at one point in time. Data availability issues are less problematic in cross-sectional analysis of financial information. While, the existence of private and family held firms in this study means that the available data may not be representative of the set of firms of interest to the study, this problem can be solved by collecting this data through questionnaires or interviews. Two main limitations are associated with using cross-sectional designs: they do not explain why correlations exist; and they have difficulty in eliminating all the external factors which could possibly have caused the observed correlation (Easterby-Smith *et al.,* 1991). However, this research tried to solve this problem using an interview method which allows the researcher to focus on the relevant factors. All the previous studies presented in Chapter 4 tested the determinants of corporate hedging via correlation and regression models. They attempted to infer relationships between the hedging decision and its determinants using published data (such as the firms' annual report). While the use of correlation and regression models in these studies seem to fit their objectives, the way used to collect

the data may weaken the results achieved.

5.6 The Purpose of the Survey Design

There are three general objectives for survey research: description, explanation, and exploration (Babbie, 1998). The researcher in descriptive research is concerned not with why the observed distribution exists but merely with what that distribution is (Babbie, 1998). The descriptive approach is mainly concerned with documenting the observations of the phenomenon of interest (Marshall and Rossman,1989). In descriptive research the researcher observes and then describes what was observed. The data collected in descriptive research is often quantitative and statistical techniques are usually used, for example, to summarise the firm's characteristics. Descriptive research goes further in examining a problem than exploratory research, since it is undertaken to ascertain and describe the characteristics of firms (Hussey and Hussey, 1997). The survey research may also be used as an explanation of why a firm chooses to hedge or not to hedge. To explain the firm's hedging policy means to give a reason for it , to make it comprehensible. The explanatory research can be used to measure the cause and effect relationships, investigating the extent to which one variable (the effect) is explained by another variable (the cause) (Robson, 1993). The exploratory study is research in areas where very little prior knowledge or information is available on the subject under investigation (Easterby-Smith *et al.,* 1997). The exploratory design aims to look for patterns, ideas or hypotheses, rather than testing or confirming a hypothesis (Hussey *et al.,* 1997). This study mainly focuses on *the exploration objective* as we are aware that we might have overlooked some additional corporate hedging determinants. Using the exploratory study the study can gain insights and be familiar with corporate hedging area to generate more ideas and determinants that can be developed into more structured and detailed research hypothesis that can be tested in the next stage (questionnaire). To achieve this purpose the study mainly used the interview method. The respondents did indeed mention factors relevant to the currency hedging decision that we had not initially anticipated. These additional factors were subsequently taken into account in the main research method (questionnaire). This study is also an *explanatory study* as it seeks reasons for particular practices; and also *descriptive study* as it seeks to describe the firm's characteristics that are associated with the hedging decision.

5.7 The Unit of Analysis

The unit of analysis can be individual, dyads, group, organization, machines etc. (Easterby-Smith, Thorpe, and Lowe, 1991). An important question arose at this point who should be considered a possible respondent company from the private sector? This required a decision on organisation characteristics. In other words, the researcher had to decide which private sector companies should be included in the population from which a respondent would be chosen i.e. all private sector companies or only those companies which have international trade. Due to the relatively recent introduction of FX risk problem in private sector companies, the researcher felt that the inclusion of all private companies in the population would not serve the objectives of this study. It was obvious that a large number of private companies had never dealt in international markets, and, as a result, would not be able to reflect an objective assessment of hedging determinants. Therefore, only respondents from private companies who had experience in FX risk through their dealings in international markets were considered as possible respondents from the private sector companies. For the purpose of the study export and import companies are the unit of analysis for the study. The exporting firms are those firms that sell their products in competitive world markets, but may source their input in their domestic markets and/or world markets. The importer firms are those firms that source their inputs in competitive world market, but may sell their products in their domestic markets or foreign markets. The exporter and importer firms are those firms that sell their products and source their inputs in competitive foreign markets. Although focusing on exporting and importing firms may raise concerns regarding the rationality of using this firm sample, several features of this sample make it particularly well suited for an analysis of the determinants of FX risk management decision. First, exporting and importing firms are exposed to FX risk: the volatility of FX rates has a substantial impact on cash flow variability for exporting and importing firms. Second, the rationale and methods of hedging against FX risk are available for these firms. Most of the previous studies were based on samples consisting of different kinds of companies, such as domestic companies, export and import companies, and MNCs (such as, Mian, 1996; Berkman *et al.,* 1996). Most of the domestic firms do not have any FX exposure, and the MNCs also face small amounts of FX exposure because these firms are well diversified and have foreign subsidiaries. It seems that exporters and importers who do not have foreign subsidiaries face the largest degree of currency exposure and the

impact of FX rate movements on their cash flows can be highly significant. The sample of exporters and importers with ex anti-FX rate exposure reduces noise in the empirical tests by excluding firms that may have incentives to reduce variance, but do not have ex ante exposure. Other empirical studies have either used broad but unrestricted samples (Francis and Stephan, 1990; Nance *et al.*, 1993, Mian, 1996; Howton and Perfect, 1998;), industry specific samples (Tufano, 1996; Hardwick and Adams, 1999; Haushalter, 2000), or MNCs (Joseph, 2000).

5.8 The Theoretical Framework

A combination of both finance theory (FT) and contingency theory is adopted as a framework for exploring and explaining the determinants of FX risk management in Saudi firms.

5.8.1 The finance theory

The previous studies reviewed in Chapter Four of the determinants of corporate hedging concentrated mainly on FT. Most of these studies argued that in choosing to hedge or not to hedge managers are assumed to be *risk averse*, *income maximizers* and thus to be seeking the maximum return for a given level of risk (i.e., Smith and Stulz, 1985; Bessembinder, 1991; Froot, *et al.*, 1993; Tufano, 1996; Berkman and Bradbury, 1996; Fok, *et al.*, 1997; Geczy, *et al.*, 1997; Gay and Nam, 1998; Hardwick and Adams, 1999; Haushalter, 2000). Haushalter (2000) stated that FT offers two basic explanations for why corporations hedge; corporate hedging is attributable to managerial risk aversion, and corporate hedging can reduce the likelihood that a company will encounter financial difficulties.

Managers should make only those decisions that will increase the firm value. Regarding the subject of the research under investigation in this study, it is important to introduce three major concepts taken from the FT approach; (a) shareholder wealth maximization, (b) efficient capital markets, and (c) the capital asset pricing model (CAPM). Finance theories offer several hypotheses to explain why corporate hedging can be rational or value enhancing, each of which relies on some form of market imperfection (see section 3.3). In an efficient market any new information would be immediately and fully reflected in prices. Solnik (1996, p. 155) stated that 'CAPMs have been developed assuming efficient markets. When exchange risk can be fully

hedged, i.e., if there exist forward exchange contracts in all currencies, it is shown that all investors should hold a combination of their national risk-free asset and the world market portfolio (partly) hedge against currency risk. A risk pricing relation in the CAPM spirit applies, which states that the expected return on an asset should be a linear function of risk premia on the market portfolio and on all currencies'. The CAPM is a method of share valuation based on the proposition that there exists a linear relationship between risk and return (Watson and Head, 1998). For managers, before hedging the currency risk, they should compare the risk with expected return. According to the CAPM, the risk is that the essential factor that has to be taken into account, can be divided into two parts; the unsystematic risk and systematic risk (Sharpe, 1964). While, Shareholders can eliminate the unsystematic risk by the diversification of their portfolio (i.e., by holding a portfolio of appropriate securities), however, the systematic risk cannot be avoided regardless of the level of diversification (Lintner, 1965). It is clear that FT indicates that managers should not manage unsystematic risk but should manage the systematic risk (Salter and Weinhold, 1979). FT recognizes the FX risk as systematic risk and can be minimized using hedging instruments. FT suggests that the equity markets will not reward unsystematic markets risk management, but will reward systematic markets risk management (Bettis, 1983). FT assumes that the goal of the firm is to maximize shareholder wealth. It assumes a normative wealth and utility maximizing framework for both manager and shareholder. From the FT perspective the important criteria for any managerial decision is the effect it will have on shareholder wealth (Brttis, 1983). Theoretical and empirical researches have presented ways in which FT assumes that corporate hedging, in general, might increase firm value (Mayers and Smith, 1982, 1987; Smith and Stulz, 1985; Bessembinder, 1991; Froot, et al., 1993; Berkman and Bradbury, 1996; Fok, *et al,* 1997; Geczy, *et al.,* 1997; Gay and Nam, 1998; Hardwick and Adams, 1999). FT suggests that managing FX risk can positively affect the value of the firm (Smith and Stulz, 1985). For example, Chapter Three has described how hedging can create value for the shareholders through lower expected costs of financial distress (Smith and Stulz, 1985), improving the firm's expected investment opportunities (Froot, *et al.,* 1993), reducing the volatility of pre-tax income to decrease expected tax liability (Mayers and Smith, 1982), and by reducing the agency costs associated with outside financing (Bessembinder, 1991).

FT has made major advances in understanding how risk management activity is valued.

FT has had scant impact on risk management strategy. Risk management strategy should learn to apply FT. However, FT must be extended in order to reconcile risk management strategy analysis. The financial side of risk management strategy has been given a particular focus in previous corporate hedging studies, yet has had little impact on risk management strategy. Despite the discussion on the determinants of risk management policy, to include only the theories of value maximization and managerial risk aversion may affect the validity of the framework provided. The valid hedging decision from the FT perspective is the one that stresses the expected return from the hedging process. While the above concepts are generally accepted by financial economists they seem to be not fully enough to explain the risk management strategy. In practice, Myers (1984) argued that manager do not use FT when they plan their firm strategy. Peary (1984, p. 152) stated that 'sometimes FT is maligned as being too theoretical, possessing little, if any, practical applicability'. Myers (1984) believed that it is fair to say that most firms' strategic planners are not guided by the tools of FT. The gap between risk management policy and financial analysis may reflect misapplication of finance theory (Chamber and Lacey, 1993).

The FT agrees that if managers do hedge, they must believe that the main condition for this decision is that the value of their firm is increased by hedging activity (Howells and Bain, 1998). If the only guidance for managing currency exposure is the maximizing value argument, this would imply the acceptance of the framework constructed from only the FT. The theory that can be used to explain the risk management strategy should consider strategy from different perspectives. The risk management strategy seems to be more contingent sophisticated. Using the contingency approach as support to guide the risk management policy may be an attempt to overcome the limited contribution of the financial analysis in determining the hedging decision. FT stresses fundamentals (Myers, 1984), but ignores the deflection by the firm's real-life context. Otley (1980) suggested that the contingency approach is particularly useful when exploring the context of a phenomenon of interest. A combination of both the FT and contingency theory will be better for more understanding of risk management policy in firms. FT still has some practical problems that must be resolved using the contingency approach and applying new methodology and method. The combination between the theories may extend the study arguments to cover both the value maximization theories and the firm real-life context (organizational, managerial, and environmental contingent factors).

While the arguments in the effect of the FT against risk management strategy were to some extent discussed in the previous corporate hedging literature, however, the effect of the contingency approach is not yet explained. The exploratory study, in chapter 6, will be used mainly to explore the effect of the contingency factors on FX exposure management policy. It should be mentioned that chapter 7 presents the framework of the study which is constructed using both contingency theory and FT (as obtained from the literature review in chapter 3 and the exploratory study in chapter 6).

5.8.2 The contingency theory

Contingency theory establishes from the work of Burns and Stalker (1961), and developed by Woodward (1965) and Pugh and Payne (1978). Otley (1980), Macintosh (1981), provided an extensive review of the contingency theory literature. Contingency theory first became prominent as a means of explaining variations in organizational structure (Thomas, 1986). Contingency theory suggests that organizational design is contingent on environmental uncertainty, technology and size (Donaldson, 1996). Contingency theory argues that there is a best way to organize, dependent on environmental conditions (Lawrence and Lorsch, 1967). The contingency theory argues that there is no universal approach to hedging decision which applies equally to all firms in all circumstances. There are many variables which influence the decision to hedge or not to hedge. The contingency approach rejects the views based on the idea of one best form of hedging decision. This study builds on this idea and attempts to analyse the determinants of the hedging decision in terms of relationships among its components and the environment of the firm. The choice between the decision to hedge or not to hedge will depend upon situational contingent variables for each particular firm.

There are no references to contingency theory in the determinants of corporate risk management literature which has been reviewed in this study. Using a contingency theory will be an important development in the theory of risk management. The idea of a universally applicable corporate hedging decision model may have been instrumental in fostering its acceptance, however, most of the previous studies did not produce the results expected. A possible explanation is that corporate hedging decision models employed by these studies were not adapted to the context/contingency variables of the firms concerned. The development of contingency models represents a major potential

for research in the corporate hedging decision. The use of the contingency theory as a framework for this study allows an exploration of the firm's context within the corporate hedging decision and the management of the firm's characteristics which may influence the hedging decision.

The literature of contingency theory is replete with detailed discussions of many variables which are likely to be applicable to explain the firm's hedging policy. Jones (1985, p. 304) stated that 'the contingency variables may be broadly classified into environmental influences, which occur to a large extent independently of action taken by an organization, and internal variables in respect of which the organization can exercise more discretion'. For example, Jones (1985) in his empirical study of the changes introduced into management accounting systems following an acquisition adopted contingency theory. He used two environmental variables (competition and technology) and six internal variables (size of the organization, organizational goals, the degree of structural differentiation, management philosophy, prevailing culture, and choice by the dominant coalition). The identification of contextual variables potentially implicated in the design of hedge or not to hedge decision can be traced to the original structural contingency framework developed within organizational theory (Chenhall, 2003). The most pervasive theories of organizational structure identified some of the main contingent variables such as environment, technology, size, structure, strategy and national culture (Burns and Stalker, 1961; Woodward, 1965; Child, 1974; Otley, 1980; Chenhall, 2003). Contingency theory has focused on such contingency variables as environment (Burns and Stalker, 1961, Lawrence and Lorsch, 1976), organization strategy (Chandler, 1962, Child, 1972), technology (Thompson, 1967, Woodward, 1965), and organization size (Hickson, Pugh and Pheysey, 1969). Brian (1979) stated that contingency theory is a useful tool in defining relationships between managerial work and behaviour, and training and development strategies. Luthans (1985) stated that the contingency approach can be seen as a form of 'if-then' matrix relationships. For corporate risk, the implication of contingency theory is that firms facing similar environments would display similar firm mechanisms to deal with corporate risk. The synthesis of this study is that a number of contextual factors influence the way a specific company organizes itself. If certain situational factors exist, then the choice to hedge decision will be the most appropriate.

The main focus of contingency theory will be concentrated on the way the

corporate hedging decision determinant is shaped so as to reflect the reaction to the environment and the needs of the resulting tasks. Both the internal and external environment factors are referred to as contingencies. Thus, while most of the previous studies in corporate hedging determinants focused only on the internal factors, this study will extend the exploration by considering the internal and external factors as contingencies. It considers the relationship between FX risk, diversity of the environment, and the degree of organizational differentiation. Each of the different aspects of the hedging decision is contingent upon one or more of the contingency factors. The major theme in this study is that when a manager faces the decision to hedge or not to hedge, there are often important relationship amongst organizational, environmental, and management variables affecting the decision.

While the traditional contingency theory can be used to contribute to risk management research, it has been subject to a number of criticisms or doubts about its practical value to this research. Contingency theory in corporate risk management is not without its problems. The choice to engage in hedging activity when faced with contingency variables has not been addressed in previous research. Also the nature of the contingency variables which may affect the firm's risk behaviour has not been properly elucidated. The contingency theory is said to be deterministic, and suffers from conceptual and methodological problems (Schreyogg, 1980). Schreyogg argued that the contingency paradigm is deterministic as it leads to only one best structural 'decision choice' to a specific contextual situation. Greenwood, Rose, Hinings, Cooper, and Brown (1999) suggested that there has not been just one-way organizations response to the same environmental conditions. The assumed effect of independent environmental variables in the hedging decision (dependent variable) is open to question. In that a large firm, for example, may have the power to exercise control over certain aspects of its environment. Also a firm with monopoly position in the market may be less affected by the environment; also a firm can affect its environment by, for example, advertising or political pressure groups (Mullins, 1996). Mullins argued that some firms may be less dependent upon their environment (changes its contingency) and in a more secure position compared with other organizations.

There is a need to extend contingency theory to explain changes in the contingency (Donaldson, 1996, a). Donaldson (2001) argued that contingency theory has not drawn much on economics and tends to remain isolated from it. Contingency approaches

have been extensively criticized for being overly deterministic and for neglecting the subjective and interpretive nature of hedging decisions. Some studies rejected the idea that the contingency model leads to organization structure (Child, 1972; and Whittington, 1989). Whittington rejected the contingency determinism and argued that managers under the strategic choice theory have the ability to exercise a free choice over the fare of their companies. As a result, any mismatch in contingency factors is likely to have less severe consequences for risk management decision. The contingency approach argues that the hedging decision is affected by the situational determinants. This argument alone can not provide us with accurate understanding of the hedging strategy and should be improved. The impact of contingent factors on hedging decision seems not to be a deterministic process; rather the currency risk hedging decision comprises of a set on inter-related management procedures which act as complements and perhaps as substitutes. In addition, Otley (1980) argued that the conceptualization, definition and measurements of key variables require greater theoretical and empirical attention.

These complications can be minimized by adopting new contingency theory by building the basis for the contingency framework through the inductive theoretical approach and testing the validity of applying this framework using the deductive theoretical approach with support from finance theories. The new theoretical framework is improved by recognizing the criticism made against the contingency theory. The process of the contribution of the contingency theory in this research will be organized in two stages; first using the exploratory study, and second using a survey questionnaire. Any recommended determinants contingent variables will be examined during these two stages. While most of the previous studies which used contingency theory claimed that contingency determinism posits that any change in the contingent factors should lead fairly and immediately to a change in the company's structure (Lawrence and Lorsch, 1967; Brian, 1979; Donaldson, 1987; Chenhall, 2003). This study applies the Child, 1972; and Bourgeois, 1984, argument that managerial decisions and contingent deterministic factors work together in shaping the organisation. To seek improvements in the instruments used within the contingency framework, this study will apply an exploratory study at the beginning in order to identify the contingency framework variables which can be applied to the research context.

The traditional contingency approach fails to address how subjective meanings

underlay the operation of risk management in the significance of an organization's traditions and the importance of culture in shaping how risk management decision operated. To address this limitation, the contingency approach has been supplemented by the phenomenological paradigm (interpretive approach). The interpretive approach can be used to identify what factors are important according to the understandings and beliefs of the managers involved with risk management strategy in company. In this study, contingency is used as guidance for the exploratory study rather than being used in the positivistic way as suggested in the literature. To better make sense of using the exploratory study in the risk management decision, the contingency and finance theory have been supplemented by an interpretive approach. Overall this study has tried to make improvement to the traditional contingency theory by solving the criticism made against it. The study has striven to fill in gaps and make the theory more coherent. In so doing the study has created a more flexible framework in order to understand the currency hedging policy. *This study sees the managers as making hedging decisions that are acceptable from their perceptions, contingent to firm's context, and in the interest of the shareholder to increase the firms' effectiveness.* Changes in contingencies can be explained by the feedback from managerial perception and economic factors. In so doing we hope that using contingency theory in this way may break some new ground in applying ideas from the manager perception and finance into contingency theory.

While Donaldson (1996) argued that the origins of positivist organisation theory lie in the contingency theory, adopting the contingency theory using the positivist approach may eliminate the influence of the managerial value preferences, beliefs, ideologies and power in the hedging decision. The contingency, interpretive, finance and positivist theoretical approaches to the study of hedging decision are seen as complementary in that they offer alternative explanations which may add richness to the interpretation of data, and as conflicting to the extent to which they are based upon different theoretical perspective assumptions. This study agrees with Berry, Loughton, and Otley (1991, p. 113) that 'by adopting multiple initial perspectives, it was hoped that the researcher would remain open to the possibility of discovering new and alternative ways of understanding the phenomena observed'.

5.9 The Research Methodology and Methods

The research method refers to the various means by which the research data is collected. In order to gain a better understanding of the subject under investigation and companies' perceptions of its nature and management, it is important when selecting a particular research methodology and methods to take into account the nature of the study objectives and the sensitive information needed to answer any related questions. Hussey et al., (1997, p. 64) stated that 'having decided on the sample, it is necessary to decide how to ask the survey questions. The alternatives are face-to-face or telephone interviews or questionnaires'. Accordingly, to achieve the objectives of the research, the research plan consists of two parts. The first part is devoted to a review of the literature on FX risk management in firms in developed and developing countries. The purpose of this review is to identify various important aspects and key issues relating to the subject of FX risk management, which need to be explored throughout the study. More specifically, this review is used to develop the questions presented to the research participants during the second stage. In addition, this review will be used to test, whenever applicable, the extent to which the responses of the Saudi firms to the issues raised in the study are significantly different from other studies in other countries. In other words, circumspect comparisons between overseas studies will be made where specific aspects allow direct comparison with this study. This approach is necessary given the variety of methodologies employed by other authors in FX risk management research.

The second part is dedicated to the discussion of FX risk management in Saudi firms. This study deals with hedging determinants. Hedging data is not freely available because hedging data is company proprietary information. For a research in social science, it is more useful to use a number of different methods to collect data. However, this is not practically easy in terms of time and data availability. In this study collecting the same amount of data from different firms was in practice impossible to achieve. For example, the access to the information in stock exchange firms was greater than in private or family firms. Firms that are listed in the Saudi Stock Exchange were more able and willing to provide the researcher with documentary evidence. In general, the access to personnel was difficult and restricted in some of the firms in the sample. In this study, three research methods were used; documents, interviews, and

questionnaires. These collective data methods were developed to gather information about Saudi firms and their hedging behaviour in order to measure the extent to which hedging activities are used and to determine the existence of certain characteristics such as size, ownership structure, industrial classification, and percentage of foreign operations that would lead firms to hedge FX risk.

5.9.1 Qualitative versus quantitative method

The research method chosen to study a problem should be compatible with the questions being asked. As stated in Chapter One 'the aim of this study is to *explore* and *examine* the determinants of currency hedging decision by Saudi firms'. The aim of the thesis contains both 'explore' and 'explain' the determinants of currency hedging decision by Saudi firms. The study decided to use the method that is more appropriate to achieve each part of this aim. There are two main different methodologies which are qualitative and quantitative. One should not approach an investigation by looking for an excuse to use only quantitative or qualitative methods but should, instead, ask, what kind of method is most likely to give the best answers to the research questions? It was also made that using only quantitative methods could limit and weaken the final conclusions. Understanding the differences between the quantitative and qualitative approaches is critical because it not only tells the researcher the type of information that he is likely to need, but how much weight the researcher can place on it for a decision-making purpose. To achieve the research aim, this study has adopted both qualitative and quantitative approach.

Qualitative research tells the researcher how managers think, what managers think about, how they evaluate or decide and why. What motivates, drives and pleases them, and can be used *to explore* new motivations. Qualitative research allows us to get inside managers' experiences, perceptions, attitudes and values, *to identify* and understand what problems faces, how they will react when they face it, and what enables them to react (Denzin and Lincoln 1998). What qualitative approaches have in common is a reliance on the written or spoken word or the observable behaviour of the person being studied as the principal source of data for analysis. The purpose of such research is a greater understanding of the world as seen from the unique viewpoint of the people being studied. The qualitative approach is subjective in nature and involves *identifying*, examining and reflecting on perceptions in order to gain an understanding of social and

human activities (Gordon and Langmaid, 1988). Some researchers may prefer to use the qualitative approach as they are not confident in designing a quantitative study and using statistical tools in analyzing data. Qualitative research aims to *discover* meaning and patterns and seeks understanding through inductive analysis, moving from specific observation to the general. It focuses on studying things (phenomena) deeply, in all of their complexity, in their natural settings; generally through observation without intervention or manipulation. By observing in depth, a qualitative study can provide insights into the interrelationships between population members, generate understanding of cultures, develop new concepts about phenomena, or help define what is important in an area that does not yet have a good theoretical base (Strauss and Corbin, 1990). Qualitative researchers start with general research questions rather than a specific hypothesis and are more likely *to end with tentative answers or hypotheses* about what was observed (DeVaus, 1996). It can be concluded that this study adopted the qualitative approach to the extent that it may help to highlight the theoretical work against the currency risk management practice in order to identify areas of agreement, and to address the currency risk management problem from the perspective of the firm.

Quantitative approach is objective in nature and concentrates on measuring phenomena, it involves collecting numerical data and *analyzing* them and using statistical tests (Maxim, 1999). It involves the collection of structured data which is more easier with analytical process. Research on the quantitative mode employs deductive logic, moving from the general to the specific, i.e., from theory to experience. Quantitative research usually *start with a specific hypothesis to be tested* and usually end with confirmation or disconfirmation of the hypotheses that were tested (Creswell, 1994). Quantitative research seeks *causes and relationships* demonstrated statistically, a theoretical perspective, positivism that is concerned with facts, prediction, and causation and not the subjective nature of groups or individuals of interest (Bryman and Cramer, 2001). In quantitative research the research is usually concerned that his or her findings can be generalized beyond the confines of the particular context in which the research was conducted (Hussey and Hussey, 1997). In that if the study is carried out with a questionnaire to a number of firms which answer the questions, it is possible to say that the results can apply to firms other than those which responded in the study. This concern reveals itself in social survey research in that it often gives rise to the question of how one can create a representative sample. This problem was solved in this study by

focusing on large number of population of the exporting and importing firms in Saudi Arabia under some conditions (see sub-section 5.9.3.5).

Babbie (1983) stated that the major difference between quantitative and qualitative research lies in their fundamentally different assumptions about the goals of research. Babbie (1983, p. 537) defined qualitative analysis as "the nonnumerical examination and interpretation of observation for the purpose of *discovering underlying meanings and patterns of relationships*", as opposed to quantitative research, "the numerical representation and manipulation of observations for the purpose of *describing and explaining the phenomena that those observations reflect*". This research employed a mixture of both qualitative and quantitative methods. It is appropriate for the objectives of the thesis to gather both qualitative and quantitative data; qualitative to allow *exploratory* analysis for new currency hedging decision determinants; quantitative to allow *describing, examining* the correlations between the determinants and the hedging decision. Increasingly, authors and researchers who work in organizations and with managers argue that one should attempt to mix methods to some extent, because it provides more perspectives on the phenomena being investigated (Easterby-Smith *et al.,* 1991). Fielding and Fielding (1986) advocate the use of both quantitative and qualitative methods in one study. Hussey *et al.,* (1997, p 72) stated that "once the researcher chooses the research paradigm. It is not unusual in business research to take a mixture of approaches, particularly in the methods of collecting and analysing data". Bryman (1988) draws out some features of using quantitative methods which are sublimed by a qualitative method (a mixed method) on the same study. First, social scientists are likely to exhibit greater confidence in their findings when these are derived from more than one method of investigation (Webb, Campbell, Schwartz, and Sechrest, 1966, cited by Bryman, 1988). Secondly, qualitative research can be used as a precursor to the formulation of problems and the development of instruments for quantitative research. Qualitative research may facilitate the construction of scales and indices for quantitative research, and also the presence of qualitative data may greatly assist the analysis of quantitative data. On the other hand, quantitative research also can be used to facilitate qualitative research, in that quantitative data can be used in the judicious selection of cases for further qualitative study. The initial quantitative research allows the structuring of the issue to be addressed and also provides the basis for the selection of comparison of groups for in-depth qualitative interviewing. Third,

quantitative and qualitative research is combined in order to produce a general picture. Qualitative and quantitative research changeably can be used to fill some gaps between the theories and practices, because the gaps cannot be readily filled by a reliance on participant observation or semi-structured interviewing alone. Finally, the problem of using qualitative methods in collecting data is that it fails to provide a sense of the typicality or generality of the events described, the researcher can use the quantitative data as a means of establishing the generality of the study's findings. Several other writers have also pointed out the usefulness of merging qualitative and quantitative methods (see for example, Gill and Johnson, 1991; and Hakim, 1987). The hybrid approach (merging qualitative and quantitative methods) adopted in this study generates some debate among academics and practitioners so that a better framework for addressing the currency risk management determinants can be adopted.

5.9.2 Documents

This involved collecting and examining relevant publications, annual reports, and documents from the Saudi Arabian Monetary Agency and the Saudi Shares Registration Company, the Ministry of Commerce and Industry (the Custom department), Central Department of Statistics in Ministry of Planning and Dammam and Jeddah seaport. This information is used mainly to provide background information relating, in particular, to the nature of the private sector and company systems in Saudi Arabia. This information is also used to define the study sample. Documents gathered from other sources, on the other hand, are mainly used to provide background information relating, in particular, to the nature of the export and import business and the economic and financial system in Saudi Arabia.

5.9.3 Interview method

Using the information and guidance obtained from the literature review and contingency theory, the second stage of the research involves visits to a random sample of the exporting and importing companies. The visits will be used to explain the differences in the exposure management determinants of the firms in sampling and exploring new determinants. There are three types of interviews identified in the literature: structured, semi-structured and unstructured (Kane, 1983). The structured interview is the most formal and standardized schedule interview, and it lends itself to quantitative analysis

and establishing discrete facts. The semi-structured interview assumes that the researcher may ask different types of questions to get the same information from the interviewees (Denzin and Lincoln, 1998). It typically refers to a context in which the interviewer has a series of questions that are in the general form of an interview schedule but able to vary the sequence of questions. The questions are frequently somewhat more general in their frame of reference from those typically found in a structured interview schedule (Bryman, 2001). Also, the interviewer usually has some latitude to ask further questions in response to what are seen as significant replies. While on the unstructured interview there are no set of questions and the same information is not required from each person. Kane (1983) argued that the choice of the interview form to be used on the study will depend on the research being undertaken. While the unstructured interview has the advantage of being flexible and giving the interviewer the opportunity to generate new uncovered information, it was seen as inappropriate for the purpose and objectives of this study. Given the nature of the subject researched, the researcher believed that one type of interview was enough. The formal semi-structured interview was made with the risk management decision maker. Using this form of interview is more appropriate for making comparisons between firms and gathering more information at the same time. It was very important that all facts should be recorded. The semi-structured type is used in this thesis, because this type can provide the researcher with the same questions to be answered by different firms which enables us to compare the differences or similarities between these firms' behaviour regarding the subject under investigation. While a predetermined schedule of questions is produced, they are designed to allow the interviewer to pursue other issues and to introduce new material as deemed appropriate depending on the firm's situation. Whilst a tape recorder was available for all interviews, most of the interviewees refused to be recorded and asked only for notes to be taken.

Burgess (1984) identified some of the interview advantage; (a) interview is a useful way to get large amounts of data quickly, (b) immediate follow-up and clarification are possible, (c) it allows the researcher to probe and pursue interesting issues that arise in the course of the interview. For example, such probing may well uncover new determinants or reveal new dimensions to the hedging problem, (d) interviews allow the researcher to understand the meanings people hold for their every day activities, (e) an interview may permit a higher degree of confidence in the replies than questionnaire

responses, (f) enables respondents to expand upon their answers and reasons for responses, (g) it allows points to be made by respondents which were not envisaged by the person framing the questions, and allows for follow-up questions to be put.

To conduct the interviews a topic guide and questions were prepared; the design and content are discussed in chapter 6. A copy of the semi-structured interview guide is presented in Appendix B.II. Considering the aim and objectives of this research, it was important that the head of treasury department or the head of financial department or a director (the risk management decision maker) was interviewed in each firm. These persons were considered to be in a good position to provide the study with factual information relating to the FX risk management decision; also they are in a position to highlight new hedging decision determinants. While the interviewees should fell into two broad categories, hedging firms and non-hedging firms, the one basic interview schedule was considered appropriate, as the majority of questions were pertinent to both groups. The purpose of using two groups, hedging and non-hedging firms was to investigate the differences or convergence, if any, between these groupings. Most of the questions in the interviews were designed to be open-ended. The interviews succeeded in providing rich background information about hedging decision behaviour in Saudi Firms and the factors, which might affect the hedging decision. These exploratory interviews held with the risk management decision makers were useful in providing deep focus information on the firms' FX risk management, and were used mainly to restructure the questionnaire design which was used in the final study. For more information about the interviews, see chapter 6.

5.9.4 Questionnaire method

5.9.4.1 Introduction

Studying the literature to establish an appropriate theory and construct a hypothesis, is the normal process under a positivistic paradigm. In order to acquire knowledge of the social world from the positivists' point of view, one needs to identify the social structure using a positivistic research style. This methodological style is mainly based on quantitative methods and empirical analysis that are drawn principally from natural sciences. This approach seems appropriate for positivist researchers who seek to explain and predict a structured, determined, social world. They assume that the social world

lends itself to an objective form of measurement; and that the social scientist can reveal the nature of the world by examining lawful relations between elements that, for the sake of accurate definition and measurement, have to be abstracted from their context (Morgan and Smircich, 1980). The convenient method within the positivist philosophy begins with seeking explanation for a phenomenon and its determinants, underlying assumptions about it, then the data are collected and tested through the hypothetico-deductive approach (Watts and Zimmerman, 1986) where any theory can be subjected to conclusive testing against natural facts-similar to the way in which scientific research is carried out. The hypothetico-deductive method is derived from positivism, it views scientific research as a coldly logical process, searching step by step in a rational manner (Mcneil, 1990, p 127). In the positivist approach "researchers are likely to do quantitative social research and to use experiments, surveys and statistics" (Newman, 1994, p58).

This study adopted the hypothetical-deductive approach (theory testing approach) in order to achieve the hypothesis testing objective. The method used in this research is proposing some theories (see chapters 3, section 3.3) and exploring new theories (see chapter 6, section 6.3), drawing from these theories a series of hypotheses (see chapter 7, section 7.3.2) that propose empirical consequences, collecting quantitative data for testing these hypotheses using standard test procedures (e.g., statistical tests), and finally deciding whether theories are or not supported depending upon whether the data collected are or not congruent with the hypotheses. Hypotheses are always concerned with some measurable characteristic of the population of interest. This characteristic in the study is called a determinant. Hypotheses are then formed about the effect of this determinant on the hedge or not to hedge choice. A test of these hypotheses using objectivist methods can be made only by observing and recording overt determinants, using a recording procedure that has been used to achieve the research aim. A questionnaire method is commonly in use for the survey design, and can be used to test hypotheses which may be conducted using a sample of population of interest.

5.9.4.2 Why questionnaire

In sociology in particular, the social survey approach in contrast with experimental designs is one of the main methods of data collection, adopted in this study using a questionnaire. The rationale for choosing this method is that it can be used to generate

quantitative data on a large number of firms who are known to be representative of a wider population in order to test theories or hypotheses as viewed by the exploratory study (chapter 6) and many previous studies. This method will be used, particularly, to elicit data from representatives of Saudi exporting and importing firms who manage the financial problems in the firm, regarding the nature and the determinants of the FX risk hedging decision. This method is often used to collect data when the issues raised are likely to be confidential and sensitive, such as providing information about the firm's risk management policy and the financial affairs. In addition, using a questionnaire as a method for eliciting data gives respondents more time to consider their answers. With a questionnaire the respondents have the opportunity to answer at their leisure. The researcher can avoid a problem of non-contact by insuring that the mailing list is up to date for the sample. Furthermore, the questionnaire, as stated by Mason and Bramble (1979), has the merit of increasing the generality of data and ensuring a great level of veracity in the respondents' answers. In addition, Turney and Robb (1971) believed that a questionnaire is the appropriate means of obtaining information about attitude, opinion, feelings, and facts because of the sensitivity of the questions and the idea that the respondents may prefer to remain anonymous when they answer these questions.

The questionnaire is generally cheaper than a large sample of standardized interviews, it does not require a trained staff of interviewers, all it entails is the cost of planning, sampling, stamps, and providing self-addressed envelopes for the returns (Oppenheim, 1992). Oppenheim (1992) suggested that the main limitation with questionnaires is that of non-response, particularly when respondents have no special interest in the subject of the questionnaire. Researchers in a questionnaire have no control over the respondent's environment and cannot be sure that the appropriate person completes the questionnaire. This problem will be minimised in this research by directing the questionnaire to individuals who have an interest in the subject. However, using a hand delivery questionnaire may help to solve some of the postal questionnaire limitations. Questionnaires require simple questions. The language used in a questionnaire must be one that the population finds easy to understand. The answers in questionnaires have to be accepted as final, researchers do not have any opportunity to probe beyond the answers given, the researcher cannot go back to clarify ambiguous answers, or to appraise the non-verbal behaviour of respondents. These limitations will be tackled by adopting various processes in the questionnaire design stage, including the review of

initial questionnaires in the pre-test study by PhD students and experienced academic staff and by conducting a pilot study. These steps will be very useful for developing the final versions of the questionnaires.

5.9.4.3 The Design of the questionnaire

One of the most significant considerations for many researchers is whether to ask a question in an open or closed format. In the open question format respondents are asked a question and can reply however they wish (Babbie, 1990). Whereas, in the closed question format the respondents are presented with a set of fixed alternative from which they have to choose an appropriate answer (Gill, and Johnson, 1991). Both types of questionnaire format have their advantages and limitations. There are various advantages to an open questionnaire format. First, it gives the respondents the chance to answer in their own terms, and the researcher can get different answers for the same question (Mason and Bramble, 1979). It gives the respondents an opportunity to express themselves in their own words and to put more emphasis on what they feel is important about the issues being researched (Oppenheim, 1992). Another advantage is that it can be used for exploring new areas or ones in which the researcher has limited knowledge. Third, open questions do not suggest certain kinds of answer to respondents, which may give the researcher the opportunity to examine the knowledge and level of understanding of the respondents relating to the issues researched (Bryman, 2001). However, there are some limitations pertinent to this type of question format in that it is difficult for answers to be coded, and the respondents may answer the question longer than would be the case for a comparable closed question. As it requires more effort from the respondents, the questionnaire is less likely to be completed and as a result the researcher may end up with poor results after the analysis.

By contrast, using a closed question format makes it easy for the researcher to pre-code the questionnaire, thus turning the processing of data for computer analysis into a fairly simple task. With the closed questionnaire format it is easy for the respondent to process answers, it requires no writing, and can be quicker and easier to answer which may help to increase the response rate (Nachmias and Nachmias, 1996). One of the most important advantages of using a closed question is that it enhances the comparability of answers. Using a closed question may clarify the meaning of a question for respondents and gives them the available answers, which may help to clarify the situation for them.

Finally, a close-ended questionnaire provides a range of critical answers and, thus, reduces the chance of overlooking issues of vital importance to the research. This type of questionnaire, however, has its own limitations. First, there is a loss of spontaneity in respondents' answers, and a loss of the possibility that they might come up with interesting replies that are not covered by the fixed answers that are provided (Bryman, 2001). Bryman argued that it can be difficult to make forced-choice answer mutually exclusive. Furthermore, closed questions may be irritating to respondents when they are not able to find a category that they feel applies to them. This may lead respondents to ignore questions when they have certain viewpoints that do not fit within the listed options.

After considering the advantages and disadvantages of both types of questionnaire, this study adopted a closed format. The questions in the questionnaire are of one format i.e. closed-ended questions requiring a simple tick in the appropriate box. Using a semi-structured interview, it helps in formatting the closed-ended questionnaire and to the possibility of overcoming the limitations of questionnaires by maximizing the possible options set for each question. The questionnaire constructed the questions on the different types of variables that have been used to generate the empirical data. There are five different types of variables used in order to build the questionnaire, see table 5.2.

Table 5.2: Types of variable used in the questionnaire

Type	Description	Example in the questionnaire
Nominal (categorical)	A classification of objects (people, firms, nations, etc.) into discrete categories that cannot be rank ordered.	Section one, questions 4, 6, 7
Ordinal	The categories associated with an ordinal variable that can be rank ordered. Objects can be ordered in terms of a criterion from highest to lowest.	Section four, questions 1, 2
Interval (a)	With 'true' interval variables, categories associated with a variable can be rank ordered, as with an ordinal variable, but the distances between the categories are equal.	Section two, question 1
Interval (b)	Variables which strictly speaking are ordinal, but which have a large number of categories, such as multiple-item questionnaire measures. These variables are assumed to have similar properties to 'true' interval variables.	Section four, questions 4, 5
Dichotomous	A variable that comprises only two categories.	Section one, questions 10, 13

Source: Bryman and Cramer, (2001), p.58.

Questions were generated from different sources such as, existing literature pertinent to the research, contingency theory, and the results of the exploratory study (chapter

6). The questionnaire was divided into six sections see Appendix B.I. A short introduction for the subject under investigation was included to help the respondent understand the questionnaire and put them in the proper frame of mind for answering the questions. Section one aimed to get some background data relating to the respondent and his firm; questions were designed to elicit details of the individual respondent and his firm. This section started by asking respondent easy questions to gain confidence in answering them, such as the respondent's age, education, etc. Section two focused on gathering data relevant to the characteristics of the respondent's firm. Section three was to determine the magnitude of the FX risk that a firm faced. It was also focused on the effect of FX rate movements on the firm's activities. The purpose of section four was to get some information regarding the firm's internal environment. The aim of section five was to gather data relevant to the firm's strategies against FX risk. In this section the study aimed to obtain information concerning the type of hedging methods used by the firm. The final section (section six) of the questionnaire related to the firm's external environment.

Another issue worth noting relates to the language of the questionnaire. While the first draft of the questionnaire was formulated in English, it was translated into Arabic, the native language of the Saudis (see Appendix B.III). It was felt that a translated questionnaire would be easily understood and answered by the respondents since most of the respondents would not be familiar enough with the English language to fully comprehend the questions. To translate the questionnaire from English to the Arabic language, the translation processes consist of two stages, first, by the researcher and revised by other PhD students. In the second stage a copy of the English version was given to the professional translation office in Saudi Arabia to translate to the Arabic language. The results of both stages were compared with each other in order to achieve good result. Finally, before using the questionnaire in the explanatory study, the researcher decided to test the questionnaire using both pre-test study and pilot study (see section, 6.4).

5.9.4.4 The fieldwork content

The purpose of this section is to provide details of the research sampling plan for the empirical research. Great care was taken in the selection of the sample to ensure that it adequately represented the range of exports and imports firms in the population. The

focus of the field study was Saudi firms. Most of the academic studies on the determinants of risk management (Nance, Smith and Smithson, 1993; Mian, 1996; Tufano, 1996; Fok, *et al.*, 1997; Gay and Nam, 1998; Allayannis and Ofek, 2001) mainly focused on the MNCs or industry index. In contrast, this study is focused on exporting and importing firms, as there are only a small numbers of MNCs in Saudi Arabia which are insufficient to achieve the research objectives.

A positivistic paradigm often uses large samples in order to conduct statistical analysis. Given the aim and objective of this study, the primary focus of data collecting was the international firm. An international firm can be defined as a firm, which exports to or imports from foreign markets. However, while the firm is the principal unit of investigation the research issues must be investigated with personnel in firms. The focus of this study is to analyse the determinants of the FX risk management decision of non financial firms. The reason for not including the financial firms such as banks in this study's sample is that the exposure faced by these financial firms is significantly different from those of non financial firms.

This research was based on exporting and importing firms in Saudi Arabia. The explanation of currency risk management practices of Saudi exporting and importing firms is interesting for several reasons. Firstly, the currency risk management activities of Saudi international firms can be considered to be at a comparatively early stage of financial development since these firms have not traditionally been active in international financial markets. Secondly, the absence of local FX, money, and forward markets in Saudi Arabia and the limited number of Saudi stock companies may possibly affect the Saudi managers' attitude to risk and their FX hedging strategies. Thirdly, most empirical studies about currency risk management activities, concentrate on the behaviour of multinational companies (MNCs), whereas, this study will be concentrated on currency risk management activities of exporting and importing companies. Many Saudi firms are heavily engaged in global import and export and are susceptible to unanticipated fluctuations in FX rates. Fourthly, studies about the currency risk management practices are mostly concerned with companies located in large open economies such as United States (U. S.), the United Kingdom (U. K.), Germany, Japan, and Australia. Studies that concentrate on the behaviour of companies located in smaller, open economies are rather limited. Fifthly, Saudi Arabia is an Islamic country and firms there may adopt different hedging methods relating to the Islamic

law (*Shariah*) perspective. Sixthly, the currency risk management activities of Saudi firms may be affected by the internal and external environment in Saudi Arabia. Finally, to the best of my knowledge, no study has yet given any explanation of the FX risk management practices of Saudi firms. Thus, concentrating on Saudi firms makes an interesting and attractive candidate for this study.

5.9.4.5 The distribution of the questionnaires

Distribution of the questionnaires took place during the researcher's visit to Saudi Arabia between the middle of March to the middle of July 2002. At the beginning, this study requested from The Commercial Ministry, Central Debarment of Statistics in Ministry of Planning, the Ministry of Industrial, King Abdul Aziz Seaport in Dammam, Jeddah Seaport and the Customs department in Financial Ministry, lists of companies which export to or import from foreign markets. These bodies provided the researcher with useful lists of the private companies which export to or import from foreign countries, the companies in the lists were ordered from the highest involvement in the international markets to the lowest involvement in the international markets. At that time, the researcher visited the Saudi Chamber Of Commerce and Industry, accompanied by a letter from the Dean of the College of Arabic & Social Science at Al-Imam Mohammed Ibn Saud Islamic University (see Appendix A.I) illustrating the nature and importance of the study and asking for help and co-operation with the researcher. The central information officials, thankfully, agreed to participate in the study and to co-operate with the researcher and provided him with a list of Saudi's private companies based on five levels according to their total sale. After careful review of these three lists, a total of 171 companies were selected. For the purpose of this study, the selection of firms to be included in the sample should be according to the following criteria as of fiscal year 2001:

- The company must be listed on the export or import lists.
- The company should be based on first or second level companies of the Saudi Chamber of commerce and Industry list according to the total sales of not less than SR30 million (£5 million).
- The firm must not have all its exports and imports from US. (this condition was included because the firm which exports or imports only from US will not have

any exposure since the US dollar is fixed against the Saudi riyal, and the only explanation in this firm for not to hedge is simply because it does not have any exposure)

98% of the companies' population located in only five cities, the first one in the capital city Riyadh, the second city Jeddah, and the last three cities are Dammam, Al-kuber, and Al-jubail, which are all in the same area (the destination between these three cities is only 100km). A visit to these cities was important, as the researcher advocated the distribution and gathering of companies' questionnaires directly by himself. The selection of this method was significantly influenced by the particular imperatives of the Saudi environment. For instance, whereas in a developed country a large sample of questionnaires can be distributed via the postal service and follow-up procedures conducted through post, telephone or e-mail services, the inadequacy of the communications services in Saudi Arabia meant that these methods were not feasible. As a result, the researcher sought to find an appropriate balance between efficiency and feasibility and what might be desirable in methodological terms. Another reason for selecting this particular method was that personal delivery and follow-up was perceived as likely to generate a higher response rate, particularly in the context of a developing country such as Saudi Arabia.

During the stay in all of the five cities, a telephone call was made to each company in the population list to explain the study's nature and to identify the individuals most likely to complete the questionnaires. The questionnaires were distributed together with covering letters explaining the nature and importance of the study and the vital role to be played by each respondent in the success of this thesis. Selected companies filled in the questionnaire and the researcher collected them (see Appendix A.III). The questionnaires were addressed by name, to the risk management decision makers. To support his position, the researcher attached another letter from the Dean of the College of Arabic & Social Science, Al-Imam University (see appendix A.I). The letter attached to each questionnaire, stated that the researcher is a member of staff of the college studying for a PhD in Finance. The letter also asked the respondents to co-operate with the researcher. In addition, the general instructions on the first page of the questionnaire gave an assurance of confidentiality and a fax number was provided if the respondents prefer to send the questionnaire back using a telephone (copies of the English and Arabic versions of questionnaire as well as the covering letter were attached), also

a prepaid enveloped was provided, in case the respondent was happy to fill in the questionnaire later and send it by post.

A period of 5 weeks was spent in each city, Ryiadh and Jeddah, and 6 weeks in Dammam, Al-kuber, and Al-jubail. A date for collecting completed questionnaires from particular companies was agreed at the time of delivery. A reminder telephone call was made as the deadline approached to ensure the completion of the questionnaires before collection. However, only 31 companies completed the questionnaires during the researcher's stay in these cities, while most of the companies asked for more time to fill in questionnaires and promised that they will fill in the questionnaire later on and send using the prepaid envelop or fax. A total of 171 questionnaires were issued to the respondents in companies and 136 (79.5%) of the companies responded. Ninety-four (55%) of the questionnaires received from the sample were usable, four of the questionnaires were excluded from the analysis since most of the questions were left uncompleted, and 38 (22.3%) of the respondents refused to participate in the study with most of them explaining that it was company policy not to respond to questionnaires, with some of the financial directors apologising for not filling in the questionnaire as they were too busy. From the questionnaires received there were 11 questionnaires completed by companies with all their exports and imports from U. S. markets. These companies were excluded from the final sample since they did not have any transaction currency exposure. Also the other firms which did not respond (35 firms) were contacted by telephone over three times, between March to July 2002, and on each time they promised to fill in the questionnaires, but in the end they never did. In view of the purpose for the research, the relative issues being investigated, the time in which the empirical data had to be collected and the available resources, the respondents sample size was considered to provide a reasonable coverage of the phenomena being studied. The analysis of the responses is provided in Table 5.3.

Table 5.3: An analysis of the responses to the questionnaires

Questionnaire	Number	%
Non- Financial Companies:		
Usable questionnaires	83	48.5%
Complete questionnaires from companies trading only in US markets	11	6.4%
Uncompleted questionnaires	4	2.3%
Refused to fill the questionnaires	38	22.3%
Not respond	35	20.5%
Total	171	100%

The relatively good response rate from the responses may relate to the strategy followed by the researcher in distributing the questionnaires. Non- respondent bias is always of major concern in survey studies as this may affect the validity and general conclusion of this study. The problem is that the characteristics of the firms that did not respond may differ substantially from those that responded. As stated previously, every attempt was made to increase the respondents' number. Table 5.4, presents the characteristics of the respondent and non-respondent firms, and provides the basis for non-response test consisting of the firm's total sale, capital, and total assets obtained in the Saudi Chamber of Commerce and Industry database for the years 2001. Table 5.4, presents the characteristics of the survey of respondents compared to those of the non-respondents in order to determine whether there were any differences. From the table 5.4, we can see that there are no significant differences between respondents and non-respondents on the basis of total sales, total assets, capital, and foreign trading which might preclude generalisation of the results to the total sampled firms.

Table 5.4: The distribution of the respondents and non-respondents characteristics

The Firm Characteristics	Non-response Firms		Response Firms	
	No.	%	No.	%
Size (Total Sales):				
Large size (more than 610 million)	20	41.7	28	58.7
Medium size (between 210 m – 600 m)	33	53.2	29	46.8
Small size (between 30 m – 200 m)	24	48	26	52
Total	77	48.1	83	51.9

The Firm Characteristics	Non-response Firms		Response Firms	
	No.	%	No.	%
Total Assets:				
Large size (More than 810 m)	22	34.4	42	65.6
Medium size (between 410 m – 800 m)	32	59.3	22	40.7
Small size (between 50m – 400 m)	23	54.8	19	45.2
Total	77	48.1	83	51.9
Capital:				
Large size (More than 310 m)	29	52.7	26	47.3
Medium size (Between 81 m – 300 m)	30	52.6	27	47.4
Small size (between 5 m – 80 m)	18	37.5	30	62.5
Total	77	48.1	83	51.9
International Trade:				
Export	5	62.5	3	37.5
Import	38	55.9	30	44.1
Export & Import	34	40.5	50	59.5
Total	77	48.1	83	51.9

5.9.4.6 The validity and reliability of the study variables

The validity represents "the extent to which a test, questionnaire or any other form of operationalisation is really measuring what the researcher intends to measure" (Hall and Hall, 1996, p.43). Both the reliability and validity of the questions were tested during the pre-test and pilot study. One of the most important ways to assess if the research variables' measures validity is to look at the face validity which simply involves ensuring that the measures and variables used by the study do actually measure or represent what they are supposed to measure or represent (Hussey *et al.*, 1997). The questionnaire was checked and revised by: (a) doctoral students in Sheffield Hallam University (students in accounting and business fields), (b) doctoral Saudi students in UK Universities (students in accounting and business fields), (c) some of the academic staff in Al-Imam University in Saudi Arabia (Accounting and Business Department), (d) five financial managers suppose to be part of the study population. These people's suggestions regarding the improvement of the questionnaire were taken into account before the last version of the questionnaire was distributed.

Reliability is "the extent to which a test would give consistent results if applied by different researchers more than once to the same people under standard conditions"

(Hall and Hall, 1996, p.44). The approach is to look at the consistency of a person's response to an item compared to another scale item (item-item correlations). This provides a measure of the overall reliability of the scale. The index of this is given by a statistic called 'alpha'. This ranges between 0 and 1. The higher the figure the more reliable the variables and as a rule of thumb alpha should be at least 0.7 before we say the variables are reliable (DeVaus, 1996, p.256). The reliability of the research group variables were tested using Cronbach's Alpha. As stated in Chapter 7 there are four groups of variable which are: The determinants of the firm's incentives to hedge, the determinants of the management risk aversion, the determinants of the firm's need to hedge, and the determinants of the firm's ability to hedge. The result for testing the reliability for these groups as presented in Table 5.5, indicates that the group variables were reliable.

Table 5.5: The research variable reliability

The Group Variable	Alpha Coefficient
The determinants of the firm's incentives to hedge (Accounting ratio measures)	0.73
The determinants of the firm's incentives to hedge (Indicator measures)	0.83
The determinants of the management risk aversion	0.86
The determinants of the firm's need to hedge	0.81
The determinants of the firm's ability to hedge	0.72

Finally, the existing literature suggests that triangulation, or the use of multiple theories, methodologies, and data sources, would produce more valid and reliable data (Cunningham *et al.,* 2000). The validity and reliability of data would be enhanced by using different methods for collecting the data.

5.9.4.7 Testing the normality of the data

It is important before starting the analysis of the data to identify the normality of the data whether the data is normally distributed or not. This step is important since some of the statistical analysis tools (parametric tests) are more appropriate to be used with normally distributed data, and other statistical analysis tools (non-parametric tests) are more appropriate to be used with non-normal distributed data. There are a relatively large number of statistical tests which can be used to determine whether a difference between two or more groups is significant. To decide which of these statistical tests is more appropriate to use it should be recognized if the analysed data is parametric or non-parametric data. Bryman and Cramer (2001) argued that it is only appropriate to

use parametric tests when the data fulfils the following three conditions, (a) the level or scale of measurement is of equal interval or ratio scaling, that is, more than ordinal, (b) the distribution of the population scores is normal; and (c) the variances of both variables are equal or homogeneous. From the level of scale used the variances and, from testing the normality of the data distribution (Appendix D), we would describe the data to be non-parametric data. Appendix D shows that using Kolmogorov-Smirnov to test the normality of the data distribution for the four groups (the determinants of the firm's incentives to hedge, the determinants of the management risk aversion, the determinants of the firm's need to hedge, and the determinants of the firm's ability to hedge), the test indicates a deviation from normality since the test reports a highly significant (*Sig.* less than 0.05), except for the determinants of hedging incentives measured by the accounting ratio.

5.10 Conclusion

This chapter has stressed the importance of the research methodology and methods to guide the study in answering the research questions. Two methodologies appear to dominate the study of the determinants of corporate hedging, the interpretive (phenomenological) approach and the positivist approach. The chapter has pointed out that the interpretive approach is adopted in the first stage of this research (the exploratory study, chapter six, interviews). Also the chapter has showed that the positivist approach can be used as a theoretical perspective for the second stage in this research (the explanatory study, chapter eight and nine, questionnaires). This chapter has also briefly described the research assumptions under the positivist and interpretive approaches. This chapter has described the research design that shaped the study choices and uses of particular methods and linked them to the desired outcomes. The discussion showed that the cross-sectional design or social survey design is more appropriate for the study. This chapter has not only described the research methodology but also provided an account of the rationale for the choice of methods and the particular forms in which the methods are employed. This chapter has outlined some important aspects around the methods used to collect the research data. The questionnaire and semi-structured interviews were chosen to be the appropriate methods for collecting the research data. The chapter has outlined the process of preparing the questionnaire.

This chapter has suggested that particular determinants of hedging decision will depend upon the specific circumstances in which a firm finds itself. Contingency theory must identify specific aspects of the corporate hedging determinants associated with certain defined circumstances and demonstrate an appropriate matching. The traditional contingency theory implies that managers must match their environment and organizational settings, suggesting that the different situational context of business will dictate a distinctive set of firm characteristics. Using a contingency theory in corporate hedging decision, we would suggest that the choice to hedge or not to hedge may result from a matching of an organization's environment, strategy and internal structures, management characteristics, and systems (see section, 5.8). The contingency theory assumes that a firm moves from non-hedging decision to hedging decision because of a change in the level of one or more of its contingencies, such as an increase in manager ownership or manager experience. This chapter has highlighted the importance of developing the traditional contingency theory in a number of directions. This chapter tried to recognize the criticism made against the traditional contingency theory and then to suggest solutions to them. Combination between the contingency theory, finance theory, and the interpretive approach may present some modifications to contingency theory and make it more realistic and more dynamic. In so doing, *this study sees the hedging decisions that firms made to be related to their managers' perceptions, related to the contingent situational determinants, and in the interest of the shareholder to increase the firms' effectiveness.*

Chapter Six

The Exploratory Study: The Interviews

6.1 Introduction

The aim of this chapter is to discus the interviews and to identify the determinants of currency exposure policy in Saudi firms. The objective from carrying out the work discussed in this chapter is to examine the role of contingencies and the environmental context in the corporate hedging decision, and to facilitate the building of the study framework. This chapter is divided into four sections.

The next section defines the purpose and the benefit from carrying the exploratory study. It examines the rationale of using the interviews in this study and how this benefits the research. The third section presents the description of the interviewees' answers. The fourth section presents the process of testing the questionnaire. The last section outlines the main conclusion of this chapter.

6.2 Why Exploratory Study

The study at this stage was much more interested in the interviewee's point of view, it directed the study into what the interviewee sees as relatively important in the hedging decision, and helped to ask new questions that followed up the interviewees' replies. It was the finance and contingency approach framework that formed the basis of a series of questions in the interviews with risk managers regarding the expected determinants of foreign exchange exposure management decisions. The main areas of interest are the influence of the firms' characteristics, the firms' external environment, and the management characteristics in a manager's choice to hedge or not to hedge. The study's main assumption is that the decision to hedge or not to hedge the foreign exchange exposure is contingent upon environmental, organizational, economical and managerial characteristics. As a result of the environmental differences between Saudi Arabia and developed countries, which all the previous studies related to, respondents interviewed were expected to be able to discern, and hence provide more explanations about contingency and financial factors which have effect on the hedging decision. The objective of the interviews is to use both finance and contingency theory in an inductive

approach to establish if there is a relationship between the hedging decision and the firm's internal and external environment. As chapter 4 presented the limitations in the current literature in the determinants of corporate hedging, this chapter introduces the contingency theory and new methodology (as presented in chapter 5) as should be combined with finance theory. The contingency theory holds that, while the hedging decision can be achieved in more than one way, selection of the decision which is most suitable depends on circumstances. The use of contingency theory in this study is to identify a richer set of firms characteristics associated with the hedging decision through the interviews to incorporate in the theory building approach.

Chapter 3 presents the theories of optimal hedging which have been examined in previous studies. While these existing theories on corporate hedging might be important as determinants of the hedging decision, they are incomplete determinants. Hedging decision strategy is different from one firm to another depending on different circumstances faced by a firm. The hedging decision is contingent upon the circumstances in which a firm finds it self, so a model that relates the hedging decision to those circumstances must be constructed. The interview content will be based on the previous literature and the effect of the contingency factors on the hedging decision. The exploratory study (the interviews) will be used to model and measure the degree of misfit between a contingency variable and several different foreign exchange risk management variables of each firm in the interviews.

In order to identify the determinants of the hedging decision with the focus of extending the findings of the previous studies, it is important to rely first on explorations embedded in the extensive responses collected from the risk management decision makers in the firms under study. Thus the study in this point is exploratory in nature. Given these circumstances, the interview method was the one used at this point of the research (Burgess, 1984).

6.3 The Description of the Main Findings From the Interviews

6.3.1 Introduction

The exploratory study concerned the firms' internal and external environment and the management characteristics which might affect the firms' attitudes to foreign exchange exposure. Interviews were conducted with 18 risk managers in firms affected by the

changes in foreign exchange rates, see Table 6.1. Prior to undertaking the questionnaire survey, these interviews were held during November and December 2001. These semi-structured interviews allowed the interviewees to explain how they determine the foreign exchange exposure management decision. The interviews were held with individual risk management risk decision makers with the aim of allowing the interviewees to talk about the nature of their work and the factors that influence their choice to hedge or not to hedge. On the basis of the information gathered from these interviews, a formal questionnaire was compiled (see Appendix, B.I). The interview study used semi-structured interviews.

The sample of the interviews was drawn from the list of 171 firms selected by the researcher, see section 5.9.3.6. The research interviews were concentrated in the firms in the capital city 'Riyadh'. A total of 63 firms in Riyadh were contacted directly to identify the best person to be interviewed. A number of 18 firms (29%) accepted to be interviewed. Before starting any interview, the interviewee was assured of confidentiality, and that particular attention would be paid to avoiding the use of leading questions. From the 18 firms interviewed there were 3 firms with all their exports and imports from U.S.A markets and using the US dollar only. These three companies were excluded from the descriptive analysis in this chapter, since a natural hedging is achieved with the US dollar is fixed against the Saudi riyal. Of the 15 financial managers interviewed, 9 of them were not hedging their currency exposure, and 6 were hedging their foreign exchange exposure.

Table 6.1: An analysis of the responses to the interviews

Questionnaire	Number	%
Non- Financial Companies:		
The interviewed firms	15	23.8
The interviewed firms which their companies trading only in US markets	3	4.8
Refused to be interviewed	24	38.1
Not respond	21	33.3
Total	63	100

Most of the interviews took more than an hour with most not recorded (13 interviews). The interviewer asked questions and took down notes of the responses. For that reason the notes written during the interviews concentrated mainly on identifying the determinant factors which may influence the decision-makers and drive them to hedge

or not to hedge, and generates an appropriate proxies used to measure these factors. A copy of the interview guide is presented in Appendix B. The first section starts with general description of the interviewed firm. The objective of the first section in the interview guide is to explore deeply the amount of foreign exchange exposure in the firm. These include issues relating to the degree of international involvement, the foreign currencies, the effect of FX movements in the firms' operations, and the currency exposure management strategy. In the second section, the interviewees were invited to talk about their firms risk management policy and how this risk management policy may influence their decision. Section four was designed to focus on the managerial and ownership characteristics and attitude toward foreign exchange exposure management. The purpose of the fourth section was to explore the firm's external environment and to discuss how it might affect the firm's choice to hedge or not to hedge. The last section sought to identify directly the determinants of foreign exchange exposure management policy from the managers' perspective. The purpose of this section is to highlight uncovered factors regarding the foreign exchange exposure hedging decision.

To analyse the interviews, the research used content analysis as an appropriate approach (Hussey *et al.,* 1997). Content analysis is a way of systematically converting text to numerical variables to explain the findings. Jones (1996, p. 330) stated that content analysis is a research method in which texts-such as books, speeches, and television and movie scripts or descriptions generated by subjects for the purpose of the study are examined for the presence or absence of certain specified types of information or concepts'. Content analysis is an approach to the analysis of the interviews that seeks to quantify content in terms of predetermined categories and in a systematic and replicable manner (Bryman, 2001).

6.3.2 The firm's internal characteristics

The purpose of this section is to explore the firms' internal characteristics which may affect the hedging decision. The questions in this section seek to identify the firms' characteristics for both the hedging and non-hedging firms. In the first and second part, the interviewees were asked to identify their industry, and the firm's ownership structure. Table 6.2, shows the industry membership, and the firm's ownership structure. The firm's characteristics presented in Table 6.2, show that the interviewed

firms located in different industry, and that firms in some of these industries seem likely to hedge. It was expected that all of the chemical and oil companies would not have to hedge as most oil products are priced in U. S. dollar (dollar is fixed against Saudi riyal). But one of the interviewee from an exporting oil company confirmed that '*company hedge the currency exposure because some of the customers in foreign countries stipulated to pay in their currencies. The reason was that a high proportion of the Oil Industry output, is exported to highly foreign competitive markets'*.

The Table also shows that the interviewed firms consist of three different structures, shareholders, family, and private firms. While, it can be seen from the table that family firms were more likely to engage in hedging activity, this may open new questions of why these firms engage in hedging activities more than others. One of the main possible explanations can be found from one of the interviewee explains that *'the members of the family mostly work as a group in the company and have a better control for the company and that they are always looking for increasing the reputation of their family name'*. One of the interviewees from a shareholder firm stated that '*the absence of appropriate criteria and standard to evaluate the managers' work may affect the output of the job that these managers did'*. This may open up new questions such as, to what extent the level of control by the owners may affect the managers' attitude against the currency exposure, and to what extent the nature of management performance system may affect manager risk attitude. The evidence showed that the more control that the owners had in the firm, the more likely the manager may get worried about the currency exposure and more likely to engage in hedging activity. This prediction is explored more fully at the next step in this study.

In question three, four, and five the interviewees were asked to identify their foreign business activity and the magnitude of their firms' foreign exchange exposure. Table 6.2, shows the trading activity, the foreign purchases as a percentage of the total purchases, and the foreign sales as a percentage of the total sales. All of the firms export, import, or export and import from and to foreign markets. Also all the interviewed companies sell some of their products or purchase some of their import from foreign markets other than US markets, although the proportions range from 21% of the total sales or total purchases to 100%. The results in Table 6.2, shows that there are no significant differences between hedging and non-hedging firms regarding their involvement in international trading. If there are no differences between hedging

and non-hedging firms regarding their currency exposure magnitude, what are the factors which drive the hedging firms to feel that their exposure matters and should hedge? Could it be that the use of the way that the study used to measure foreign exchange exposure magnitude may not be enough?

Table 6.2: A profile of the firms selected for interview

The variables	The measurement	Hedging Firms		Non-Hedging firms		Total	
		No.	%	No.	%	No.	%
Industry Membership	Chemical & Oil	1	33.3	2	66.7	3	100
	Food & Drink Distribution	1	100	-	--	1	100
	Electric & Electronic	2	33.3	4	66.7	6	100
	Cement & Building Tools	-	--	2	100	2	100
	Cars dealer &Equipments	2	66.7	1	33.3	3	100
Firm structure	Shareholder firm	1	16.7	5	83.3	6	100
	Family firm	4	80	1	20	5	100
	Private firm	1	25	3	75	4	100
The International Trading activity	Export	-	--	1	10-0	1	100
	Import	2	25	6	75	8	100
	Export & Import	4	66.7	2	33.3	6	100
Foreign purchases as % of the Total purchases	No	-	--	1	100	1	100
	1% - 20%	-	--	-	--	-	--
	21% - 50%	1	33.3	2	66.7	3	100
	51% - 80%	2	33.3	4	66.7	6	100
	81% - 100%	3	60	2	40	5	100
Foreign sales as % of the Total Sales	No	2	25	6	75	8	100
	1% - 20%	-	--	-	--	-	--
	21% - 50%	2	66.7	1	33.3	3	100
	51% - 80%	2	66.7	1	33.1	3	100
	81% - 100%	-	--	1	100	1	100

The following comments from financial managers of hedging and non-hedging firms are indicative of the general feeling towards extending the measures of the firm's foreign exchange exposure magnitude. First, while two financial managers from non-hedging firms mentioned that their firms' foreign denominated costs are not that big, however, they argued that their firms usually faced problems because of the increasing volatility of foreign exchange rates. Financial manager from hedging firm said that '*As all competitors source their raw materials in currencies other than US dollars, we are on a different level of currency exposure and therefore there is competitive advantage or disadvantage from exchange rate movements*'. This may open up new logical

argument that the level of the firm's foreign exchange exposure magnitude is not enough reason to drive the risk manager to hedge unless unexpected changes in foreign exchange rates are experienced. The level of volatility in the firm's foreign exchange rates can be used as additional measure for the firm's currency exposure magnitude. Second, some financial managers from both hedging and non-hedging firms expressed their worry about their firms' debt in foreign currencies and that these debts increased their currency exposure magnitude. This led the study to consider a firm's foreign debt as another measure for its currency exposure magnitude.

Table 6.3, presents the results of question six. Interviewees were asked about their total sales, total assets, and the capital of their companies. The purpose of this question is to examine the effect of a firm's size and its currency exposure hedging decision and to identify an accepted proxy to measure the firm size. The results in Table 6.3, are mixed and do not express any clear relationship between the firm size and the currency exposure management decision even when the study used three different proxies. This result may be affected by the small size of the study sample, and needs to be examined using a large sample of firms. While theory predicts that there is a positive relationship between firm size and the hedging activity, one of the financial managers from a non-hedging firm argued *'our company is too big and I have difficulty to measure the foreign exchange exposure, we have ineffective information system and a less cooperation between departments in the company, which affects my decision to manage currency risk or not. I feel that we should build a good inter information system, and that hedging strategy and the decision to hedge should be organized with board of directory'*. Another financial manager from a non-hedging firm said '*while I am responsible for the company's financial affairs, and one of my jobs to some extent is to solve any financial problem in the company, currency exposure is one of them. But because of the limited information that I get from other operational departments, I have difficulty deciding whether or not we should hedge the currency exposure'*. As can be seen from the previous statements and other interviewees' opinions, the limited cooperation and flexibility between the different departments in the company regarding the currency exposure problem, may prevent the risk manager from considering an appropriate hedging decision. This may open up new questions such as, to what extent does the level of help that a risk manager may have from operating a department affect the manager's attitude toward currency exposure?

Another financial manager in a hedging firm said '*almost all our financial risk including the currency exposure is considered in any improvement strategy in the company. In the company we have some flexibility in exchanging the information between different departments, specially in the management of the currency and commodity risks. I always get some help from the production, marketing, and purchasing and sales departments*'. Also from the interviews, there was only one company that had a treasury department, meaning that the responsibility of the financial risk is in other departments such as the financial or accounting department. In addition to the effect of that on the risk management strategy, it also may affect the availability of enough information for risk management practices. The person who is responsible for corporate risk management should have enough support from other departments, especially the operation departments.

Table 6.3: The interviewee firms size.

The variables	The measurement	Hedging Firms		Non-Hedging firms		Total	
		No.	%	No.	%	No.	%
The Total sales	Large (more than SR 610m)	3	42.9	4	57.1	7	100
	Medium (from SR210 to less than SR 600m)	1	33.3	2	66.7	3	100
	Small (from SR30m to less than SR200m)	2	40	3	60	5	100
The Total assets	Large (more than SR 790m)	4	44.4	5	55.6	9	100
	Medium (from SR410 to less than SR 780m)	0	00	1	100	1	100
	Small (from SR50m to less than SR400m)	2	40	3	60	5	100
The Capital	Large (more than SR 310m)	2	33.3	4	66.7	6	100
	Medium (from SR80m to less than SR 300m)	3	75	1	25	4	100
	Small (from SR5m to less than SR70m)	1	20	4	80	5	100

The purpose for questions 7 to 10, is to generate acceptable indicators for the agency costs, the financial distress costs, the investment opportunities, and for the corporate finance costs. As can be seen in Appendix B.II, the interviewees were asked first, to identify how possible it is to reduce the conflicts between managers and the owners. To define the things that may increase the probability of bankruptcy. Identify how possible it is for the company to increase the investment opportunity. Finally identify how possible it is for the company to reduce the corporate finance cost. The interviewees described many reasons for the purpose of the questions. In order to identify possible

measures (indicators) for hedging incentive variables (agency cost, financial distress cost, investment opportunities, and corporate finance cost). The respondents were asked to identify some important indicators regarding, the possible steps to reduce the agency cost, what increases the financial distress cost, how to improve the investment opportunities, and how to reduce the corporate finance cost. The interviewees in their response pointed out some hedging incentive indicators, and Table 6.4 presents the ones which are repeated by some of the interviewees. These hedging incentive indicators are easy to use and can be generated using the proposed method for collecting data (the questionnaire).

Table 6.4: The most important indicators presented by the interviewees that are suitable for measuring the different hedging incentive variables.

The variable	The indicators	The number of the firms repeat the indicator
How possible it is to reduce the conflicts between managers and the owners "the agency cost"	By increasing the participation of the owners in the company	8
	By improving the firm's total sales	6
	By increasing the dividend payment	5
	By increasing the firm value	4
	By using a monitoring device system to control the relationship between managers and owners	4
	By improving the management compensation system and make a link with managerial performance	3
What are the things that may increase the probability to going bankrupt "the financial distress costs"	When the ability of the company to service its debt is low	10
	When the percentage of the firm's debt is high	10
	Some industries have a high probability of going bankrupt than others	5
	When you enter into a new investment that has equal probability of gaining and losing	3
	When the company face more financial risk	2
How possible it is for the company to increase the investment opportunity "the investment opportunities"	By increasing and protecting its cash flow	7
	By generating new ideas for new investment	5
	By increasing the ability to solve the financial problems	3
	By protecting our position in the markets	3
How possible it is for the company to reduce the corporate finance cost "the corporate finance costs"	By increasing the company's capital or asking the owners for help	6
	By presenting the financial statements in a way which can increase the probability and flexibility of having external finance	4
	By receiving external funding under flexible conditions	4
	By receiving cheaper external funding	4
	By improving the cash flow	3
	By protecting the cash flow	3

6.3.3 The foreign exchange exposure management strategy

The aim of this section is to explore the firm's foreign exchange exposure management strategy. This part sought to identify if the firms in the interviews were hedging their currency exposure and to identify some factors that may discourage a firm from hedging. A brief introduction with hand out for the different currency exposure management methods available is presented. The interviewees were asked if their firm hedged the currency exposure. Six firms from fifteen pointed out that they hedged their currency exposure. Nine firms noted that, while they had currency exposure they did not hedge their currency exposure. In asking this question, the study recognized the firms that use any or all of the hedging techniques available such as, the internal hedging techniques, operational hedging techniques, and financial hedging techniques as a hedging firm, see section 2.4.2. While all the non-hedging firms had a large amount of foreign exchange exposure, four of them expressed the view that hedging activities are not important to their firms. Whereas three firms expressed the view that hedging foreign exchange exposure is important to their firms, two financial managers expressed the view that hedging foreign exchange exposure is of considerable importance.

The interviewees, in the second question, were asked if their firms had a risk management policy. Table 6.5 shows that all the hedging firms have a risk management policy, while only 4 from 9 non-hedging firms had a risk management policy. It seems that most of the non-hedging firms do not have any risk management experience. The reason for the relatively poor risk management practice was spelt out by one of the non-hedging financial manager the following way: '*applying risk management policy is not easy task, firms need to have qualified employees in risk management activity in order to think about establishing a new risk management policy*'. Consistent with this view, the financial manager from hedging firm stated '*while we have risk management policy and engage in hedging activity, however we always relied on a bank's technical support in managing the firm currency exposure as our experience in using derivative contracts is not that much*'. The manager of an electronic firm stated that *'the company sells electronic equipment to retailers in domestic markets, but produces no electronic equipment but instead source products from manufactures in Japan and Taiwan. Most of our purchased costs denominated in Japanese Yen and are highly sensitive to changes in the Yen exchange rate. While the need for hedging existed, but we do not*

hedge since we do not have qualified staff to carry our financial hedging activities'. These three statements show that non-hedging firms and some of the hedging firms may suffer from the shortage of qualified staff in risk management activity. Also from the interviews, there are some financial managers from non-hedging firms with difficulty to understand the importance of currency exposure management. A financial manager from a non-hedging firm pointed out that the firm is sometimes affected by changes in foreign exchange rates, but feels that his company has more serious problems than currency exposure, and these problem have to be solved first. The risk manager stated: '*while we believe that foreign exchange risk existed in the company we feel there are more serious problems than foreign exchange exposure (such as competitive and debt risk) to focus first'.*

The above discussion leads to consideration of some factors expected to affect the hedging decision. First there is need to examine the question as to whether the absence of a qualified risk management staff affects the firm's attitude towards currency exposure? Whether the risk management experience matters? It is also important to find out how firms see currency exposure and the importance of the currency exposure problem relating to the other financial problems that firms may face, such as interest rate risk, commodity price risk, country risk and so on. One of the interviewees in an electronic equipment industry stated that '*more than 80 per cent of the company's purchases are sourced from competitive foreign markets, and the purchase costs are extremely sensitive to changes in foreign exchange rates. For that reason the firm's directors were asked to hedge, but the director saw hedging as a way of* ***speculating*** *in the market and refused to hedge, as speculating is not one of the company's activity'.* One manager stated that '*firm will not make any risky decisions such as hedging foreign exchange exposure unless it have some level of influence or control over the outcome of the decision, and we thought that entering into hedging decision with lack of influence or control over that decision is a way of speculating and gambling and prefers not to speculate'.* Also there are some firms which do not understand the difference between hedging activity and speculation, and at the end they saw hedging in the financial markets as a way of speculating.

The third question in this section examines the influence of the cost of implementing the hedging strategy on the managers' decision to hedge or not to hedge. Table 6.5, shows that most of the non-hedging financial managers describe the hedging strategy

implementation as a costly activity. But also 4 out of 6 financial managers from hedging firms had the same idea about the cost of the hedging strategy.

Table 6.5 : The interviewees risk management strategy.

The variables	The measurement	Hedging Firms		Non-Hedging firms		Total	
		No.	%	No.	%	No.	%
The risk management policy	Yes	6	60	4	40	10	100
	No	0	00	5	100	5	100
The cost of implementing hedging strategy	High	4	36.4	7	63.6	11	100
	Low	2	50	2	50	4	100
Forecasting the foreign exchange rates	Yes	6	66.7	2	33.3	8	100
	No	0	00	7	100	7	100
Diversification	Two currencies or less	2	33.3	6	66.7	8	100
	Three currencies or more	4	57.1	3	42.9	7	100

The following views expressed by financial managers from non-hedging firms exemplify the general attitude towards the hedging costs; '*we are unable to employ operational hedging techniques since we have low level of operating flexibility, and for us it's difficult to rely on financial hedging such as forward currency contracts as these kinds of contracts are very risky and costly. Few years ago we decided to hedge the currency exposure and the treasury department in the bank helped us. After sometime we found the cost of hedging exceeded the benefit from using the financial hedging techniques, and for that reason we decided again to stop hedging currency exposure and letting our position open to the changes in exchange rates. In general we have the feeling that the changes in the foreign exchange rates were offsetting in the long-run*'. Other financial managers from a non-hedging firm argued, *'we do not hedge since we thought that a hedging strategy can only provide a small relief from the transaction exposure effects of changes in exchange rates'*.

Some financial managers from non-hedging firms saw the cost of hedging currency exposure as exceeding the benefit that many firms get from this activity. In addition, most of the interviewees in the study described using derivative contracts in hedging as risky techniques and very costly. One of the financial manager from a hedging firm said, *'while his company relies heavily on financial hedging contracts such as forward and option contracts, the financial hedging contracts are limited in Saudi Arabia'*. The absence of local forward, future, and option markets in Saudi Arabia may affect the firms there, and may increase the costs of using the derivative contracts. The only

access available for Saudi firms to use derivative contracts is through the banks. It seems that both the cost of implementing the hedging strategy and the absence of the financial markets in Saudi Arabia may eliminate the manager's interest towards the currency hedging activity.

Interviewees were asked, in question four, to point out if their firm usually forecast future foreign exchange rates. Results of their responses are recorded in Table 6.5. It can be seen from the Table that all hedging firms made a forecast of future foreign exchange rates. The Table shows that only 2 out of 9 non-hedging firms made forecasts the future foreign exchange rates. One of the financial managers from non-hedging firms said, '*we plan our future investment on the spot rate, we do not make any forecast for future spot rate'*. It seems that for financial managers, it is difficult to measure the effects of the currency exposure in their firms' operations unless they have the ability to forecast future exchange rates. The absence of information regarding the expected changes in the foreign exchange rates may affect the financial managers' ability to identify the currency exposure magnitude, and therefore choose inappropriate decision. The difference between hedging and non-hedging firms regarding the forecast of forward exchange rate may affect the hedging decision and this will be examined in the next stage of the study.

Question five in this section considers the degree of currency diversification in the interviewed firms. The respondents were asked to identify how many foreign currencies they used in their exports and imports activities. Their responses are recorded in Table 6.5. The Table shows that most of the hedging firms interviewed were trading using three or more currencies, while most of the non-hedging firms were trading using only two or less foreign currencies, and these results were compiled against the predicted diversification theory. The only possible reason for that is the sample of the small firms interviewed may affect the result of the diversification argument. One of the managers stated that '*the decision to enter into a new geographical location for our business is affected by factors such as taxation issues and political risks. But currency exposure is a less significant factor affecting our decision to extend our business'*. While one of the non-hedging firms interviewed stated that '*in the company, the effect of the changes in the exchange rates on the overall position of the company, was not that bad'*. One of the financial manager from a hedging firm who holds a PhD with 6 years of experience in risk management activity confirmed the above finding, said: '*our company*

currency exposure increased with the number of foreign currencies that we use in the international trading. It increased the sensitivity of our costs, sale volume, and profit to the changes in foreign exchange rates'. A similar view was given by another financial manager from a hedging firm, he said: '*during the last four years we started to increase our hedging strategy to cover 80 per cent of our costs denominated in foreign exchange by taking out forward contracts. Before taking this strategy, the currency exposure hurt us too much but after that we were able to hedge at better rates'.*

Regarding the sensitivity of the firms' operations to changes in foreign exchange rates, while all of the hedging firms confirmed the increasing effect of the changes in foreign exchange rates on their costs, profit, sale and purchase volume, and cash flow, there were only four non-hedging firms who experienced the same problem. In contrast to most of those non-hedging firms interviewed, the hedging firms confirmed that they do not have the ability to make pricing adjustments in response to changes in foreign exchange rates. These hedging firms confirmed that the effect of changes in foreign exchange rates on their costs, profits, cash flows, and sale volumes are high, and because of that these companies have tried to minimize these effect.

The last question in this section considers the Islamic solution for the currency risk. The respondents were asked to identify the available Islamic method to hedge currency exposure. All of the respondents argued that banks did not introduce any acceptable solution for the currency risk (acceptable from Islamic Shariah). One of the financial managers from a non-hedging firm who holds an MBA degree, stressed the above point by saying '*Most of our costs denominated in UK sterling, and during the last three years the changes in the UK sterling caused some problems for us such as increasing the cost of our raw materials and decreasing our importing volume. And while we asked our banks to provide us with financial contracts which can be used to minimize the effect of the changes in UK sterling on our firms, all the financial hedging contracts advised by the banks were not acceptable from The Islamic view and our management board did not accept any unaccepted activity'.* Another financial manager from a non-hedging firm pointed out '*Our company is prevented from using derivative contracts due to the Islamic "Shariah". And we asked Al-Rajhy bank (Islamic bank) to provide us with an accepted financial contract to minimize our currency exposure. The bank advised us to use Islamic swap contract, as the only one available in the bank, while we found that this contract divided the risk between us and the bank but very risky to*

be used'. One of the managers in a non-hedging firm said "*when one of the bank's treasury department visited us and ask us to hedge currency exposure we asked hem if there was any acceptable way to do that (from an Islamic point of view) and he argued that all the financial contracts available are from international markets and were not accepted in Islamic 'Shariah'*. Most of the interviewees suffered from the unavailability of an Islamic solution for their currency exposure. One of the financial manager from hedging firms confirmed that Islamic 'Shariah' prohibited the use of derivative contracts, arguing '*as this is the only way available for us to minimize the currency exposure we found ourselves using them*'.

From the above discussion, the exploratory study provided the research with two important factors which may affect the firms' attitude against the foreign exchange risk. The first is the degree of the firm's operational (costs, profit, sale and purchase volume, and cash flow) sensitivity to changes in foreign exchange rates. The high level of sensitivity may increase the firm's foreign exchange exposure magnitude and the probability that firms would hedge the currency exposure and this prediction should be considered further in the following study (using the questionnaire). The second factor is that the Islamic view may affect a firm's attitude towards currency exposure. Also the debate surrounding the effect of a firm's diversification strategy in the hedging decision is not clearly understood and needs further investigation.

6.3.4 The management characteristics

The aim of this section is to explore the effect of management and the risk managers' characteristics in the hedging decision. This section is to determine the attitude and ability of the financial manager against currency exposure management in their firms and whether they see hedging as important for their firms. The interviewees were asked, in the first question, about their position in the firms. The interviewees' job title is reported in Table 6.6. The Table shows that four non-hedging firms asked the accounting managers to take responsibility of the financial risk in the firms. The accountants usually did not have enough experience on risk management, and as shown in the table this affects their attitudes against currency exposure. The Table also shows that only one company in the sample had a treasury department, which meant that, in general, these companies do not give enough attention to the different risks they faced.

Table 6.6: The risk managers' qualification

The variables	The measurement	Hedging Firms		Non-Hedging firms		Total	
		No.	%	No.	%	No.	%
Title of Interviewee	The director	2	40	3	60	5	100
	The financial manager	3	60	2	40	5	100
	The accountant	-	--	4	100	4	100
	The Treasury	1	100	-	--	1	100
The length of working on the company	More than 10 years	3	42.3	4	57.1	7	100
	Between 4 to 10 years	2	33.3	4	66.7	6	100
	Less than 3 years	1	50	1	50	2	100
The length of working in current job	More than 10 years	2	50	2	50	4	100
	Between 4 to 10 years	3	42.3	4	57.1	7	100
	Less than 3 years	1	25	3	75	4	100
The qualification degree	PhD	2	100	0	00	2	100
	Master	2	40	3	60	5	100
	Bachelor	2	25	6	75	8	100
The qualification area	Management & Business	5	62.5	3	37.5	8	100
	Accounting	0	00	6	100	6	100
	Finance & Economic	1	100	0	00	1	100

One of the accounting managers from a non-hedging firm argued '*I am the one who is supposed to be responsible for foreign exchange exposure, but as most of my experience is concentrated on accounting issues, for that reason I think I am not interested to undertake a risky decision such as adopting a hedging activity to minimize currency exposure*'. One of the respondents interviewed stated that, because of the Asian crisis in 1997, the company has started to establish a treasury department with the main suppliers in Japan and South Korea. He says; "*The Asian financial collapse of 1997 put issues of financial risk and highlighted the importance of the risk management in our company and encouraged us to establish a new department for risk management*". However, the purpose for a treasury department is not only to manage foreign exchange risk but also in general to enable the company to progress toward its goals and objectives in the most direct, efficient, and effective path. The risk management carried out by a treasurer is not a specialized management function, it is a general management function. This is not to say that a treasurer does not have to concentrate deeply on hedging foreign exchange risk activities, it shows however, that treasury functions are broad and interdisciplinary and not to be narrowly described as foreign exchange risk hedging function. A treasury department is concerned with all risks and should have a

broader understanding of risk and uncertainty and their effects on the company. The findings above raised the question of whether the use of unsuitable managers to look after a firm's financial risk is affecting its attitude against these risks.

The second and third questions focused on the working experience in the company, the interviewees were asked to identify the period of work in their company and in the current job. Inconsistent with theory, the responses reported in Table 6.6, shows that a high number of financial managers with more than four years of experience in the company or current job were not-hedging their currency exposure. Most of the respondents from non-hedging firms argued that their experiences were in business, management, accounting issues but not in risk management activity. While all of the financial managers in hedging firms confirmed that they had experience in risk management activity, there were only two interviewees in the non-hedging firms who confirmed that they had experience in risk management activity. This may indicate that for a company to engage in risk management activity, it needs to be with staff that at least has some experience in risk management activities. While it was considered that most of the firms in the interviews should hedge currency exposure, only six from fifteen firms were hedging their currency exposure and this may be affected by the absence of experience in risk management activity. Four respondents from hedging firms and two respondents from non-hedging firms pointed out that their companies ran training programs in risk management activities, and some of these programs had connections with their banks. In order to improve the employees' experience, firms usually ask their employees to attend some training programs from time to time. From the discussion above, we can suggest that the decision to hedge or not to hedge currency exposure may be affected by the risk manager's experience in risk management activity and the risk management training program available in the company.

The interviewees, in question four, were asked about their qualifications speciality. From the responses, there were four out of six financial managers in hedging firms with a postgraduate degree (Masters or PhD), whereas only 3 out of 9 financial managers in non-hedging firms had a Master degree. The qualification level and area may be important to be further discussed in the following stage (the explanation study) as they can serve as proxies for a manager's qualification. This is because most of the hedging managers come from a management and business background while most of the non-

hedging managers have an accounting background.

An important observation from the interviews was the nationality of the interviewed persons. In that there were a high percentage of employees working in financial departments from foreign countries. The first reaction from the interviews is that the firm that employs risk managers from western or Asian countries is more likely to engage in hedging activity. The reason behind this is that these managers, before they came to Saudi Arabia, they had some experience in dealing with financial risk in companies in their countries. One of the managers said that he was a member of the risk management team in another company outside Saudi Arabia and had some experience on how to minimize the foreign exchange exposure. He has been working in his current company for several years, and during these years he became convinced of the importance of hedging activity. This new factor may need to be further examined as a determinant of hedging decision.

The fifth question in this section was about the companies' managerial compensation system. Interviewees were asked to identify if their companies had special compensation systems for managers, and if yes, to describe them. While most of the respondents agreed that their firms had a managerial performance related compensation program, they differed between companies. For example, the responses from the interviews showed that there were three different managerial compensation programs in these companies; the performance ideal monetary compensation system, an equity compensation system, or an attractive managerial high salary unrelated to result. The evidence from the interviews shows that most of the non-hedging firms (6 out of 9 firms) used the performance ideal monetary compensation programs and only one company used the equity compensation system. In contrast most of the hedging firms (three out of six firms) have an equity compensation system to encourage managers working in the interest of shareholders, see Table 6.7. Through the interviews five of interviewees from hedging firms clarified that their companies measured the manager's performance. Some of these interviewees pointed out that their companies had criteria and standards for manager's performance. Other interviewees stated that their company measures the manager's performance through the improvement in the profit or the dividend payment. In addition, some of the interviewees confirmed that their company performance was usually evaluated by the banks. The manager performance system may play an important role in encouraging the managers to work in maximizing the

firm's value whenever the company is able to compensate them.

Table 6.7: The managerial stockholding and compensation program in the companies

The variables	The measurement	Hedging Firms		Non-Hedging firms		Total	
		No.	%	No.	%	No.	%
The performance related monetary compensation program	Yes	4	40	6	60	10	100
	No	2	40	3	60	5	100
The equity compensation program	Yes	3	75	1	25	4	100
	No	3	27.3	8	72.7	11	100
The fixed managerial salary unrelated to result	The manager annual income is less than 50000 pounds	3	50	3	50	6	100
	The manager annual income is between 50000 and 150000 pounds	2	40	3	60	5	100
	The manager annual income is more than 150000 pounds	1	25	3	75	4	100
The manager stockholding in the company	Yes	5	62.5	3	37.5	8	100
	No	1	14.3	6	85.7	7	100

The last question in this section is about the level of managerial stockownership in the firms. Interviewees were asked to point out if a firm manager could be an owner. The responses reported in Table 6.7, shows that firms are more likely to hedge when the managers own some of the a company's shares. It seemed that the more close a manager's interest is to that of a shareholder the more likely that manager may decide to engage in decisions such as hedging. One of the financial managers from a non-hedging firm said *'I am an employee in the company and not one of its owners, and for that reason I am not willing to take a sole responsibility of using the derivative contracts for hedging as these contracts are very risky, because one of the company's strategy is not to engage in a risky activity''*. A proportion of the manager's stockholding in the firm

will be an important determinant for the hedging decision.

The last observation from the interviews in this section is that two interviewees from non-hedging firms argued that their companies should hedge the currency exposure but their managers refused. These interviewees pointed out that their managers were too old (over 55 years) to understand the hedging activity. They refuse to accept new ideas such as using derivative contracts. It seems that the decision to hedge or not to hedge in these firms were partly affected by the age of the managers, and this need to be explored further using the questionnaire.

6.3.5 The external environment

As stated in section (6.2), using the contingency theory in this study, will give more opportunity to discover the external and internal environmental factors, and the possibility to examine the extent to which these factors may affect the hedging decision. The aim of this section is to identify the firm's external factors which may influence the decision to hedge or not to hedge the currency exposure. The first question in this section was about the market of the company. Respondents were asked to describe their markets. The responses in Table 6.8, shows that there are three different markets, these are, competitive market, price regulated market, and oligopolistic market. The Table shows that most of the companies in a competitive market were hedging their currency exposure. While it was expected that companies in a price regulated market are more likely to hedge, the Table shows an unexpected result. One possible reason for this may be found in a financial manager from a company with prices regulated by the government. *'We source most of our raw materials from foreign markets (70% from Japan, 20% from USA, and 10% from Europe), and we sell all of our products in domestic markets. While our prices are controlled by the government, it also takes our product costs in mind when the prices are identified'.*

In the second question the interviewees were asked to describe the level of competition that their companies face in the markets. Most of the interviewees who described their markets as highly competitive markets were hedging their currency exposure. The financial managers from the non-hedging firms said '*we sell our products (cars and parts) to customers directly or to wholesalers who sell to their customers. As all our products are imported from foreign competitive markets, the company's costs are*

extremely sensitive to changes in foreign exchange rates, with most of our products sold in the domestic markets. And as we are the only company in Saudi Arabia with an agent of this kind, it is possible for us to transfer the currency exposure to our customer'.

Table 6.8: The firms' external environment

The variables	The measurement	Hedging Firms		Non-Hedging firms		Total	
		No.	%	No.	%	No.	%
The Market	Competitive market	5	71.4	2	28.6	7	100
	Price regulated market	1	33.3	2	66.7	3	100
	Oligopolistic market	0	00	5	100	5	100
The competition position	High	4	80	1	20	5	100
	Medium	1	25	3	75	4	100
	Low	1	16.7	5	83.3	6	100
The relationship with banks	Strong	3	37.5	5	62.5	8	100
	Normal	3	50	3	50	6	100
	Weak	0	00	1	100	1	100

However, other interviewee from a hedging firm in a car industry said '*we sell our products in competitive domestic markets. For that reason any changes in the foreign exchange rates automatically affect our costs, prices and demand. We have little ability to pass on the effect of the changes in exchange rates to our customers. This always drives us to hedge in order to minimize the effect of the changes in foreign exchange rates in our costs'*. One of the interviewee points out that '*company mainly imports from UK and sells its products in competitive domestic markets. He claimed that any appreciation in sterling has given their competitors, particularly those who import from U. S. A. and Germany, the opportunity to discount their product prices in the domestic markets'*. Another stated *'most of our competitors import alternative products and so if we are not able to control our currency exposure, then we may lose our position in the markets'*. Another manager said '*In our markets the products can be used as alternatives, with elastic demand. The foreign exposure that our company has is higher and in order to secure our competitive advantage with prices that are accepted in the market we hedged our exposure. High quality and low prices are the core competence*

of our business, and that drove us to manage any risk that may affect our prices, on the other hand, we are only prepared to take risks if they have a synergistic effect on our marketing strength'.

The interviewees were asked to specify the reasons that made them describe their markets as competitive markets or the reasons that made them feel that their markets are not competitive markets. They described many reasons but for the purpose of identifying possible measures (indicators) for competitiveness in the markets, these competitive indicators should be easy to use and can be generated using the proposed method for collecting data (the questionnaire). The respondents identified some important indicators which give some of them reasons to describe their markets as competitive markets and for others to describe their markets as less competitive. The interviewees in their responses pointed out some competitive indicators, we chose from them the ones most often repeated by the interviewees; (a) the differences in the products available in the markets, (b) the number of the competitors in the markets, (c) the price demand elastic, (d) the differences between competitors regarding their costs denominated foreign currency. The following comments from some of the financial managers are indicative of the general feeling towards their markets:

'as we are the only dealer of these products in Saudi Arabia, it is possible for us to pass the effects of the changes in foreign exchange rates to our customers'.

'Our company is one of eight other companies in the same industry which sell the same products but each one of these companies sell their products within their area, and this protects us from being involved in a competitive problem'.

Two of the interviewed non-hedging financial managers said most of their main competitors were importing from the same countries that their companies imported from. This has put them and their competitors under the same effect if the exchange rate changes. A financial manager from a non-hedging oil company said *'the company generated approximately 80 per cent of its sales revenues in UK. And during the last few years changes in the UK sterling vis-a-vis the Saudi riyal exchange rate has increased dramatically. And the prices for our products are fixed prices, and as a result we can not pass through the impact of unfavourable changes in UK sterling to our customers. For that reason we suffered too much from exchange rate changes and I*

asked the board of directors to allow us to engage in financial hedging contracts but it was found that all the advised financial contracts are not acceptable in the Islamic Shariah'. Another financial manager from a non-hedging firms of cement and building equipments said *'Most of our raw material costs are paid in Deutsch Mark, Yen, and Italian lira. Although, our company is the only cement factory in the area, and for that reason the demand for our products by customers is highly insensitive to changes in price. This gives us an increased ability to transfer any unfavourable effects of foreign currency movements to the customers, which reduces the need to hedge in our company'*.

From the above findings, it can be suggested that when changes in foreign exchange rates have some impact on increasing the competitive position of a firm in the foreign or domestic market, the firm may engage in hedging activity. Most of the hedging firms in this exploratory study, showed that the impact of the changes in foreign exchange rates do not depend only on the magnitude of the exports or imports exposed to the changes but also to the competitive environment in which these firms operate.

The third question in this section was about the companies' relationship with banks. The respondents were asked to describe their companies' relationship with banks. It was predicted that the companies with strong relationship with banks will be more likely to hedge, however, Table 6.8, shows mixed results and we can not draw a clear relationship between hedging and the level of the relationship with banks. However, the following views expressed by financial managers are indicative of the strong relationship between hedging firms and banks in the following way: one of the financial managers said *'the company relies primarily on derivative contracts for the management of currency exposure. While we do not have enough experience to exercise these contracts the bank's treasury staff helps us on the use of these contracts'*. One of the interviewees in a small company found that using a part-time risk officer from banks is more helpful to extend the risk management function far beyond the capabilities of a single manager. This respondent claimed that part-time treasurers from the banks treasury departments may have high risk management skills and technical knowledge. From the interview, one of the respondents said that the involvement of a senior treasurer from the bank in matters relating to foreign exchange risk is critical for ensuring that a company devotes a sufficient amount of attention and resources to controlling this important risk. The involvement of the bank treasury

department should encompass the development of policies for measuring and reducing the company's foreign exchange risk and the implementation of these policies. In some of Saudi companies, senior treasurers from banks are usually and formally involved in managing foreign exchange risk, though the degree of this involvement did vary. Two of the hedging companies interviewed stated that the reason for using a senior treasury manager from banks was that these companies had a poorer understanding of key concepts relating to foreign exchange risk and its measurement and management.

In the fourth question, the interviewees were asked to identify if the accounting methods used by their companies played any role in minimizing the effect of currency exposure in their financial statements. Most of the interviewees confirmed that the currency exposure did not affect their choice of accounting method. The fifth question in this section, asked the interviewees to identify if exchange rate policy affected the level of their companies currency exposure. Some of the interviewees, in companies where part of their companies' foreign trade started in U. S. markets, argued that the fixed price between the US dollar and Saudi riyal (SR) minimized their currency exposure.

6.3.6 The determinants of hedging decision

This section focuses directly on the determinants of the hedging decision in the company. The aim of this section is to address any missing or uncovered factors that may influence the currency exposure hedging decision. To ask the interviewees about the determinants of the currency exposure hedging decision, it was decided to ask the interviewee this question, 'what are the determinants of the hedging or not to hedge decision in your company'? After which the interviewer asked the further question, 'are there any further factors that influence your decision to hedge or not to hedge'? This was followed by the question; When you decided to hedge or not to hedge on what basis do you form your decision?

In this part of the interview the study was able to determine the general determinants of the hedging decision. Some of the interviewees repeated some of the specific determinants discussed in previous sections in this chapter, and talked about the determinants which control the firm's ability and needs to hedge. Most of the interviewees stated that the needs for the hedging decision, the ability to hedge, and the benefit from hedging were important in determining the decision to hedge or not to

hedge. The following views expressed by financial managers exemplify the benefit, the ability, and the need towards hedging and the feeling of pressure generated by them.

The determinants of the hedging decision can be summarized from one of the manager's statements, '*Before deciding to hedge or not to hedge we asked ourselves do we need to hedge? Are we able to hedge? What benefit we would get from hedging? For example, while the need for hedging exist in the company, however the ability and our board of directors' attitude against risks affects our decision to hedge as they are not sure about the benefit of hedge. The owners of the company are different in their acceptance of risk, some owners accept more hedging activity but others are worried about the risk associated with hedging activity and asked not to engage in hedging activity'*. In addition to what the manager said, it was felt his attitude or the manager's risk aversion also plays an important role in the decision that his firm reached. Another manager said '*hedging in a financial market is a very risky activity, but we feel that the need for hedging has increased and we must hedge as it can help us to survive'*. Another manager added '*our bank advised us to hedge the foreign exchange risk and helped us on the best way. Our firm decided to go head with the hedging decision since the outcomes were acceptable'*. It seems that the feedback on positive outcomes increases the likelihood of hedging decision. Thaler and Johnson (1990) argued that decision makers tend to be risk averse following prior losses and risk seeking following prior gains. The following comments from financial managers are indicative of the general feelings towards the hedging benefits: One of the managers said '*the company at the beginning refused to hedge the foreign exchange exposure and have started to hedge since the firm experiences returns below some reference point'*. On the other hand one of the managers in a non-hedging firm stated that, '*I believed my firm should hedge the exposure but they prefer not to do since the firm's returns are in an expected level'*.

In order to get more details, the interviewees were asked about what they meant by the ability and the need to hedge. Most of the interviewees explained that the firm's need to hedge increased when the currency exposure and its effect on the firm increased. Also the interviewees argued that the firm's ability to hedge depends on the staff risk management qualification, the owner's ability to understand the benefit of the hedging activity and to encourage the manager to do so, and the financial ability to finance the hedging activity. Some of the interviewees argued that the availability of hedging tools are important determinants of their companies. One of the managers

interviewed confirmed that '*our ability to transfer the currency exposure to the third party affects the company's need to hedge'*.

As one of the interviewees explained '*Unfortunately, while I feel that the company should engage in hedging activity, the possibility to do this is not available in the company. Qualified staff in risk management, financial sources, the safety way to do this, all affected our attitude against currency exposure. Once I explained to the board of directors the importance of the hedging activity for the company, its benefit from their point of view was not clear at that time. They argued that the benefit from a hedging decision can not be compared with the level of risk associated with decision and that the need for hedging is not that important*'. One of the managers interviewed said '*My company has different financial risks that are part of its core business, however, the management and financial sources did not help us to establish risk management strategies'*. Another manager added '*the harm that the changes in exchange rates cause to the firm's costs and cash flows identifies the level of need for the hedging decision. But our ability to resolve this bad effect influenced our decision to minimize this effect'*. In addition, another interviewee pointed out this '*Our core competency is the capability to provide our customers with best services in a higher competitive market. Managing our currency exposure is the essence of our competitive advantage, really the needs for hedging the currency exposure increases from time to time, so we are ready to take high risk in this activity by accepting the hedging decision'*.

One of the managers noted this *'In our industry currency risk is an integral part of the business. And we do care about this risk, but using the financial instrument contracts for hedging this risk is not an easy task, and for this reason we did not try to hedge'*. One of the managers argued, *'In Saudi Arabia, we have shortages of qualified people who can organize and present a training program in financial and management risk'*. One manager who had a training program in risk management said *'For him the program resulted in increasing awareness of risk management process, and his understanding of the company's foreign exchange exposure phenomena was considerably strengthened'*. He explained that a training programme in financial contracts for hedging purposes developed his personal interpretations of the foreign exchange risk and affects his attitude against that risk. The results of the interviewees' opinions regarding the hedging decision shows that in addition to the managers'

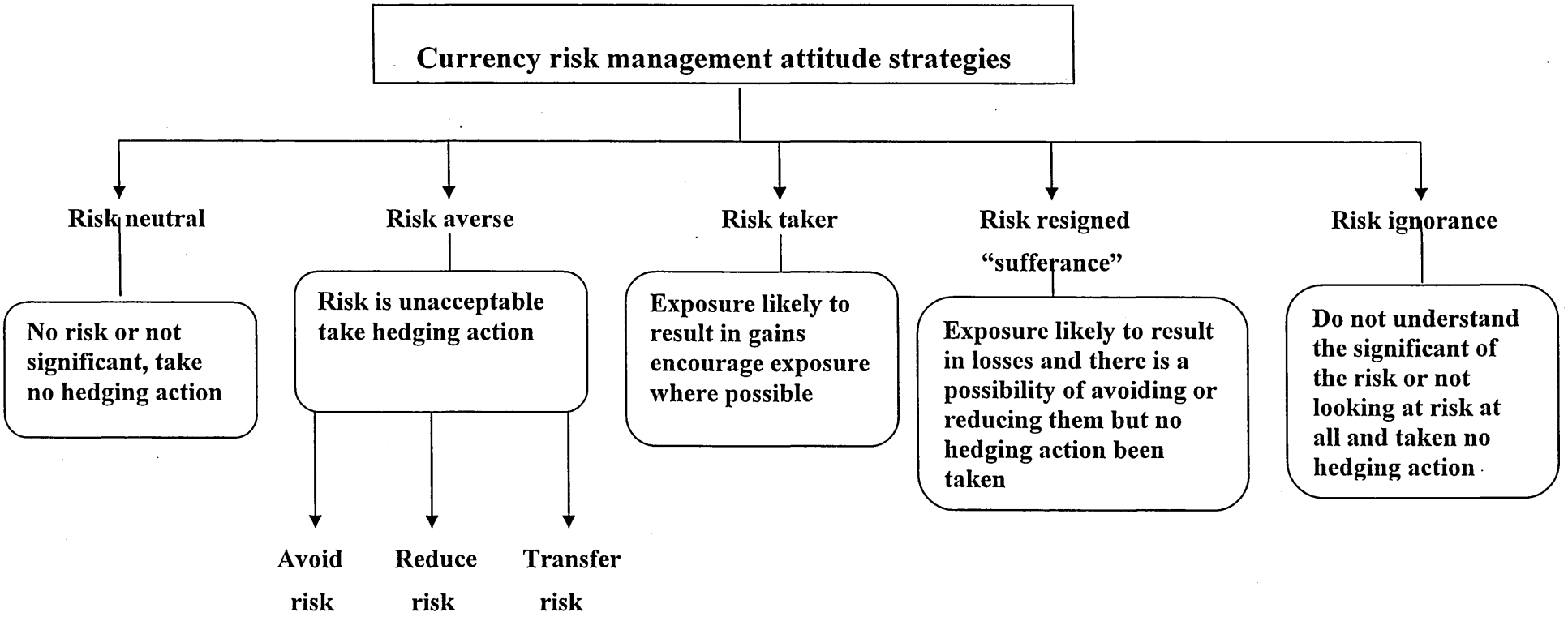
attitude against currency exposure (the management risk aversion), the hedging decision is also affected by the manager and the firm's ability to hedge, the need for a hedging decision, and its benefit to the firm.

Finally, as mentioned in Chapter Two, there are three different attitude strategies against the risk, which are risk neutral, risk averse and risk seeking (see section, 2.4.1). During the exploratory study the researcher observed further management attitudes towards currency exposure (see Figure 6.1), as follow:

- **Risk ignorance**. Company does not understand the significance of the risk or does not look at risk at all and takes no hedging action.

- **Risk resigned "sufferance".** Exposure likely to result in losses and there is a possibility of avoiding or reducing them but still no hedging action is taken.

Figure 6.1: Currency risk management attitude strategies



6.4 Testing the Questionnaire

6.4.1 The Pre-test Study

It is important to conduct a pre-test study before administering a self-completed questionnaire to the research. The rationale for choosing to make a pre-test study is not only to ensure that a questionnaire operates well; but also to ensure that the research instruments as a whole function well. During the pre-test study, questionnaires were given to some colleagues in Sheffield Halam University and some Accounting and Business PhD Saudi students in the UK to read through and play the role of respondents, even though some of them knew little about the subject. Also during the pre-test study, both the Arabic and English versions of the questionnaires were reviewed by various members of the College of Accounting and Business at Al- Imam University. This was done to obtain their opinions on the above issues as well as on the translation of the questionnaires. The pre-test study demonstrated that the questionnaire was reasonably well understood, but some changes were necessary. This process resulted in several substantive changes to the questionnaire

6.4.2 The pilot study

The pilot study which was adopted in this research used not only the questionnaire but also the interview method. Using a questionnaire only in the pilot study was deemed inadequate since there would not be an interviewer present to clear up any confusion. Also, with interviews, persistent problems may emerge after a few interviews have been carried out and these can then be addressed. The pilot study also helped the researcher to identify questions that made respondents feel uncomfortable and to detect any tendency for respondents' interest to be lost at certain junctures. It also helped to ensure that the questionnaire was free from any difficulties and ambiguities which could lead to inadequate or misleading responses. A pilot study was carried out to raise issues that might need to be addressed before a more formal survey was used for the final stage. It is always advisable to "pilot" the questionnaire as fully as possible on a small number of firms before using it for real. After designing the questionnaire and pre-testing, there is a need to undertake a pilot study to make sure that the questionnaire is clear from any discrepancies or misunderstandings that it may have (Goode and Hatt, 1952). During

the design of the pilot study and preparing the questionnaire, it became clear that in seeking to confirm some of the output of the exploratory study regarding the understanding of a Saudi firm's role against FX risk, background, relationships between hedging decision and its external and internal environment, and the hedging methods, the study identified the gap between findings in the exploratory study and practice. This helped to fill the gap between the theories used to describe the situations in the developed countries to that of the theories which can be used to describe the situations in developing countries. For most studies of the hedging decision behaviour, this type of questionnaire and interviews are a novel approach. Indeed, some results from the pilot study about these subjects are extremely important. Preliminary reading of the literature concerned with determinants of hedging decision suggested a framework which might be useful for underpinning the pilot study. Conversely, it can be said that the pilot study provided an opportunity to test this framework to see if hedging decision behaviour can be described in such ways, and to see if this framework promoted useful debate.

After the pre-test step, the second step was to try the questionnaire out on people who were similar to those who are in the research sample. Questionnaire surveys often face difficulties before reaching their final versions. Oppenheim (1992, p. 47) stated that "questionnaires have to be composed and tried out. Improved and then tried out again, often several times over, until it is certain that they can do the job for which they are needed". At the time of doing the interviews (on November, 2001), five interviewed firms were happy to comment on the final form of the questionnaire, which was helpful in gaining a clear understanding of the quality of the questionnaire. Five interviews were conducted in which discussion was focused around what was in the questionnaire. A sample of 5 firms located in the capital city Riyadh, obtained from the Export and import data gathered before the explanatory study relating to the top 171 of the population firms (see section. 5.9.3.6), was used as a sample for piloting the questionnaire. The pilot study occurred on March, 2002 and involved the distribution of the questionnaires to firms directly by the researcher.

To ensure that the format and the content of the questionnaire were clear and unambiguous, the questionnaire was filled in the presence of the researcher. On the pilot study, the respondents were asked to evaluate the questionnaire content and language. The feedback from these was used to modify, reclassify or delete some items in the

questionnaire. No valid statistical analysis can be conducted on such a small sample (only 5 completed questionnaires), as the results would be biased and any statistical inferences would be invalid. The responses to the pilot study were not included in the analysis. After the end of the pilot study, which helped the study to reach the final design of the study questionnaire, the confidence in the process of using this questionnaire to collect the needed empirical data had increased.

6.5 Conclusion

Results are reported of an interview survey conducted with 18 firms. The objective of the interview was to identify and categorize the determinants of the firm's foreign exchange exposure management decision. The results of the interviews indicate that the determinants of a hedging decision can be grouped under four groups; the hedging incentive (benefit), the hedging ability, the hedging need, and management risk aversion. When previous studies analyzed the determinants of a hedging decision they mainly consented on the determinants of hedging decision as a way of increasing a firm's value. However, using the contingency theory approach adopted in this chapter gives more opportunity to discover the external and internal environmental factors, and the possibility to examine the extent to which these factors may affect the hedging decision. The interview evidence to some extent helps to explain why many companies choose to hedge or not to hedge their currency exposure. The interview findings help to identify the factors which can be used to explain why firms may hedge or not their currency exposure.

The interviews revealed that while most of the firms interviewed are highly vulnerable to changes in foreign exchange rates, there are factors which influence their ***ability*** to engage in hedging activity. These are the manager's qualification, the firm's size, the ability to pay the cost of hedging, the availability of qualified people in risk management, management performance evaluation and reward, bank relationship, availability of risk management policy, hedging tools, the ability to forecast exchange rates, the participation of the operating departments, a risk management training programme, and the manager's nationality. This chapter has argued that the hedging decision depends on the level of the firm's need to hedge, in that firms with high currency exposure and high sensitivity to changes of exchange rates are more likely to hedge, and that the exposure increases as the competitive position increases. The

level of exposure can also be affected by the accounting method used by the company, the currency and market policy.

This chapter has argued that management risk aversion plays an important role in determining the hedging decision. The interviews showed that the manager's risk aversion is affected by the firm's ownership structure, its control, the manager's ownership and age, the manager's compensation arrangements and the Islamic view. As found in previous studies, this chapter has shown that the hedging decision was affected by the expected outcome from the hedging activity. The interviews showed that the hedging incentive was important from the shareholder (board of directors) point of view. At the end of the exploratory study, which influenced the final design of the questionnaire, the confidence in the process of using it to collect the needed empirical data had increased.

Chapter Seven

Theoretical Framework

7.1 Introduction

The previous chapter reported results of the interviews that were conducted with people responsible for foreign exchange exposure problems in some Saudi firms. The purpose for interviews was to generate information relating to the determinants of the decision to hedge the foreign exchange exposure from the participants interviewed. The main objective in that chapter is to explore new determinants for the hedging decision and to examine the existing determinants in order to build the study's theoretical framework. This step was taken as a result of the lack of an existing theoretical framework which has been used to examine the determinants of hedging foreign exchange exposure.

The purpose of this chapter is to set out the research theoretical framework (Model) and identify its use in this study. The procedures used for constructing the model, the dependent and independent variables are described and defined. This chapter is divided into four sections. The following section presents the process of building the theoretical framework. Section three describes the study's theoretical framework. The last section outlines the main conclusion of the chapter.

7.2 The Process of Building the Theoretical Framework

The purpose of this section is to present the main sources used to construct the theoretical framework of the study. In order to build the study's theoretical framework, three stages have been employed in the preparation of the theoretical framework. First, the literature review, covered in chapter 3 and 4, provides the first step for constructing the theoretical framework. The literature covered in these two chapters was used to review the corporate hedging determinants recognized in the previous studies. The review of the literature has revealed a large number of determinants of corporate hedging. The determinants examined in many of the studies are similar, the only differences being the methods and methodology adopted. However, previous studies provide us with little guidance in defining the expected determinants of foreign exchange risk management. It was stated in chapter four that while most of the

literature on corporate hedging concentrated on the determinants of the corporate hedging decision and the derivatives used, only limited studies have been carried out to examine the determinants of the decision to hedge foreign exchange exposure. Due to the lack of an existing theoretical framework to guide the determinants of the decision to hedge or not to hedge the foreign exchange exposure, the details which are provided in chapters 3 and 4 will be used in connection with other sources as a basis for constructing the theoretical framework in this chapter.

This study attempts to extend prior models and address criticisms of specific applications. In the second step, the study expands the scope in defining corporate hedging determinants to also include contingency factors that may have influence on the hedging decision, and which may improve the exploratory ability of a research model. The third step in the preparation of the theoretical framework is the interview analysis data which played an important part in identifying and clarifying the relevance of additional factors. On the basis of the interviews data, attention was focused on determining whether the firm's external and internal context affect the firm's decision to hedge or not to hedge. In this aspect, the detailed analysis presented on chapter 6 regarding the determinants of the foreign exchange exposure strategy in the interviewed firms was of great value. In this chapter the exploratory study (chapter 6, the interviews) is used in order to model and measure the degree of misfit between a contingency variable and several different foreign exchange risk management determinant variables. Using the interpretive approach within the exploratory study may help the study to understand the hedging decision from the manager's point of view who is directly involved in the decision, and to highlight the influence of the manager's attitude, contingency variables, and financial variables in the hedging decision. This brings out the desirability of building a framework that not only considers the association between a contingency and foreign exchange exposure management determinant variables, but also between contingency variables and all of the foreign exchange exposure management variables for which it is a contingency.

To date, most corporate hedging determinants studies have focused on providing business practitioners with set prescriptions for hedging benefits. However, this approach has resulted in inconsistent findings to direct hedging decision, and provides incomplete framework. Our alternative is through a combination of finance theory and contingency theory, which posits that a firm's hedging decision determinants are better

defined by a firm's manager and dependent on the context in which the firm operates. This study therefore uses both the finance theory and contingency theory in order to discover the main determinants of the hedging decision which depend on the context in which the firm operates.

7.3 Developing a General Framework of Hedging Decision Determinants

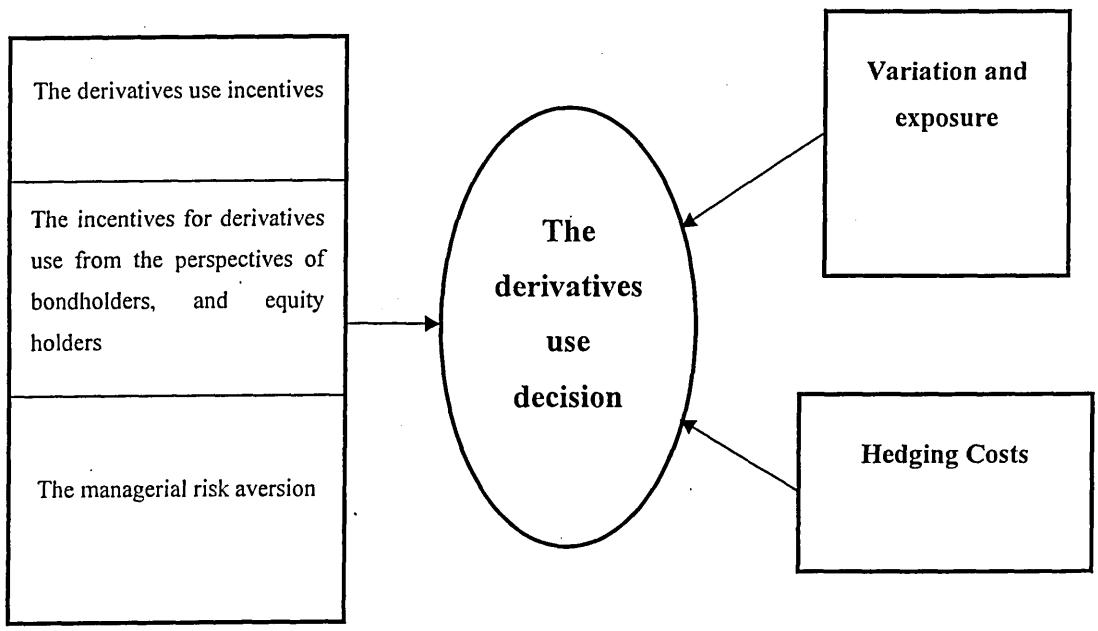
7.3.1 Introduction

Chapter 4 reviews previous studies of the determinants of corporate hedging focused on two main reasons to analyse the hedging decision determinants. The first view focused on managerial differences in risk aversion, so that these studies ascribe some of the firm's risk behaviour to the link between corporate risk management activities and the risk aversion of corporate managers, their utility, and the form in which they hold a stake in the firm (e.g. Nance, *et al.,* 1993; Mian, 1996; Berkman, *et al.,* 1996; and Tufano, 1996). The second view is that the effect of the hedging decision in increasing the firm's value can be used as an incentive to determine the corporate hedging (e.g. Froot, *et al.,* 1993; 1996; Fok, *et al.,* 1997; Joseph, 1999). In order to build their model, most of the theoretical explanations of the determinants of the hedging decision in these studies, were mainly concentrated on the incentives for hedging which are likely to benefit contracting parties and on the manager's risk aversion. Most of the previous studies in corporate hedging were mainly analyzing the same determinant variables using different representative sample.

Geczy, *et al., (1997)* provides a simple framework which could be used to describe general differences in hedging strategy between companies mainly built on the level of hedging activity. Geczy, *et al.,* study mainly concentrated on two views of hedging decision determinants, namely the managerial wealth and firm value maximization or what we can see as hedging motivations theory. However, unlike other empirical studies, Geczy, *et al.,* extended the testable implication of existing theories on derivatives use by considering how the cost of using derivatives and the magnitude of the exposure affects the decision to use them. This framework is one of the most comprehensive frameworks in the literature as it covers to some extent some dimensions which are important in considering the decision of derivatives use, see

Figure 7.1. Geczy, *et al.*, (1997) organized various theories into a single framework by discussing the incentives for derivatives use from the perspectives of managers, bondholders, and stockholders. They used indirect measurement to proxy the cost of using derivatives by suggesting that firms with economies of scale in implementing and maintaining a risk management program are more likely to use currency derivatives. However, while the factors that been considered as corporate hedging determinants in Figure 7.1 are important for hedging decision, there are also other factors which might be necessary to consider for the hedging decision (see the exploratory study, Chapter 6).

Figure 7.1: The Geczy, Minton, and Schrand (1997), the determinants of derivatives use decision framework



Analysing the hedging determinants from only the view of the benefits from that hedging activity may affect findings of previous studies. Joseph (2000) argued that contrary to the general view found in the finance literature, hedging does not always decrease the variability of the firm's value. However, few studies acknowledge the multi-dimensional nature of the hedging decision. Also these few studies narrowed their view to only cover some of the dimensions relating to the firm's internal environment. While most of the previous studies only tested for associations between the hedging decision and internal variables, this study argued that the hedging decision should be considered by recognizing patterns between many interrelated environmental and organizational variables. The need for a more comprehensive framework for the determinants of the hedging decision exist,.since most of the previous empirical studies

of the corporate hedging decision only concentrated on the determinants of managerial dispositional differences and a firm's benefit from hedging. It seems that it is difficult for the decision makers in a firm deciding to hedge or not without understanding the firm's needs and ability to do so and the possible limitations of the decision. The exploratory study argued that corporate hedging policy and decision should not only consider the determinants of a firm's benefit from hedging and the management risk aversion but also the determinants of the firm's ability and needs to do so.

7.3.2 Describing the theoretical framework groups

This chapter establishes a theoretical framework which will then be examined with reference to the empirical results from questionnaires in this study. Using all these three sources presented in section 7.2, this study attempts to bring all the views which are generated from these sources together into a coherent summary. The development of the framework is based on the belief that there is a relationship between the hedging decision and the firm's environmental, organizational, financial, and managerial characteristics. This study sees the hedging decisions that firms made to be related (to some extent) to their managers' perceptions, related to the contingent situational determinants, and in the interest of the shareholder to increase the firms' effectiveness.

The focus of this study is the corporate hedging decision as a dependent variable. The primary issue in this subsection is to model the determinants (independent variables) that affect the choice of the decision to hedge or not to hedge. Finance theory offers two basic explanations for why corporations hedge. The first proposes that corporate hedging is affected by *managerial risk aversion.* A second explanation is that corporate hedging *increases firm value* by reducing expected financial distress costs, expected agency costs, expected corporate finance costs, and increasing expected investment opportunities. The contingency approach argues that the dependent variable will be determined by the environmental, organizational, and managerial factors. In other words, the contingency model assumes that the hedging decision is influenced by factors which are external to the firm as well as those operating within it. The choice to hedge or not to hedge is determined not only by the direct result of the decision, but by many others such as *the firm's ability and need* to adopt hedging activity. Contingency and financial variables for corporate hedging determinants are categorised in four groups of determinants termed the hedging incentives, the managerial risk aversion, the

firm's need for hedging, and the firm's ability to hedge.

7.3.2.1 The determinants of hedging incentive.

Theoretical research has presented ways in which corporate hedging, in general, might increase firm value (Smith & Stulz, 1985; Bessembinder, 1991; Froot, *et al.,* 1993, Joseph, 1999; Breeden & Viswanathan, 1990). These academic works tried to build a framework for implementing corporate hedging decision depending on the potential impact of hedging on the firm's value. Finance theory indicates that hedging increases a firm's value by reducing expected cost of financial distress, reducing expected costs of agency conflicts, reducing expected cost of corporate finance, and improving the firm's investment opportunities (Nance, *et al.,* 1993). Clearly, the question of whether or not hedging activity can be used to maximize shareholders' wealth remains unresolved. This statement can be established if there were market imperfections of some sort. Since some of the previous studies' findings can be attributed to poorly defined proxies for corporate hedging incentives, this study employs indicators along with accounting ratios as measures of hedging incentive variables. Indicators are an appropriate measure because they are a direct indicator of the real situation in the firm. Thus its reflection can be used to measure a specific variable, whereas using accounting ratio alone to measure a specific idea may be misleading as it may reflect the fluctuations of an entire industry or economy rather than the expected variable.

Financial Distress Costs

As argued in Chapter 3, hedging decisions can be used to decrease the firm's financial distress costs. FT indicates that hedging increases firm value by reducing the expected financial distress costs. Smith and Stulz (1985) argued that the transaction costs of financial distress could encourage firms to engage in hedging activities. They argue that hedging reduces the probability that a firm encounters financial distress by reducing the variance of its value, and the expected costs of financial distress (Mayers and Smith, 1987). Fok, *et al.,* (1997) used leverage ratio and the firm size as indicators of expected bankruptcy costs. The larger the debt relative to a firm's value, the higher the probability of bankruptcy, and the higher the likelihood that a firm will hedge to reduce the volatility of operating income. They measured the financial distress via debt ratio, debt to firm value ratio and times interest earned. Howton and Perfect (1998) and Berkman and Bradbury (1996) used the interest coverage and leverage as proxies for the expected

costs of financial distress. To measure the financial distress Tufano (1996), used a cash cost and leverage (long-term debt scaled by firm size).

Geczy, *et al.,* (1997) used two measures of borrowing capacity as proxies for a firm's pre-hedging probability of financial distress: the long-term debt ratio. The higher the firm's long-term debt ratio the greater the probability of financial distress. Therefore, the higher the firm's long-term debt ratio, the more likely the firm is to hedge. A firm in financial distress will typically face two defaults in its financing strategy: long-term financial strategy as indicated by leverage and short-term financial strategy as indicated by liquidity. Joseph (2000) used liquidity and leverage as proxies for financial distress. Haushalter (2000); Allayannis and Ofek (2001) used the leverage to examine the effect of the financial distress costs on corporate hedging. Nance, *et al.,* (1993), measured leverage using two different measures: the firm's debt-size ratio, and the coverage of fixed claims. Haushalter (2000) found that corporate hedging is positively associated with leverage. In contrast, Allayannis and Ofek (2001) found that leverage is negatively associated with the hedging decision and is the opposite from what theories of optimal hedging would predict. Also Nance, *et al.,* (1993) did not find any evidence to support a positive linkage between hedging and leverage, which does not support the leverage hypothesis.

There are many studies which have used the long-term debt ratio as a proxy for leverage (Jia and Lilian, 1998; Geczy et al, 1997; Haushalter, 2000. Colquitt and Hoyt (1997) carried out a study of the financial firm sector and found a positive relationship between usage of financial instruments and a firm's leverage level. In addition, using a sample of non financial firms, Geczy *et al.,* (1997), Dolde (1995) and Tufano (1996) found as predicted by theory, some evidences of a positive relationship between leverage and risk management activity in general. However, Block and Gallagher(1986), Dolde (1993) and Nance *et al.,* (1993) did not find evidence to support a positive linkage between hedging and leverage.

However, using a sample of firms from Saudi Arabia to collect financial measurements to examine the effect of leverage on hedging decision and makes it difficult to obtain any information regarding the firm's interest coverage ratios. Saudi Arabia is an Islamic country and religious companies are not supposed to accept any contracts containing

paying an interest rate as it is called "Riba[1]" and prohibited in Islamic 'Shariah'. Firms' annual reports do not include any information about interest rate. There are many financial ratios which can be used as a measure of failure of rates. Two measures of financial distress costs used by Nance, *et al.,* (1993); Geczy, *et al.,* (1997); and Gay and Nam (1998), are employed: Leverage, which is defined as the firm's long term debt to total sales, and debt service coverage, which is defined as the firm's earnings before interest and taxes (Zakah, the Islamic tax) to debt.

In order to examine the effect of financial distress costs on the hedging decision from different perspectives, this study in addition to the use of accounting ratios will use indicators to measure the firm's financial distress cost. From the findings in the interviews and from the managers' perspective this study has established new indicators to measure the financial distress cost. These indicators are presented in Table 7.1. The study predicts that the more the respondents agree with financial distress cost indicators the more the financial distress cost will be and the firms are more likely to be hedging firms. In order to find whether the differences in the responses of the two participating groups regarding the financial distress costs are statistically significant, the following hypothesis will be tested:

H1: There is significant difference between hedging and non-hedging firms regarding the financial distress cost

Table 7.1: The determinants of the incentives of hedging indicators.

Variables	Indicator
Agency Costs	• The company's owners participate in the decision of the strategy and plan to grow the company
	• The company's total sales have been improved
	• Most of our company's profits are paid as dividend to the firm's owners
	• The owners of the company satisfied with improvement in the company
	• Our company has adopted a monitoring device system to control the relationship between managers and owners
	• In our company the management compensation system has been linked to the corporate performance
Financial Distress Costs	• Our company's ability to service its debt is low
	• The percentage of our firm's debt is high

[1] Riba in debts occurs when interest in and form (either as money or as goods) is paid as compensation for a loan, unless it is not agreed on beforehand and is paid completely voluntarily. Riba is prohibited from Islamic point of view.

Variables	Indicator
	• In our industry the probability of going bankrupt is very high • We are dealing in business where the probability of gain and loss are equal • The risk management tools available in the markets to hedge foreign exchange risk are very risky
Investment Opportunities	• Our ability in managing the financial risk protects our expected cash flow • We always have a plan to improve our investment opportunities • The ability of our company to get over the financial problems increase our financial opportunities • The investment opportunities in our market are good
External & Internal Finance	• We finance our investment by increasing the company's capital or asking the owners for help • We present our financial statements in a way which can increase our probability to receive more flexible external finance • We have more flexibility to get external funding under flexible conditions • In our company the cost of external finance is cheaper as our financial risk is low • Our cash flows have been improved • From our normal activities we can generate enough cash flow for future investments

Agency costs

Fama and Jensen (1983) argue that agency theory proposes that owners and managers have different goals for the firm. Amihud and Lev (1981) stated that, agency theory suggests that owners seek to maximize their wealth while managers tend to maximize their own best interests. FT indicates that hedging increases firm value by reducing the expected agency costs. To calculate agency costs as a ratio, this study uses the one used by Ang, Cole and Lin (2000) in their study, the turnover ratio of annual sales to total assets. Turnover can be used to generate an aspect of the efficiency with which assets are utilized. This ratio indicates how many times annual sales cover total assets. This ratio is a measure of how effectively the firm's management deploys its assets. When the ratio of annual sales to total assets become low it may mean firms experience positive agency costs, because the manager of a firm works against the interest of shareholders, by making poor investment decisions or concentrating on their own interest. This study also uses the operating profit margin ratio, a profitability ratio. The operating profit margin ratio can be defined as operating profit to total sales. The greater a firm's profitability ratio, the more the manager's work on the interest of the firm's shareholder. The more the shareholder will be satisfied with the firm's management. Almohaimeed (1999) found that the financial indicators such as profitability and stock return have great impact in the institutional investors' investment decision in UK. To examine the reflection of the hedging decision on the agency cost, we started by

determining the effect of hedging decision on the firm's total sales ratio and operating profit margin ratio.

As used with financial distress cost, to examine the reflection of the hedging decision on the agency cost, this study uses two different ways of measuring the agency cost, first, using the accounting ratios as described above, and second, using the indicators. The results of the exploratory study show the importance of the agency conflicts in influencing the hedging decision. The interviewees identified some factors that may influence or decrease the level of agency conflict in the firms, and as summarized in the interviews results, Table 7.1 shows the main agency costs factors which can be used as indicators to measure the level of agency conflict in each firm in the study sample. The firm is more likely to hedge when the survey respondents show a high level of agreement with agency costs indicators, which means that the agency conflict is low in hedging firms. To examine the effect of the agency conflict level on the hedging decision, this study will test the following hypothesis:

H2: There is significant difference between hedging and non-hedging firms regarding the level of agency conflict.

Growth opportunity

Despite the central importance of the issue to financial risk research, there is no theoretical or empirical consensus on whether the firm's growth opportunities affects the hedging decision. Studies on this issue generally take one or two very different directions, as two seminal studies illustrate. On one hand, Nance, Smith, and Smithson (1993) found that firms which hedge had more growth options in their investment opportunity set. On the other hand, Mian (1996) found no evidence that hedgers had more growth options in their investment opportunity set. These two studies make different assumptions about the nature of the problem

There are some empirical studies which consider the growth opportunities as a determinant for hedging firms. For example, Geczy *et al.,* (1997) use three variables as proxies for the growth opportunities available to a firm: the ratio of a firm's research and development expenditures to its sales; the ratio of a firm's capital expenditures for property, plant, and equipment to firm's size; and the book value of a firm's common equity scaled by its market value. Allayannis and Ofek (2001) used the

R&D expenditures, defined as the ratio of R&D to total sales as proxy for growth options in the firm's investment opportunity. Also Nance et al. (1993) and Wysocki (1996) used the firm's R&D expenditures as proxy to measure the growth options in the firm's investment opportunity set.

Other common measures used as proxies for growth opportunities is the market to the book value of total assets (market-to-book ratio). The market-to-book ratio has previously been used by Smith and Watts (1992), Mian (1996), Nance, *et al.,* (1993); and Gay and Nam (1998). Mian (1996) stated that the basic assumption behind the use of this to the market and book value of total assets ratio is an empirical proxy for the growth opportunity set is that firms with more growth options will have market values far in excess of their book values. Hence, the incentive contracting hypothesis predicts that hedgers will have higher market to book ratio as compared to non hedgers. The ratio of book-to-market value of the firm's assets proxy can not be used in this study, as half of the sample is private firms and it is difficult to find the market value of their assets. Therefore, to gain a better insight into the relation between a firm's hedging decision and its growth opportunity, this study analyzes the results by using several alternative proxies. To test the underinvertment hypothesis, two measures will be used: the R&D expenditures and operation expenses to sales ratio. The rational for using the R&D expenditures as a growth proxy is justified on the basis that these expenses are predictors of the development of future projects (Gay and Nam, 1998). Using operation expenditures to sales provides an indication ratio of the firms' financial capacity to take future investment.

To examine whether hedging can be used to minimize the underinvestment problem, this study uses two different ways of measuring the investment opportunities available to firm, first, using the accounting ratios as described above, and second, using the indicators. The interviewees identified some factors that may influence or decrease the level of underinvestment problems in the firms, and are summarized in the interview results. Table 7.1 identifies the main underinvestment problem factors which can be used as indicators to measure the level of the problem in each firm in the study sample. The firm is more likely to hedge when the survey respondent shows a high level of disagreement with investment opportunity indicators, which means that the underinvestment problem is high. In order to find the influence of the level of the underinvestment problem on the hedging decision, this study examines the following

hypothesis:

> H3: There is significant difference between hedging firms and non hedging firms regarding the level of underinvestment problem.

The corporate financial costs

Geczy *et al.,* (1997) used two variables as proxies for a firm's short term liquidity: the quick ratio, which is cash and short-term investments divided by current liabilities.; and the dividend payment ratio. The quick ratio can be used to measure the firm's ability to finance short-term investment with readily available cash. The greater a firm's quick ratio, the lower its need to hedge to reduce the expected financial distress and agency costs of straight debt. Froot *et al.,* (1993) also predict a negative association between liquidity and hedging, resulting from treating the liquidity available for the firms not as a substitute for long-term debt, but as a measure of the availability of internal funds. If the external source of funds is costly, the firms may hedge in order to avoid a shortage in internally generated funds.

Many proxies for corporate finance costs hypothesis have been used by previous research, such as the leverage ratio. For example, Whited (1992) argues that highly leverage firms face high premiums for external funds. Similarly, Kaplan and Zingales (1997) report that the likelihood of a firm being financially constrained increases with its leverage. Howton and Perfect (1998) use the ratio of R&D to sales and the ratio of cash flows to total assets as proxies for external financing costs. The corporate finance costs can be reduced depending on the ability of the firm to generate enough cash flows or having assets which can be quickly used to generate cash flow (Froot *et al.,* 1993). This study will use two proxies, one of them was used by Howton and Perfect which is the ratio of cash flows to total assets as proxy for external financing costs, and the other is the ratio of the tangible assets to total assets. Froot, *et al.,* (1993) argue that the level of cash available for investments is inversely related to the need for external financing, and thus derivatives use for hedging purposes. The cash flow defines as the operating income minus interest expense minus cash dividends minus net 'zakah'.

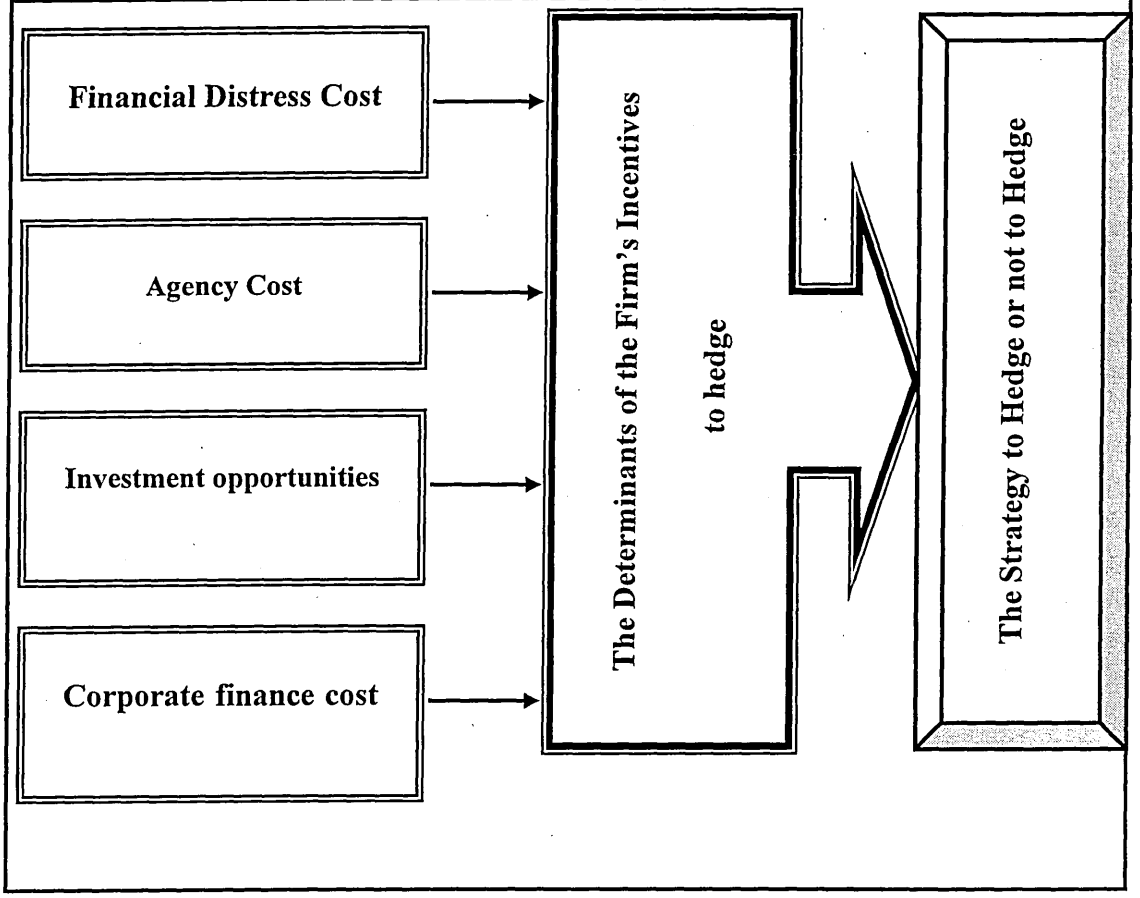
The findings of the exploratory study indicate that we can use some indicators in addition to the accounting ratios to measure the corporate finance cost in each firm in the sample. The interviews provided the study with some measurement indicators for corporate finance cost, see Table 7.1. According to these indicators, the firm will be

more likely to hedge if it shows a high level of disagreement with these indicators which lead to an increase in the corporate finance cost in the firm. In order to examine the effect of the corporate finance cost on the firm's strategy to hedge or not to hedge, this study will test the following hypothesis:

H4: There is a significant difference in the financial source costs between hedging and non-hedging firms.

The relationship between a hedging decision and the determinants of the firm's incentives to hedge are shown in Figure 7.2. The Figure shows that the hedging decision is affected by the level of the firm's financial distress costs, agency costs, investment opportunities, and corporate finance costs.

Figure 7.2: The relationship between the hedging decision and the determinants of the firm's incentives to hedge



7.3.2.2 The determinants of managerial risk aversion

It can be suggested that a firm value can be improved by hedging when risk-aversion agents who contract with the firm cannot fully diversify their claims (Smith and Stulz, 1985). It has been argued that the strategies of an organization reflects the dispositions

of the top managers in terms of their subjective attributes, such as their age, control, compensation, and ownership (Das, 1986). Finance theory suggests that corporate hedging is attributable to managerial risk aversion. Haushalter (2000, p. 87) stated that 'according to this suggestion the main purpose of corporate hedging is to reduce the likelihood that managers will suffer adverse consequences, including loss of their jobs, from fluctuations in the price of a major input and output'. The purpose of this section is to identify the relationship between hedging strategy and managerial risk aversion. This study uses six variables to represent the level of managerial risk aversion in each firm in the sample. These variables are firm ownership structure, firm control, managerial ownership, managerial compensation, manager age, and the Islamic view.

The firm ownership structure

The findings of the exploratory study showed that the hedging policy can be affected by the form of the firm's structure. In general, a number of empirical studies have examined whether or not the type of firm ownership structure makes any difference to the behaviour of firms. The question in the exploratory study that focused on the firm's structure provides potentially a useful theoretical risk management determinant. Drawing on it, this subsection framed hypothesis concerning the effects of the type of the firm ownership structure on the hedging decision. The examination of the relationship between the hedging decision and the firm's ownership structure only has been given weak attention in previous research. In the literature, there was no support for this view that changes in firm ownership structure leads to changes in corporate strategy and policy. However, if the structure of shareholding is wildly dispersed across equity holder managers are relatively free to exercise their discretion and pursue their own preferences. While in family and individual firms, where ownership is concentrated, the larger equity holders are generally able to exert rather tight control on managers' decisions (Amihud and Lev, 1981).

According to the exploratory study finding and relating to Saudi firms, the firm ownership structure can be measured using three dimensions: individual, family, and shareholder firms. According to the ownership structure argument, we would expect family and individual firms to have a greater propensity to hedge than shareholder firms. In the Smith and Stulz (1985) model, the estimate of the managerial ownership is positively related to the hedging decision. This suggests that, of those Saudi firms in this study sample which adopted hedging activities, the family and individual firms

tend to hedge more than shareholder firms. The relationship between hedging policy decision and the firm structure can be identified following the test of this hypothesis:

> H5: There is significant difference on the firm structure between hedging and non-hedging firms.

Firm control

Fogelberg (1980, p. 55) defines "control" to be "The ability to direct the affairs of the company, or to directly influence the policy decisions that are made...the ultimate control of any company is determined by the distribution of voting shares and the ability of any shareholder, or group of shareholders, to directly influence decisions which the board of directors make". This study expects that monitoring will increase the need for hedging activities. Jensen and Meckling (1976) state that external monitoring activity can be used to control the agency conflicts. Control for agency problems in the decision-making process is important when decision makers who initiate and implement important decisions are not the major residual claimants and therefore do not bear a major share of the wealth effects of their decision. Without effective control procedures, such decision managers are more likely to take actions that deviate from the interests of shareholders.

Some evidences in the interviews revealed that there was a distinction between firms that are controlled by their owners and those controlled by managers regarding their foreign exchange exposure management policy. From the findings in the exploratory study, we can argue that firms which are controlled by their owners were more likely to engage in hedging activity. To distinguish between owner- controlled and manager-controlled firms, most of the previous researches define the owner-controlled firm as a firm that at least one of its owners has 5 percent stock ownership (Palmer, 1973; Gomez- Mejia, Tosi, and Hinkin, 1987; and Han and Suk, 1998). They argued that as firms grew, and stocks become more widely distributed, the fraction needed to exercise control would shrink. However, a Saudi stock exchange market was recently established and firms stocks in a market were narrowly distributed. Using a 5 percent ownership convention, may not help this study to demonstrate significant differences between owner- controlled and manager- controlled firms in Saudi Arabia. This study designated firms as owner- controlled if at least 10 percent of its stocks are in the hands of one individual or organization of the owner. Manager- controlled firms are those whose stocks are so disparately owned that no single shareholder is able to effectively

guide the decision of managers (no single shareholder has more than 10% of the firm's stocks). There is some empirical evidence suggesting that the behaviour of managers in manager- controlled firms is systematically different from those of managers in owner-controlled firms (Boudreaux, 1973; and Amihud and Lev, 1981). For example, Tosi, Katz and Gomez-Mejia (1997) have suggested that managers make different decisions when owners have an active involvement in the firm (owner- controlled) versus when paid managers are relatively free to set the strategy of the firm (manager- controlled). Palmer (1973) has shown that owner- controlled firms differ from manager-controlled firms in term of risk aversion. Katz and Niehoff (1998, p. 759) stated that "Owner-controlled firms benefit from the influence of equity holders who positively impacts on the setting of policies and the day- to- day operations of the firm". Demsetz and Lehn (1985) suggested that owners believe they can influence the success of their firms and that all outcomes are neither completely random nor completely foreseeable. The potential for managerial self-interest is greatest when owners do not adequately monitor managers.

The firm's control argument classifies firms into owner- controlled firms if one or more of its owners have 10% or more of the firms' equity. Firms can be classified as manager- controlled firms if no owner has 10% or more of the firms' equity. This criterion provides two groups of firms which are sufficiently different in determining if the type of control has any effect upon the hedging decision. Using these two groups the following hypothesis will be tested:

> H6: There is significant difference between hedging and non-hedging firms regarding their firms' control.

Manager ownership

The managers' approach to foreign exchange exposure management regarding the decision to hedge or not to hedge will depend on the risk they personally bear (Smith and Stulz, 1985). To know what risks managers face, we need to know if they are one of the firm's owners or only employed by the firm's owners, and their level of equity ownership. Here, we compare the manager ownership of hedging and non-hedging firms and examine how a manager ownership affects the firm's foreign exchange exposure management strategies. According to the exploratory study most of the interviewees whose firms hedge their foreign exchange exposure were more likely to be managed by one of their owners. In addition, Smith and Stulz (1985) stated

that if the manager is one of the firm's owners, one would expect the firm to hedge more, as the manager's wealth is more of a linear function to the value of the firm. In looking at managerial ownership in the ownership structure at hedging firms we expect managers to be more concerned with the volatility of exchange rates, which affects the firms cash flow and earnings. Theory would predict that firms whose managers have stock as a fraction of their private wealth would be more inclined to manage foreign exchange risk, but those whose managers are only employed by firms' owners and do not hold any equity in these firms might be less inclined to manage foreign exchange risk (Tufano, 1996). It seems that managers use hedging activity primarily for reducing the risk associated with their equity holding and human capital investments in the firm.

The hypothesis regarding managerial ownership assumes that firms can be divided into two groups according to the managerial ownership in the firms, in theses groups the distinguish between the managers of the firms holding 10% or more of the firm's stock and between the managers have less that 10% of the firm's stock. To examine the relationship between hedging strategy and the level of managerial ownership in the firm, the following hypothesis will be tested:

> H7: There is significant difference between hedging and non-hedging firms regarding their manager stockholding.

Managerial compensation system

According to the literature review, and the results of the exploratory study, the managerial compensation system is one of the corporate hedging determinants. Managers cannot use their expertise on maximizing shareholder wealth unless they have some discretion in the choice of their actions, and faced with proper incentives (Smith and Stulz, 1985). They argued that making managerial wealth a concave function of a firm's value bonds the firm to a hedging policy. This study examines a sample in which some firms adopted "target ownership plans", under which managers are required to own some amount of stock. There is no theoretical or empirical consensus on whether the adoption of managerial equity ownership plans affects firms' hedging decision. Previous studies were only concentrated on the relationship between the percentage of managerial wealth and the use of derivatives, currency derivatives, or hedging decision (Smith and Stulz, 1985; Breeden and Viswanathan, 1996; Geczy, Minton, and Schrand, 1997; Fok, Carrol, and Chiou, 1997). To encourage managers working in shareholders' interest, boards of directors must link managers' interests with the same wealth

creation goals of owners through a share ownership programs (Katz and Niehoff, 1998). By insuring that managers have the incentives to 'fit' functional strategies consistent with the long-term direction set by the board, the firm will have a greater chance of achieving the suitable hedging decision.

In order to examine the effect of the firm's managerial compensation programs on hedging decision, this study distinguishes between the effect of the short-term compensation program and the long-term compensation program. To measure the short-term managerial compensation, this study uses the performance related monetary compensation level and the managers' income salary. In the case of measuring the long-term managerial compensation, this study uses the equity compensation program. When they discussed the effect of management compensation on the hedging decision, the previous studies were only concentrated on the effect of long-term compensation such as stock options in Haushalter's work, 2000. Previous studies of corporate hedging did not separate the effects of manager stockholding reward (long-term compensation) and monetary compensation (short-term compensation) on the hedging decision. It seems that the primary reason for this omission was the lack of an effective method of collecting data for measuring the value of shot-term compensation.

As a more direct test of whether managerial compensation contracts affect the hedging decision, we asked the respondents to indicate the level of their firms' performance related monetary, and equity compensation system. Clearly, the question of whether or not the firm's managers are rewarded for hedging their firm's financial risk remains unresolved. This study will test the following hypotheses:

H8: There is significant difference in the managerial performance related monetary compensation system between hedging and non-hedging firms.

H9: There is significant difference in the managerial equity compensation system between hedging and non-hedging firms.

H10: There is significant difference in the manager annual income between hedging and non-hedging firms.

Manager's age

One of the observations from the interviews was that the manager's age may affect his/her attitude toward foreign exchange exposure. In that young interviewee managers

were more likely to hedge than older interviewee managers. On the literature, Tufano (1996) argued that manager's age may play a role in directing the manager's risk attitude. In order to examine further the exploratory study observation, the following hypothesis will be tested:

> H11: There is significant difference in the manager's age of hedging and non-hedging firms.

The Islamic view

The exploratory study has shown that some firms did not hedge because the financial instruments (derivatives contracts) available in the markets for hedging were prohibited by Islamic 'Shariah'. Kamali (2000) reported the juristic debate over the validity or otherwise of future contracts (future, forward, and option contracts) revolving around five points. Firstly, that the counter values in these sales are both non-existent at the time of contract: no goods are delivered at the time and no price is paid. The contract that is concluded is, therefore, said to be no more than a paper transaction and not a genuine sale. Consequently, futures sales consist merely of an exchange of promises made for the sole purpose of speculative profit-making. To validate a sale from the perspective of the Shariah, it is necessary that at least one, if not both, of the counter values should be present at the time of the contract. Either the price or delivery of the subject matter may be postponed to a future date, but not both. Secondly, the proponents of the prohibitive argument also state that future trading is invalid in the eyes of the Shariah as it consists of short-selling in which the seller neither owns nor possesses the commodity he sells. The reason given for the prohibition is that the essence and purpose of a sale is to transfer ownership of the object of sale to the buyer; if the seller does not own the underlying commodity in the first place, he cannot transfer ownership. Thirdly, that future sales fall short of meeting the requirements of actual possession, that is, the taking into possession of the subject-matter prior to resale. A fourth issue has been raised over the deferment of both of the counter values to a future date, which effectively turns future sales into what is known in jurisprudence as the sale of one debt for another, which is said to be forbidden. And lastly, that futures trading partakes of speculation that verges on gambling and consists of uncertainty and risk-taking (gharar). Albaz (1999), Ershed (2001), Al-Shbany (2003) stated that the future contracts are prohibited in Islamic Shariah. Saudi Arabia as a country which is ruled by Islamic 'Shaiah', the firms in the country may be affected by what The Islamic view says about

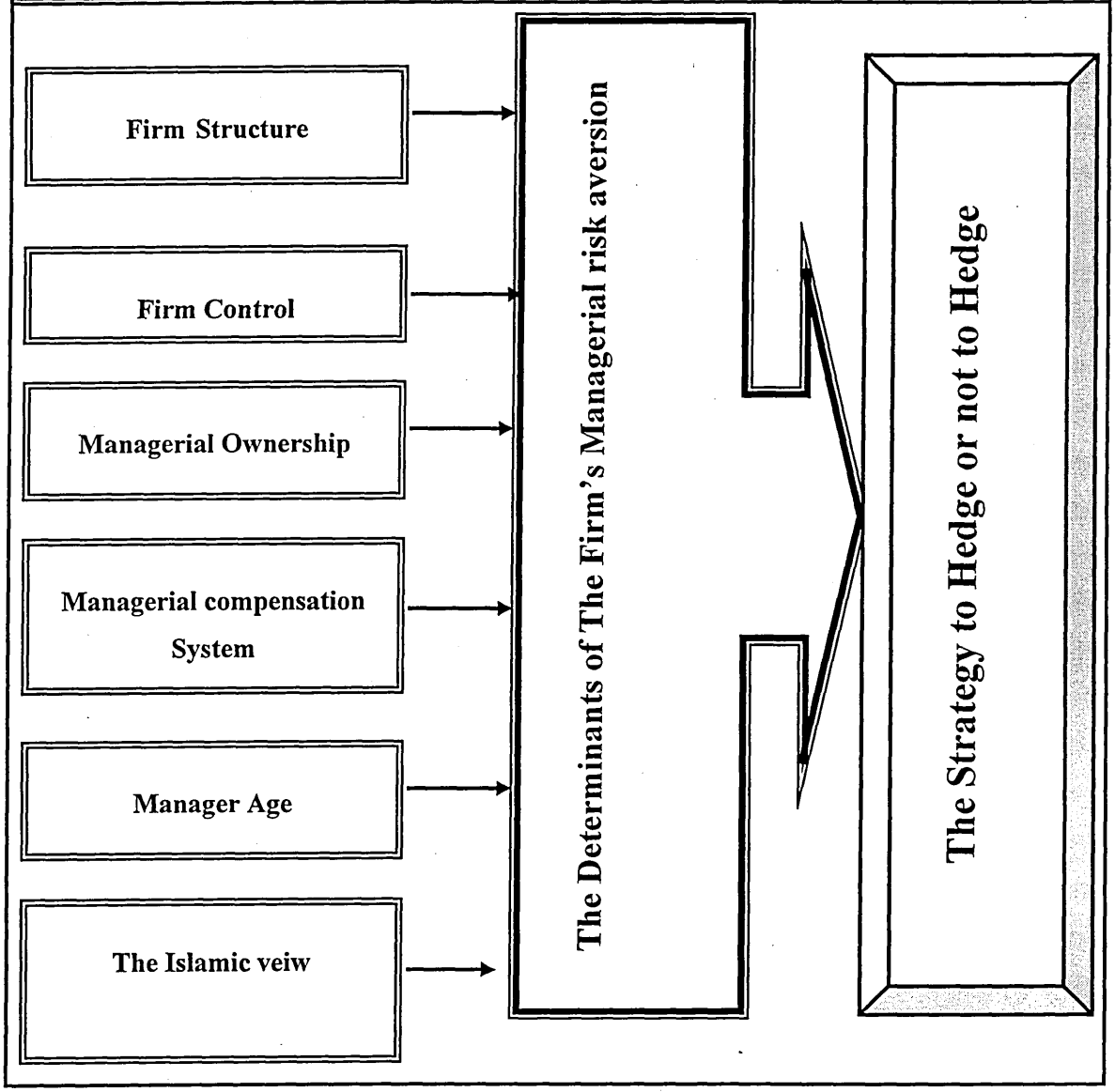
the future contracts. We would suggest that religious managers would be more likely not to use any of the future contracts for hedging purposes.

In order to examine whether the hedging and non-hedging firms are different regarding the effect of the Islamic view in their currency exposure policy, the following hypothesis will be tested:

> H12: There is significant difference between hedging and non-hedging firms regarding the effect of the Islamic view on their decision (to hedge or not to hedge).

The relationship between the hedging decision and the determinants of the firm's managerial risk aversion can be drawn as shown in figure 7.3.

Figure 7.3 The relationship between hedging decision and the determinants of the firm's managerial risk aversion



7.3.2.3 The determinants of the firm's needs to hedge

The interviewees in the exploratory study showed the importance of the firm's need to hedge. The findings indicated that firms differed regarding the degree of hedging need. Some of the non-hedging firms in the interviews stated that their need for hedging activity was reduced for such reasons as being in less competitive market or less sensitive to changes in exchange rates. The use of contingency theory as framework for corporate hedging decision in the exploratory study showed to what extent a firm's need to hedge may affect the firm's attitude toward currency exposure. Different industries and markets provide firms with different levels of need to hedge. A firm's need to hedge is affected by several factors which influence the hedging decision. The following sections present these factors.

Industry

Firms are different in their exchange exposure effects, and the cash flow impact of exchange rate changes depends on the nature of the business in which firms are engaged. He and Ng (1998) examine foreign exchange exposure in Japanese firms and found that different industries had different levels of foreign exchange exposure and different attitudes towards the foreign exchange exposure management. As seen from the exploratory study, there are some indications regarding the effect of the nature of the business on hedging policy. Although the interviews covered six different industries, the hedging firms were related to four of these industries. The nature of the business that a firm undertakes may become one of the hedging decision determinants, and this can be confirmed by testing the following hypothesis:

> H13: There is significant difference between hedging and non-hedging firms regarding their industry.

The magnitude of foreign exchange exposure

It is one of the main conditions in the choice of the study population that firms must have foreign exchange exposure, whatever the amount of the exposure, small or large. While the effect of other factors in the currency hedging decision can not be assumed without the existence of the currency exposure the question arises is that to what extent the level of exposure might affect the foreign exchange management decision.

While it was not clear, from the exploratory study results that the foreign exchange exposure magnitude alone had a significant effect on the hedging decision, the theoretical and empirical literature suggests that the exposure magnitude played an important role in encouraging the hedging decision. For this reason, the foreign exchange exposure magnitude variable will be classified as one of the variables which may affect the firm's need to hedge and will be examined further using survey data.

Measuring foreign exchange exposure is difficult. This study will consider the export and import activities as an indication for foreign exchange exposure. The final sample in this study contains firms that have at least one source of foreign exchange exposure. Geczy *et al.*, (1997) argued that a firm's ultimate decision to use derivatives also depends *on the level of its exposure to risk*, e.g. foreign exchange rate exposure or interest rate exposure. Allayannis and Ofek (2001) found that exposure factors (foreign sales and foreign trade) are the sole determinants of the degree of hedging. They found a strong positive relation between exchange rate exposure and the ratio of foreign sales to total sales. To control exposure factors, this study used the ratio of foreign sales to total sales and the ratio of foreign purchases to total purchases. A hedging decision should depend on the total foreign trade (exports plus imports) if they are in different currencies. For example, foreign exchange exposure resulting from trading in Europe markets is more likely to hedge than the exposure from American markets. This study suggests that firms with most of their exports and imports priced in U. S. dollars, are unlikely to hedge. The fixed exchange rate between U. S. dollar and Saudi riyal helps these firms to minimize the effect of the currency exposure. The higher a firm's ratio of foreign denominated sales the higher its ratio of foreign denominated purchases the greater the benefits from hedging.

To measure the degree of exposure, the following measures are used: (a) the percentage of the firm's sales generated overseas to the total sales; (b) the percentage of the firm's foreign purchases to the total purchases; (c) the percentage of the firm's foreign debt to the total debt, (d) the magnitude of the firm's foreign denominated exports in currencies other than SR or U. S dollar, (e) the magnitude of the firm's foreign denominated imports in currencies other than SR or U. S dollar, (f) the volatility of the foreign exchange rates a company is exposed to. To examine the effect of the foreign exchange exposure magnitude on the hedging decision, this study will test the following hypothesis:

H14: There is significant difference between hedging and non-hedging firms regarding the magnitude of their foreign exchange exposure.

Market

The exploratory study showed that hedging and non-hedging firms operate in different markets. Most of the hedging firms in the exploratory study operated in competitive markets. According to the exploratory study markets can be classified into three categories: competitive markets, price regulated markets, oligopolistic markets. In this context, the findings on the exploratory study showed that firms in oligopolistic markets were less likely to hedge foreign exchange risk, whereas firms in competitive markets were more likely to hedge. It shows that, in a competitive market the price of goods can be altered in response to the competitors' pricing strategies, and the advantage or disadvantage change in exchange rates. Price regulated markets are most frequently regulated by government which sets controls on firms' sales and price levels. In some Saudi markets the government controls prices in order to protect resident customers, as a result there is no real competition in the market place. In order to examine the effect of the market type on the foreign exchange exposure management policy, this study will test the following hypothesis:

H15: There is significant difference between hedging and non-hedging firms regarding the type of the market that these firms are located in.

Competition

The findings of the exploratory study imply that the level of competition is one of the corporate hedging determinants. The high level of competition might lead a firm with foreign exchange exposure to hedge this exposure in order to have a competitive advantage to minimize the effect of foreign exchange rate movements on the firm's operation. It could be possible that an unfavourable currency movement that negatively affect one firm may not to be unfavourable for other competitors. Economists see the effects of foreign exchange rates in a competitive position to vary from one firm to another even in the same markets (George and Schroth, 1991). The studies mentioned in chapter 4 did not consider the competitive situation as one of the determinants of the corporate hedging decision. This study will try to provide a formal theory of corporate hedging decision in an environment where the level of competition provides some effect to corporate decisions. Most of the previous studies concentrated on the relationship between the firm's competitive situation and the magnitude of a firm's currency

exposure (Flood and Lessard, 1986; Shapiro, 1992; Bradley, 1998; Pringle and Connolly, 1993; and Bradley and Moles, 2001). Most of the recent research examined the effect of indirect factors on the degree of currency exposure, but no one of these studies concentrated on the effects of these indirect factors on the hedging decision. The reaction of firms in a competitive market against negative exchange rate risk is usually controlled by competitors' reaction, since the customers have the chance to choose from the different goods available. In a competitive market there is little chance for firms to pass exchange rate risk to customers. The findings in the exploratory study show that the extent to which the firm's products differ from competitors' products, the sensitivity of the firm's products to changes in prices, the number of the firm's competitors in the markets, and the percentage of the competitors costs denominate in the same foreign currency, can be used as possible proxies to measure the competitive position in each firm. A further reason for considering these four measures of competition is that some of the previous findings showed that foreign exchange volatility affects the firm's costs and profits, and that a firm may transfer the bad effect to the customer or supplier. Panagariya, Shah, and Mishra (2001) stated that at the intuitive level, trade economists generally believe that most developing countries do not have market power in the world market, meaning that they face infinitely elastic demand for their goods. However, being in a competitive product market or elastic demand market may affect the firm's need to hedge.

Breadly (1998) examined the effect of a competitive position on the level of foreign exchange exposure using the same measurement used in this study. Sundaram and Black (1991) suggested that the firms' currency exposure position is affected by the extent to which a firm offers products that are different from their competitors. The firm's output or input prices are sensitive to changes in demand and expectations about future demand. Changes in commodity and material prices can also reflect movements in exchange rates. The degree of completion in markets can affect how much of the cost increase is passed on to consumers. For example, if the firm's products are different from its competitors or have few substitutes, the demand for these products is likely to be price inelastic. In that case, any unfavourable movements in the foreign exchange rate will be transferred to the firm's customers. There is a positive relationship between the magnitude of currency exposure and the extent to which the demand for the firm's products is sensitive to changes in price, and a positive relationship with the probability

of a hedging decision.

In order to examine the relationship between the competitive position and hedging decision, this study will test the following hypothesis:

H16: There is significant difference between hedging firms and non-hedging regarding the competitive situation.

The effect of the foreign exchange rate movements

The exploratory study points out that there are differences between hedging and non-hedging firms regarding the effect of the foreign exchange exposure in firms' activities. The interviewees in hedging firms argued that changes in foreign exchange rates affected their costs, sale volume, cash flow, and profit margin. We suggest that a firm's operation in a competitive market would be more sensitive to the changes in foreign exchange rates. The exchange rate movements affect both the prices and quantities of the inputs and outputs of exporting and importing companies, which leads to competitive advantages or disadvantages in the global marketplace. We know that an unexpected rise in the exchange rate that leads to a price rise will lead customers to buy less but this effect will be different from one firm to another. For example, if the firm's foreign cost rises as a result of foreign exchange rate movement, the firm's ability to raise the price of its product will depend on the product demand elasticity to the change in price. Low sensitivity of the firm's product demand to the change in price allows the manager to transfer the effect of the change in the firm's costs to the customer. It seems that a firm with a highly sensitive demand to the change in price will try to reduce the effect of the change in the cost by hedging its foreign cost. Changes in commodity and material prices can also reflect movements in exchange rates. Prices are determined by the interaction of supply and demand. For example, if the sterling/riyal exchange rate rises, the cost of raw materials prices in sterling will rise. Importers might accept lower profit margins rather than raise prices. They are more likely to do this if demand is weak or because of competition. The degree of competition in markets can affect how much of a cost increase is passed on to consumers. The argument here is that, unfavourable movements in foreign exchange rates affect negatively the firm's operations. The hypothesis is that the greater the firm's exposure to exchange rate changes, the more sensitive its sales volume, purchase volume, costs, cash flow, and profit margin to changes in exchange rates and the greater the likelihood that the firm will hedge. In

order to examine to what extent the effect of exchange rate movements on the firm's operations may influence the hedging decision, the following hypothesis will be tested:

> H17: There is significant difference between hedging and non-hedging firms regarding the influence of foreign exchange rate movements on the firm's operations.

Currency and market policy

Blin, Greenbaum, and Jacobs (1980) saw exchange control as affecting U.K. companies' decision to hedge the currency exposure. Edelshain (1995) viewed American firms as having far less experience in dealing with currency problems than U.K. firms as the exchange policy had encouraged U.K. firms to manage their exchange risk[2]. The question here is whether exchange control policy adopted by the government encouraged the companies to hedge the currency exposure. Also the market policy may affect the companies' attitude toward the currency exposure, and whether these policy have been designed to compensate for the impact of exchange rate changes. Saudi corporations in the oil industry have prices in foreign markets calculated in U. S. dollars, and this may protect these corporations from currency exposure. The exploratory study showed that currency control policy affected the hedging decision more than the market policy. This led the study to further examine the influence of the currency control and market policy in the hedging decision. In order to explore the effect of the currency control and market policy in the hedging decision, the following hypothesis will be tested:

> H18: There are significant differences between hedging and non-hedging firms regarding the effect of the currency control and market policy in their decision (to hedge or not to hedge)

[2] Edelshain (1995) stated that 'in the U.K., exchange controls and declining sterling were imperatives during most of the 1970s. The earlier demise of sterling's international reserve role prompted U.K. firms firstly to deal in an expanding array of currencies; secondly to accept the consequent transaction exposure; thirdly to adopt a partially covered foreign-currency financial structure; and fourthly until exchange control liberalization in October 1979, to effect capital flows and foreign investment under restrictive exchange policy'. P76.

Accounting method

The exploratory study showed that the accounting method had no serious effect in the interviewees hedging decision. However, the alternative view is that the accounting method may be used by the manager to present the firm's accounting statements in the way that may minimize the effect of exchange rate changes on the financial ratios of the company. Dehnani (1998) found that most firms interviewed commented that accounting methods alter significantly important balance sheet ratios, such as the gearing ratio. Angelos (1993) criticized this argument by claiming that the change in this ratio is again a paper one, i.e. not resulting from a real change in the financial structure of the firm. In order to examine the effect of the accounting method adopted by firms in their currency exposure management strategy, the following hypothesis will be tested:

H19: There is a significant difference between hedging and non-hedging firms regarding the accounting method adopted.

Diversification

While the predicted theory suggests that firms with more international diversification are less likely to hedge, the results in the exploratory study suggested that international diversification did not affect the firm's hedging decision. This inconsistent result led the study to further focus on the effect of international diversification in the hedging decision. Fooladi and Rumsey (2002, p. 44) stated that "it has been the decrease in the correlation across currencies that have maintained the benefits of international diversification. In particular, our results indicate that if the exchange rate volatility been hedged away, the benefits of international diversification would have decreased". This theoretical prediction is built on a very common belief that financial hedging and corporate diversification are substitutes in risk management, implying that firms that trade internationally using diversified currencies will have less need to manage their foreign exchange exposure. The opportunity to hedge in financial markets changes the benefit from diversification, and the ability of firms to use hedging instruments to decrease the firm's intended diversification. As a result, the more the firm diversifies internationally the less likely it will engage in foreign exchange exposure management activity. This study uses the number of currencies that a rm uses in international trading as a proxy for diversification. This relationship can be tested by the following

hypothesis:

H20: There is significant difference in the level of diversification internationally between hedging and non-hedging firms.

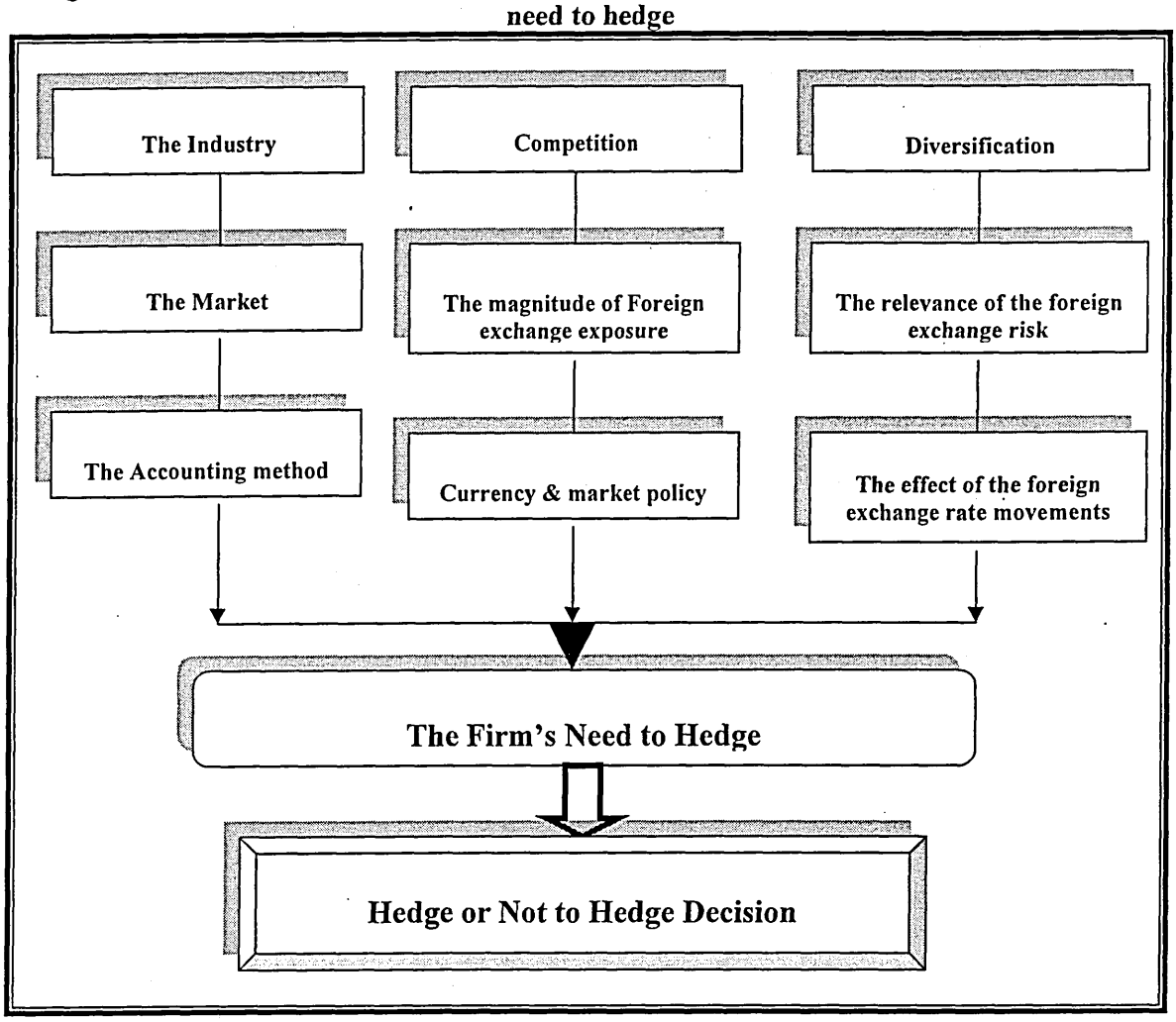
The relevance of the foreign exchange risk

The interviewees in the exploratory study revealed that to hedge or not to hedge the currency risk is related to its important effect in the company. Some of the interviewees pointed out that their firms were facing other important risks, which their firms considered had to be managed first. As a result of the uncertainty in internal and external environment, the firm may face too many different risks, such as interest risk, industry risk, and political risk. These different risks may affect the firms differently and the motivations for hedging these risks might be different. The level of importance and effect that these risks have in these firms might affect the overall sensitivity of these firms against foreign exchange exposure. The level of relevance that foreign exchange exposure may have in the firm might affect the firm's motivation to hedge. This relationship can be tested using this hypothesis:

H21: There is significant difference between hedging and non-hedging firms regarding the relevance of the foreign exchange risk to the firm.

The relationship between hedging decision and the determinants of the firm's need to hedge is shown in figure 7.4.

Figure 7.4: The relationship between hedging decision and the determinants of the firm's need to hedge



7.3.2.4 The determinants of the firm's ability to hedge

The exploratory study revealed that most of the interviewees thought that their firms suffered from their inability to hedge currency exposure effectively. The interviewees argued that firms should have the management and financial ability in order to engage in hedging activity. Most of the non-hedging firms in the interviews failed to hedge currency exposure due to the lack of qualified staff in this risk management activity. Hedging foreign exchange risk is a new idea in many Saudi firms, and for that reason the managers in these firms may have less experience in dealing with this problem and be concerned about adopting a new technique. The effect of the firm's ability to hedge in the hedging decision can be examined using eleven independent factors. The following headlines present the determinants of the firm's ability to hedge.

Manager's qualification

Knowledge is information stored in memory (Schank and Abelson, 1995). Grant (1996) argued that as individuals have limited information storage and processing capability, they specialize in particular kinds of knowledge. Bonner and Walker (1994) and Bonner (1990) suggested that knowledge and experience is a better predictor of managerial performance. As the jobs differ in the amount and type of knowledge that they require, this study expects that there are differences in the experience of the persons who are responsible for risk management in the firms. Also the opportunities for job-related learning differ by jobs. For example, we expect a treasurer or risk manager to have a level of technical knowledge primarily through instruction before beginning full-time work. Alternatively, this study expects that some of the risk management knowledge will be learnt on the-job, through self-study, and interaction with colleagues, all of which improve personal experience. It is expected that these three processes will provide knowledge differences among the persons responsible for foreign exchange exposure problems in the firms. Davis and Solomon (1989) assumed that manager related work experience was a proxy for the knowledge needed in a specific job. Solomon, Shields and Whittington (1999) suggested that employee experience can improve the accuracy of employee's knowledge of business operations.

The findings in the exploratory study showed that the risk manager's qualification plays a significant role in determining the currency hedging decision. Risk management can also benefit managers by enabling them to demonstrate their superior abilities in the way in which they deal with risks such as foreign exchange risk. Breeden and Viswanathan (1990) argued that hedging enables managers to 'lock in' their superior abilities. Managers may imprint their firms with their own values, many of which are manifested in the organization's decision-making processes (Keeney, 1992). Management skill is an important strategic concept, and can provide a company with lasting competitive advantage in the market. It seems that managers who work in the firms for a long time are more likely to engage in risk management activity, and managers with more experience should be more flexible and have the ability and skills to use new and difficult risk management strategy. However, Breeden *et al.,* (1990) argued that newly appointed financial managers are more attracted to use hedging instruments in order to build their reputation, and to put themselves in the interest of the shareholders. Tufano (1996) suggested that firms whose managers have fewer years in

their current jobs are more likely to engage in greater risk management activities. Hedging issues are probably greatest for start-up managers, where managers have less experience in current jobs and there is more uncertainty over the financial managers' ability. However, old and more experience financial managers are often less sensitive against risk (Tufano, 1996). Tufano found that risk management levels appear to be higher for firms whose senior financial managers have shorter job tenures. In addition to classifying a manager's qualification as a proxy to measure the firm's ability to hedge, managerial qualifications might serve as proxy for risk aversion, in that managers with strong qualifications would be more likely to hedge. It seems that managers with degrees in finance and international business are also more likely to understand hedging activity.

To understand the role of knowledge and the ability of a manager in the foreign exchange exposure management decision, this study follows these steps; (1) identifying the knowledge that is perceived as important by managers and treasurers, and (2) examining the relationship between knowledge and hedging decision. According to this and the findings in the exploratory study, this study uses six different proxies to measure the managers' knowledge, (a) the subject specialisation studied, (b) the level of qualification, (c) the working period in the firm, (d) the experience period in the current job, (e) the experience period in risk management, and (f) the availability of qualified staff in risk management practice. In order to examine the effect of qualification in hedging decision, the following hypothesis will be tested:

> H22: There are significant differences between hedging and non-hedging firms regarding managers' qualifications.

Manager performance

Managerial performance, like all aspects of human behaviour, is a function of both the personal attributes of the actor and the situation in which he or she exists. Managers work in a wide variety of situations and it is clear that job demands, job role, colleagues, organizational systems and other situational factors will exert an influence on the behaviour of any individual manager (Roberston, Gibbons, Baron, MacIver, and Nyfield, 1999). The exploratory study points out that most of the hedging firms have management performance evaluation and reward systems. We would suggest that the availability of the management performance program may affect the manager's attitude towards currency exposure. By engaging in hedging activities, however, managers

can reduce the sensitivity of their wealth to the management performance. The exploratory study suggests some indicators to measure management performance which are; the dividend payment to shareholders, the availability of criteria and standards to evaluate management performance, and the possibility that the firm's profit has been increasing during recent years. In order to find whether the hedging decision is affected by manager performance program in firms, the following hypothesis will be tested:

H23: There is significant difference between hedging and non-hedging firms in the management performance program.

Risk management training program

According to the exploratory study, the training program in corporate risk management gave the managers a positive experience since most of the risk mangers interviewed in hedging firms had risk management training program. The findings in the exploratory study predicted that managers who attend risk management training programs are more likely to engage in hedging activity. The risk management training program improves worker awareness towards currency exposure. The interviewees pointed out that banks' treasury departments visited their companies and presented programs on how to minimize currency exposure. The banks also provided the company with documents and leaflets regarding the currency risk management tools available in the banks. This led the research to focus further on the effect of the risk management training program in the hedging decision. In order to examine that, the following hypothesis will be tested:

H24: There is significant difference between hedging and non-hedging firms regarding the availability of risk management training program.

Banking relationship

Recent theoretical models argue that close relationships between banks and firms may improve access to financing for firms, create value, and ultimately, improve firm performance (Rajah, 1992). Close relationships may enable reputation building as a means for establishing enough advice and financial services which help the firm to manage foreign exchange risk. A good relationship may drive banks to reduce transaction costs. It is argued that for banks to protect their relationship with customers, they should be able to offer services at cost to the best customers and hold on to customers to prevent them from receiving competitive services elsewhere (Sharpe, 1990). Most studies focus on the impact of the exclusivity of a relationship between

banks and firms on credit availability and interest rates. For example, US surveys found that a close relationship between a firm and a single bank increases the quality and availability of financial services offered by the bank (Cole, 1998; and Scott, 2000). While, Angelini, Di Salvo and Ferri (1998) reported that financial services available for small Italian firms decrease with the weaknesses of the relationships with banks. These results have not been examined within the hedging activity offered by banks. In a country like Saudi Arabia the roles that banks play relating to firms are very important since banks have become the main providers of financial instruments. The absence of forward and money markets in Saudi Arabia strengthens the importance of the relationship between firms and banks. According to Saudi firms, banks should be the major source of external hedging methods and advisers on hedging activity. The exploratory study showed that firms with strong relationship with banks were more likely to hedge. To measure the relationship with banks, this study uses two variables to represent the link between companies that hedge and the strength of their relationship with banks. The number of banks from which the firm obtains external financial services, and the length of the firm's and bank relationship (the length of a firm's relationship with its primary bank). The hypothesis examined through this study is:

H25: There is significant difference between hedging and non-hedging firms regarding the relationship with banks.

Firm size

FT indicates that there is a relation between firm's size and economies of scale in the costs of hedging. The findings in the exploratory study did not provide us with a clear relationship between the hedging decision and firm size. This result, led the study to further focus on the relationship between hedging activity and firm size, since the predicted theory suggested a positive relationship between them. Mian (1996) find that firms with more assets are more likely to hedge. Jia and Lilian, (1998), found that FX rate exposure increases with a firm's size, and firms with a large size will carry a high level of hedging.

The most widely used measures of firm size are total assets, firm value and total sales. Many empirical surveys have investigated the relationship between these measures and financial risk management. Table 7.2, reports the major findings of these studies based on an extensive review of the existing literature. Most of these studies find the

relationship between firm size and corporate risk management is positive.

Table 7.2: Review of selected studies on firm size and corporate hedging activity.

Study & Date	Sample	Sample Location	Kind of Risk	Size measure	Result Signal
Tufano 1996	32	North American	commodity risk	Firm value	-
Francis and Stephan, 1990	1,061 respondents from 434 firms	US	Corporate risk	Firm value	+
				Total assets	+
				Total sales	+
Fok, Carrol and Chion, 1997	396	US	Corporate risk	Firm value	+
				Total assets	+
				Total sales	+
Nance, Smith and Smithson, 1993	169	US	Corporate risk	Firm value	+
Geczy, Minton and Schrand, 1997	372	US	Currency risk	Firm value	+
Allayannis and Ofek, 2001	378	US	Currency risk	Total assets	+
Hardwick and Adams, 1999	88	UK	Financial firma risk	Firm value	+
Mian, 1996	3,022	US	Interest risk	Firm value	+
Gay and Nam, 1998	486	US	Corporate risk	Firm value	-
Berkman and Bradbury, 1996	116	New Zealand	Corporate risk	Firm value	+
Howton and Perfect , 1998	461	US	corporate risk	Firm value	+

Nance, *et al.,* (1993), and Gay, *et al.,* (1998), employed the ratio of market value (the sum of the book value of the debt plus the market value if the equity) for the firm size. This study cannot use a similar variable as most of the firms in the sample were not registered on the Saudi Stock Market and hence it is difficult to define the firms' market value. Nance, *et al.,* (1993), Mian (1996), and Geczy, *et al.,* (1997) found that firms with more assets were more likely to hedge. Also Francis *et al.,* (1990) used the total sales to measure the firm's size. This study will use three proxies to measure the firm's size, the total sales, the total assets, and the capital. In order to examine the effect of the firm's size in the hedging decision, the following hypothesis will be tested:

H26: There is significant difference between hedging and non-hedging firms in the firm size.

Risk management policy

The interviewees in the hedging firms indicated that a risk management policy is existed in their firms, whereas, most of the interviewees in non-hedging firms pointed out that they did not have a risk management policy. Firms with a risk management policy are more likely to manage the foreign exchange exposure. Mathur (1985) indicated that the more a firm relies on revenues generated by foreign operations, the more emphasis it places on foreign exchange policy. He argued that large firms have a higher propensity for formalising the foreign exchange policy. Such policies help the organization to achieve its goals. Without formulating such policies, managers cannot operate effectively towards achieving the company goals (Mathur, 1985). The availability of a general risk management policy, and policy for derivatives use, may affect the currency hedging decision. The study will test this suggestion using the following hypothesis:

> H27: There is significant difference between hedging and non-hedging firms regarding the availability of risk management policy.

The local market for risk management financial contracts

The interviewees in non-hedging firms complained about the against the absence of a local market for the future, forward, and options contracts in Saudi Arabia. They argued that the banks were the only places available to buy or sell the financial contracts. Also they argued that the financial contracts available for hedging purposes were very risky and costly. However, this factor alone did not affect the hedging firms' decision to hedge their currency exposure. The effect of the availability of local financial markets for risk management financial contracts in hedging currency exposure needs to be further analysed. The following hypothesis will be tested:

> H28: There is significant difference between hedging and non-hedging firms regarding the effect of the absence of the local market for risk management financial contracts in their decision (to hedge or not to hedge).

The cost of implementing hedging activity

The exploratory study showed that the cost of the hedging activity plays significant role in determining the hedging decision. Most of the interviewees in the non-hedging firms argued that the hedging methods available for their firms were very costly. Costs also can be recognized as the main determinant of the firm's decision to hedge currency

exposure. Geczy, *et al,*. (1997) extended the testable implication of existent theories on derivatives use by considering how the cost of using derivatives affects the decision to use them. They used indirect measurement to measure the cost of using derivatives by suggesting that firms with economies of scale in implementing and maintaining a risk management program are more likely to use currency derivatives. They argued that large firms may face lower hedging costs than smaller firms, since they may find it easier to hedge using future and option markets, due to institutional features of economies scale that favour large firms. They predicted a positive relationship between hedging decision and firm size since hedging costs are proportionately lower for large firms. Shanker (2000) used the same measure to examine the effect of hedging costs on the hedging decision. Geczy, *et al.,* also used foreign denominated debt and pre-tax foreign income to measure the firm's ability to bear the cost of the hedging activity. Based on the findings the exploratory study, this study considers three indicators to measure the effect of the hedging cost on the hedging decision which are; the cost associated with implementing foreign exchange exposure management, the firm's view regarding whether the benefits of hedging currency exposure exceed its cost, and the cost of using derivatives contracts in hedging. Before a firm decides to hedge, it must consider the general costs associated with implementing the hedging policy and the specific costs associated with using financial instrument for hedging. This study suggests that risk management strategies will not be implemented unless the expected benefits outweigh the costs. In order to examine the effect of the hedging costs in the hedging decision, the following hypothesis will be tested:

> H29: There is significant difference between hedging and non-hedging firms regarding the effect of the hedging costs in their decision (to hedge or not to hedge).

Forecasting exchange rates

While all the hedging firms in the exploratory study attempted to forecast the exchange rate they were exposed to, only four non-hedging firms from nine were forecasting their exchange rates. Because exchange rates are continually changing any unexpected change may affect the firm's currency exposure. A firm should generate information about the likely future exchange rate movements in order to evaluate its currency exposure. Without the ability to forecast the future exchange rate, the hedging decision becomes more difficult for the manager. In order to examine the effect of the

forecasting ability in the hedging decision, the following hypothesis will be tested:

> H30: There is significant difference between hedging and non-hedging firms in the ability to forecast future exchange rates.

Operating department's role

The exploratory study showed that most of the interviewees in the non-hedging firms experienced problems in planning the risk management policy because of limited participation from operating departments. Most of the interviewees in non-hedging firms argued that they received little information regarding the firm's exports and imports which affected their ability to evaluate the currency exposure. Firms with high level of coordination between different departments and good information systems will be more likely to hedge. Departments such as marketing, sale and purchase of products should participate in preparing the firm's risk management strategy. To evaluate the effect of the other operating departments in the currency hedging policy, the following hypothesis will be tested:

> H31: There is significant difference between hedging and non-hedging firms in the level of participation of the operating department in the hedging policy making.

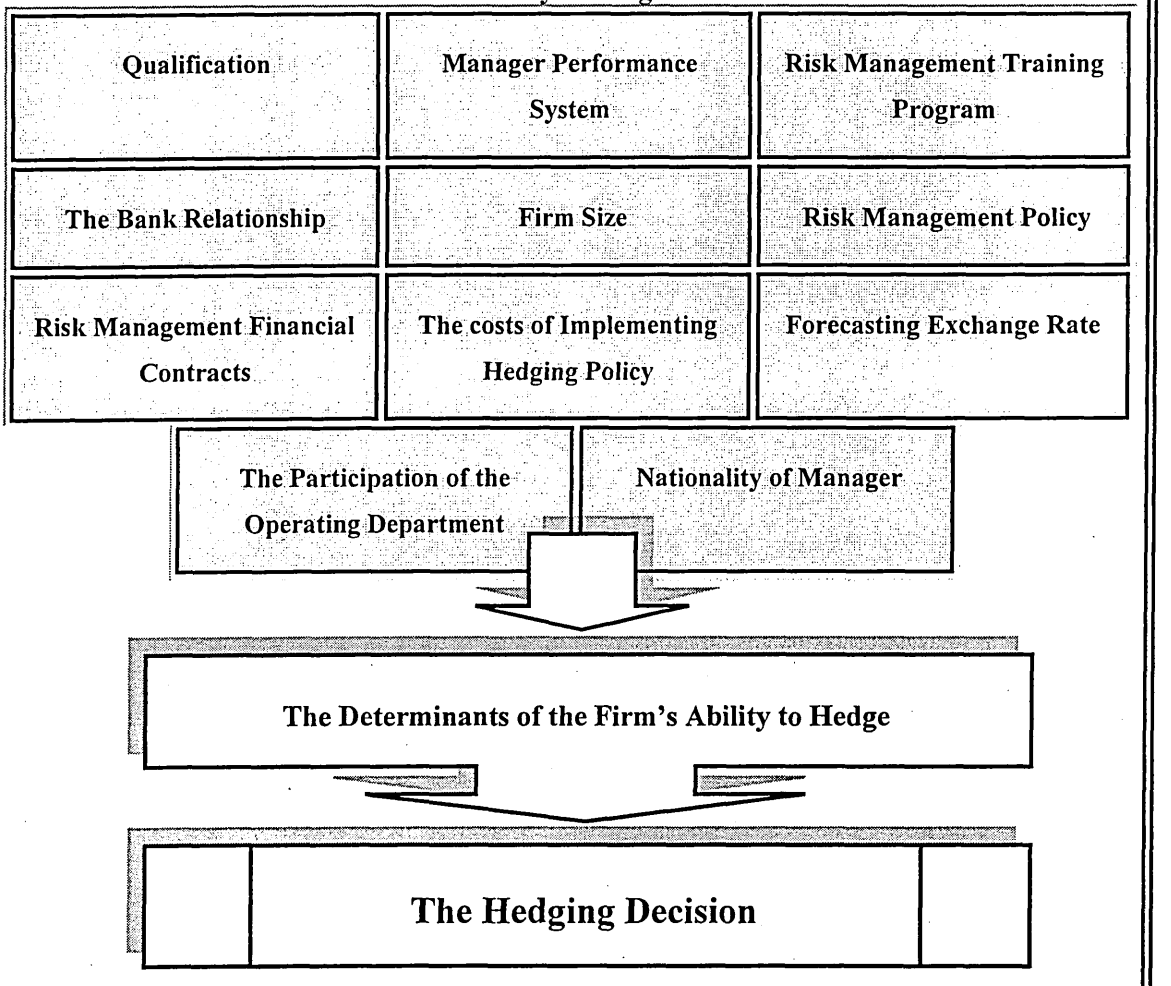
The Nationality

One of the interesting observations during the interviews was the finding that most of the interviewees who hedged their companies' currency exposure were from Western or East Asian countries. It seems that risk managers who are from Western or East Asian countries have more experience in risk management than managers from Arabic counties. In order to examine whether the risk manager's nationality has significant effect in the hedging decision, the following hypothesis will be tested:

> H32: There is significant difference between hedging and non-hedging firms in the risk manager's nationality.

The relationship between hedging decision and the determinants of the firm's ability to hedge is shown in figure 7.5.

Figure 7.5: The relationship between hedging decision and the determinants of the firm's ability to hedge

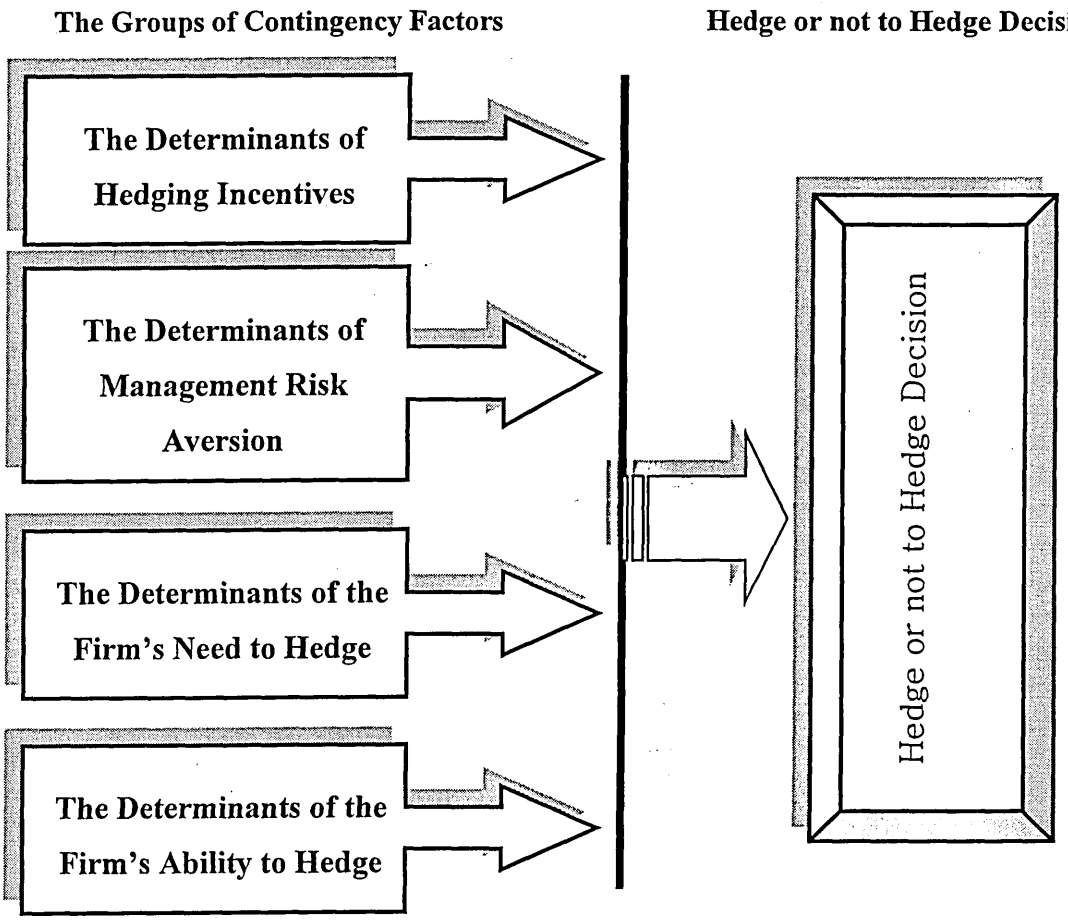


7.3.2.5 The study theoretical framework

The expected impact of finance theory and contingency theory for the purpose of this study may be summarized in the following model, see Figure 7.6. The Figure presents the financial and contingency theory model of the hedging decision. Each of the contingency and hedging factors in each of the groups presented in the figure will be measured, either as a quantitative accounting ratio, frequency, scale or as a series of ordered categories in the next Two Chapters (Ch 8, and 9,). Each firm is allotted a score on each contingency and hedging decision factor. The cross-sectional distribution of scores of the firms on a pair of contingency and hedging decision factors is then examined to see whether there is an association. Also the study will apply the Multivariate Logistic Regression, so that the influence of the hedging determinant

variables on the hedging decision can be considered in a simultaneous multivariate way rather than as a collection of univariate links. In this study, the contingency factors chosen were determined by their suitability for illustration in a questionnaire survey. These factors were grouped into four different groups of determinants. It is expected that the choice of these groups is contingent upon these factors, see Figure 7.6.

Figure 7.6: A contingency model for hedge or not to hedge decision.



7.4 Conclusion

This chapter has established a theoretical framework for the determinants of currency exposure management policy. The framework is based on three main sources, the previous literature, contingency theory and finance theory, and the interviews based on the interpretive approach and concerning the corporate hedging and its determinants. Chapters 3, 4, 5, and 6 have helped to build the framework for this research. Chapter 3 has reviewed the determinates of corporate hedging policy found in the literature review. In the chapter it is argued that the risk management theories reviewed in the

literature were incomplete. This led the researcher to look at the contingent context within the organisation and outside the organisation. Chapter 4 reviewed the previous studies on corporate hedging determinants. It highlighted the research aims, hypothesis, method, data, limitations, and findings. The aim of the chapter is to provide a detailed critical analysis for these studies. Chapter 5 highlighted the research method and methodology. It also illustrated how the contingency approach will be used to improve the way that we are looking at the risk management policy. The contingency theory adopted in this research has led the researcher to look at the determinants of corporate hedging policy from different firms' contexts. Chapter 6 contains the results of the exploratory study. The findings considered are used to identify a link between currency exposure management policy and the firm's contexts (internal and external context). This chapter highlights the important determinants of corporate hedging policy from the decision-maker's point of view.

This study attempts to address the research gaps mentioned in chapter 4 by investigating the determinants of hedging decision choice across four discrete modes (incentives, risk aversion, needs, and ability) and from managerial perspective. A contingency framework for the decision to hedge or not to hedge was developed on the premise that a hedging decision conducted by an individual firm is adopted regarding the specific characteristics of each firm. The philosophy behind the use of both corporate hedging theories and exploratory study is to enables us to define the specific characteristics of a firm and to determine meaningful ways of adopting hedging decisions to the relevant dimensions. The contingency factors that appear to make firms choose to hedge rather than not to hedge have been described in this chapter.

Chapter Eight

The Determinants of Hedging Decision: Empirical Evidence (Part One)

8.1 Introduction

Statistical analysis is undertaken in this chapter to analyse a firm's specific characteristics which Finance Theory (FT) predicts to be the determinants for foreign exchange risk management decision. This chapter aims to provide answers to the main research question as to why some firms hedge foreign exchange risk and others do not, from the FT's point of view. FT offers two groups of corporate hedging determinants. The first is corporate hedging incentives (value-maximization) and the second is managerial risk aversion. In order to examine these two groups, the analysis will begin with simple mean-difference tests for the hedged and non-hedged firms (univariate analysis). Also a multivariate analysis will be used. This chapter will show the extent to which finance theories can be used to understand the corporate hedging decision.

This chapter consists of four main sections. After this brief introduction, the second section will examine the relationship between the determinants of hedging incentives and the foreign exchange risk management decision. The relationship between the determinants of managerial risk aversion and foreign exchange risk management decision will be discussed in section three. Finally, section four presents the conclusion of the chapter.

8.2 The Determinants of Hedging Incentives

8.2.1 Introduction

Foreign exchange risk management decision may be affected by its motivation to increase a firm's value. The field of risk management draws heavily on studies of firm's value maximization. The rationale is that, to a certain extent, the hedging decision increases the firm's value by reducing the agency costs, reducing the financial distress

costs, increasing the investment opportunities, and reducing the corporate finance costs (Smith et al., 1985; Bessembinder, 1991).

8.2.2 The determinants of hedging incentives (accounting ratio analysis)

8.2.2.1 Descriptive statistics and correlation coefficients of proxy variables

In order to examine the role of hedging incentives in driving firms to hedge currency exposure, this study will examine the relationship between the hedging decision and the four groups of hedging incentives variables (financial distress cost, agency conflict, investment opportunities, and the corporate finance cost). Table 8.1, describes how these variable will be measured.

Table 8.1: The description of the hedging incentive variables (the accounting ratio)

Hypothesis (Variables)	Variable proxy	Predicted sing	Data Description (Source)
Financial Distress Costs	Leverage	+	The long term debt to total sales
	Debt Service Coverage	-	Earnings before interest and taxes (Zakah) to debt
Agency Costs	Operating Profit Margin	-	Operating profit to total sales
	The Total Sale to Total Asset Ratio	+	The total sales to total assets
Investment Opportunities	The Expenses to Total Sales Ratio	+	The expenditures to total sales
	R & D Ratio	+	The R & D expenditures
Corporate Finance Costs	The Cash Flow to Total Assets Ratio	-	The operating income minus interest expense minus cash dividends minus net zakah.
	Tangible Assets	-	Tangible assets to total assets

This sub-section presents descriptive statistics and correlation coefficients for the proxy variables of the hedging incentive determinants. Table 8.2 presents summary statistics of the independent variables. For all the firms in the sample, this study obtained data about their financial statements of years-ending of 2000 and 2001, except for the R&D ratio which is only for 2001. The study sample consists of 83 firms with a mean value of leverage defined as 32% of the firm's total assets. The ratio of debt service coverage ranges from zero percent to 93 percent. Haushalter (2000) reports that the amount of debt financing in 177 U. S. oil and gas companies, varied from zero to little more than 79 percent of total assets. From the table, it seems that a small amount of money was invested in research and development activities in Saudi firms with an average of 0.009

percent in the 2001. Table 8.2, shows that the firms varied in total sales to total assets ratio, in that the ratio ranged from 2% to 1.38%. The relative amount of sales expenses varied from 24% to 1.14% of total sales. The operating profit marginal ratio ranged from zero to a little more than 55 percent of the firm's total sale. The table also indicates that the cash flow to total assets and the tangible assets have a mean ratio of 9 percent and 44 percent respectively.

Table 8.2: Descriptive statistics for the hedging incentive independent variables (the accounting ratio)

Variables	N	Mean	Median	Standard Deviation	Minimum	Maximum
Leverage	83	0.32	0.28	0.19	0.9	0.90
Debt Service Coverage	83	0.31	0.30	0.14	0.00	0.93
Operating Profit Margin	83	0.21	0.20	0.11	0.00	0.56
The Total Sale to Total Asset Ratio	83	0.36	0.31	0.28	0.02	1.38
The Expenses to Total Sales Ratio	83	0.69	0.71	0.14	0.24	1.14
R & D Ratio	83	0.009	0.00099	0.0221	0.00	0.12
The Cash Flow to Total Assets Ratio	83	0.09	0.09	0.046	0.00	0.24
Tangible Assets	83	0.44	0.44	0.16	0.14	0.76

Table 8.3 presents the correlation among the above eight hedging incentive proxy variables. Correlations exist among some of the independent variables, in that 4 out of the 28 Pearson correlation coefficients[1] reported in the table are statistically significantly different from zero. There is a positive and significant correlation between leverage and debt service coverage (0.36 at the 0.01 level), which would not be expected, since they are measures of leverage and expected to be negatively correlated. These findings may affect the rationality of using them jointly as measures of financial distress costs. However, the correlation Table shows that the leverage and the tangible assets could be better used jointly as measures of financial distress. In addition, the significant correlation between the total sales to total assets ratio and operation profit

[1] A Pearson correlation coefficient is a statistic devised for the purpose of measuring the strength or degree of a supposed linear association between two variables, each of which has been measured at an interval or ratio level (Field, 2001).

margin ratio (0.26 at the 0.05 level) gives the rationality of using them jointly as a measure of agency costs. The two measures of investment opportunities are positively correlated with each other although not statistically significant. It is clear that there is a relationship between the total sales to assets ratio and the leverage and debt service coverage, which indicates that the total sales ratio can be used as a measure of financial distress costs. These findings suggest that the total sales ratio can be used at the same time as a measure of the agency conflicts, and the financial distress costs. There is also a positive association between the cash flow ratio and the two measures of agency costs which are the total sales ratio and the operating profit margin, supporting the assumption that the larger the cash flow available in the firms, the smaller the agency conflicts in these firms. Also it seems that a large percentage of the firms in the sample did not payout their profit as a dividend and preferred to use these profits for their future funding. Finally, there is negative correlation between the cash flow and the tangible assets, which would not be expected since they are measures the corporate finance costs.

Table 8.3: Pearson correlation coefficients of proxy variables

	X1	X2	X3	X4	X5	X6	X7	X8
X1	1	0.36**	-0.05	0.15	0.14	-0.17	0.01	0.09
X2		1	-0.09	0.17	-0.13	-0.15	0.16	-0.09
X3			1	-0.24*	0.17	-0.09	0.08	-0.15
X4				1	-0.23*	0.05	0.17	0.26*
X5					1	-0.13	-0.10	0.11
X6						1	-0.11	-0.08
X7							1	0.19

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).
Notes:
X1: Leverage
X2: Debt Service Coverage
X3: R & D Ratio
X4: The Total Sale to Total Assets Ratio
X5: The Expenses to Total Sales Ratio
X6: Tangible Assets
X7: The Cash Flow to Total Assets Ratio
X8: Operating Profit Margin

8.2.2.2 Univariate analysis

In this section, the study separated the respondent firms into two groups, those that chose to hedge their currency risk and those not, and then compared the two groups with respect to the incentives for hedging decision. The respondents were asked to identify if their firms were using any methods to hedge their currency exposure. The respondents were provided with three different groups of methods and asked to choose the one that their firm adopted for hedging their currency exposure, (see Part Two in the Questionnaire, Appendix B). The respondents were asked if their firms used any of the financial hedging techniques, internal hedging techniques, or operational hedging techniques, see section (3.3). Table 8.4, presents classification of the firms in the sample into hedging firms and non-hedging firms regarding the respondents' answers to the questions. The Table shows that 35 firms (42%) in the sample were hedging their currency exposure.

Table 8.4: The classification of the firms currency exposure management strategy

The Firms	The Number of Firms	The Percentage
Hedging Firms	35	0.42
Non-Hedging Firms	48	0.58
Total	83	100

The comparison of the means for hedgers of foreign exchange risk and non-hedgers in Table 8.5 indicates that firms in the sample which hedge differ little in their leverage and debt service coverage from those that do not hedge. The t-test shows that the differences between hedging and non-hedging firms regarding the leverage and the debt service coverage are not statistically significant. The results did not support the hypothesis (H1), that firms with more financial distress are more likely to hedge. The examination of the reflection of the hedging decision on the agency cost, involve determining the effect of hedging decision on the firm's total sales ratio and operating profit margin ratio. As the table shows, the t-Test for difference in means indicate that the mean of the total sale to total asset ratio differs significantly between firms which hedge and those, that do not at the 5% significance level. The mean operating profit margin ratio for hedging firms is 22 percent compared to a mean of 20 percent for those, that do not hedge. However, this difference is not significant at the 5% confidence level.

These findings gave some support to the hypothesis (H2) that hedging firms have a higher total sales ratio and operating profit margin ratio than non-hedging firms and therefore less agency conflict.

There is weak support for the hypothesis that firms hedge to increase investment opportunities. Using R&D-to-total sales ratio as proxy for investment opportunities, table 8.5 shows that hedging firms have less R&D ratio (0.01 vs. 0.02). The evidence is contradictory to the hypothesis that hedger firms have higher R&D ratio. The negative relationship between R&D ratio and hedging firms weakens support for the hypothesis that firms hedge to increase investment opportunities, and raises doubt as to whether the R&D ratio is a good proxy for investment opportunity. On the other hand, hedging firms have a low expenses to total sales ratio than non-hedging firms (0.67 vs. 0.71), which indicates that hedging firms are having more resources to engage in new investment than non-hedging firms. By reducing the variance of a firm's total sales and the sale expenses, hedging decreases the probability, and thus the expected costs, of the underinvestment problem.

As expected from the theoretical model, the relationship between the cash flow ratio and the hedging decision is negative. The difference in the mean in Table 8.5, indicates that firms with lower cash flow to total assets ratios have a greater incentive to hedge, the difference in the mean as found is significant at 5% confidence level. This finding supports the hypothesis that firms can use hedging activity to decrease corporate finance costs by protecting the cash flows in the firms from exchange rate movements. The other proxy for corporate finance costs is rejected, since the evidence in table 8.5 shows that the tangible assets ratios in hedging firms is higher than those in non-hedging firms. The mean of tangible assets for firms which hedge is 48 percent as compared to 41 percent for firms which do not hedge. There is also evidence that the mean of the tangible assets differ significantly between the two groups of firms at the 5% confidence level. This finding rejects the hypothesis that firms hedged as a result of shortages in their cash flow resources. This finding is inconsistent with the argument that firms that have more tangible assets have greater flexibility in meeting cash flow needs, and thus they have less need to decrease the cash flow volatility and less need to hedge.

Table 8.5: Univariate analysis of hedging and non-hedging Saudi firms

The hedging firms sample contains 35 firms, and the non-hedging firms contains 48 firms. The leverage ratio is the book value of a firm's debt divided by the total sales. The debt service coverage ratio is equal to cash flow divided by the book value of a firm's debt. The ratio of R&D is the R&D expenditures divided by the total sales. The tangible assets ratio is equal to the tangible assets divided by total assets. The ratio of operating profit margin is equal to the operating profit to total sales. The p-value in the exhibit is based on the independent-samples T test and tests the difference in the means between the group of firms hedge and not hedge foreign exchange risk.

Variables	Hypothesised differences	Hedging Firms (N = 35)			Non-hedging Firms (N = 38)			Difference in means HD - NHD	t-statistic[1] (p-value)
		Mean	Median	Std. Dev.	Mean	Median	Std. Dev.		
Leverage	HD > NHD	0.32	0.32	0.16	0.31	0.25	0.21	0.01	0.80
Debt Service Coverage	HD < NHD	0.30	0.30	0.14	0.32	0.33	0.13	-0.02	0.78
Operating profit margin ratio	HD > NND	0.22	0.23	0.12	0.20	0.19	0.11	0.02	0.27
The Total Sale to Total Asset Ratio	HD > NHD	0.44	0.40	0.30	0.31	0.28	0.25	0.13	0.03
The Expenses to Total Sales Ratio	HD < NHD	0.67	0.70	0.15	0.71	0.73	0.14	-0.4	0.16
R & D Ratio	HD > NHD	0.01	0.008	0.016	0.02	0.012	0.026	-0.01	0.52
Tangible Assets	HD < NHD	0.48	0.47	0.16	0.41	0.43	0.16	0.07	0.06
The Cash Flow to Total Assets Ratio	HD < NHD	0.08	0.08	0.03	0.10	0.09	0.05	-0.02	0.05

t-tests assume equal variances unless the null hypothesis of equal variances is rejected at a 5% significance level.

Note: DH represents firms which hedge

NDH represents firms which do not hedge

8.2.2.3 Multivariate analysis

It can be argued that the univariate analysis tend to be weak as it does not allow for interactions among the determinant variables. Using the tests of mean differences analysis only provides the study with unconditional relationships, between the different variables in the group and the hedging decision. For further assessment on the hedging decision choice and in order to have the conditional relationships, logistic (LOGIC) regression is applied. Investigating a dichotomous dependent variable means that regression analysis of interval dependent variable is inappropriate. By using the logistic regression the influences of the hedging determinant variables on the hedging decision can be considered in a simultaneous multivariate way rather than as a collection of univariate links. In this logistic regression the dependent variable is the firm's risk management decision to hedge or not to hedge. The dependent variable was a dummy variable with a value of 1 if a firm hedged, and 0 if a firm did not hedge.

Using logistic regression, the study will attempt to find which of the incentive hedging variables predicts the hedging decision, and the technique will also allow us to predict whether a certain firm is likely to be a hedging firm. It is not enough only to know the relationship between the hedging decision and the incentive variable, and the findings of the logistic regression have implications for an appropriate decision to hedge or not to hedge. Using a linear regression analysis, it is possible to find to what extent the hedging incentives variables as a group explain the decision whether to hedge or not. The logistic regression can tell us the frequency that the model correctly predicts the dependent variable, and how well the model minimizes the errors of prediction.

In order to apply the logistic regression, the study should explain the basic ideas underlying the logic model. This study will present the one that used by Gujarati (2003, p 595-596). To estimate unknown parameters in logistic regression, Gujarati used the maximum likelihood method. In simple linear regression model:

$$Y = \beta_0 + \beta_1 X_1 + \varepsilon_n \qquad [8.1]$$

Where X = the value of the predictor variable (hedging incentive variable), Y = 1 if the

firm hedges and 0 if it does not hedge, β_0 is the Y intercept, β_1 is the gradient of the straight line, and ε_n is a residual term. In multiple regression in which there are several predictors (such as the hedging incentive variables), a similar equation is derived in which each predictor has its own coefficient. The probability of Y is predicted from a combination of each predictor variable multiplied by its respective regression coefficient.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 \ldots\ldots + \beta_i X_i + \varepsilon_n \qquad [8.2]$$

The conditional expectation of Y_i given X_i, $E(Y_i \mid X_i)$, can be interpreted as the conditional probability that the event will occur given X_i, that is, Pr $(Y_i = 1 \mid X_i)$. Thus, $E(Y_i \mid X_i)$ gives the probability of a firm to hedge and whose incentive hedging variable is the given amount X_i. Assuming $E(\varepsilon_n) = 0$, we obtain

$$\Pr(Y_i = 1 \mid X_i) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 \ldots\ldots + \beta_i X_i + \varepsilon_n \qquad [8.3]$$

Now, if Pi = probability that $Y_i = 1$ (means the event occurs), and $(1 - Pi)$ = probability that $Y_i = 0$ (means the event does not occur). Using the definition of mathematical expectation, we obtain:

$$E(Y_i) = 0(1 - Pi) + 1(Pi) = Pi \qquad [8.4]$$

Comparing [8.3] with [8.4], we can equate

$$\Pr(Y_i = 1 \mid X_i) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 \ldots\ldots + \beta_i X_i + \varepsilon_n = Pi \qquad [8.5]$$

Now consider the following representation if a firm decides to hedge:

$$Pi = E(Y = 1 \mid X_i) = \frac{1}{1 + e^{-(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_i X_i + \varepsilon_n)}} \qquad [8.6]$$

To make it more easier, [8.6] can be written as

$$Pi = \frac{1}{1+e^{-Zi}} = \frac{e^{Zi}}{1+e^{Zi}} \qquad [8.7]$$

where $Zi = \beta_0 + \beta_1 X_1 + \beta_2 X_2 \ldots\ldots + \beta_i X_i + \varepsilon_n$

If Pi, the probability of the firm to hedge, is given by [8.7], then (1 – Pi), the probability of the firm not to hedge, is:

$$1 - Pi = \frac{1}{1+e^{Zi}} \qquad [8.8]$$

Now $Pi / (1 - Pi)$, the odds ratio in favour of hedging, is defined as the ratio of the probability that a firm will hedge to the probability that it will not hedge,

$$\frac{Pi}{1-Pi} = \frac{1+e^{Zi}}{1+e^{-Zi}} = e^{Z_i}$$

[8.9]

The relation is linearised by transformation into a logic function:

$$L_i = \text{In}\left(\frac{Pi}{1-Pi}\right) = Z_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 \ldots\ldots + \beta_i X_i + \varepsilon_n \qquad [8.10]$$

If we calculate the value of Z from the regression equation it will provide an estimate of the probability that the event will occur given the particular values of X. If Pi represents the probability of the presence of hedging decision in a firm, the logistic regression model to be estimated is as follows:

$$\text{In}\left(\frac{Pi}{1-Pi}\right) = \beta_0 + \beta_1 \text{Lv} + \beta_2 \text{Dcov} + \beta_3 \text{R\&D} + \beta_4 \text{Sa} + \beta_5 \text{Exs} + \beta_6 \text{Tas} + \beta_7 \text{Cas} + \beta_8 \text{Prm} + \varepsilon \qquad [8.11]$$

Where:

β_0 = Constant term

Lv = Leverage

Dcov = Debt service coverage

R&D = R & D expenses / Total sales

Sa = Total sales / Total assets

Exs = The expenses / Total sales

Tas = Tangible assets / Total assets

Cas = The cash flow / Total assets

Prm = Operating profit /total sales

β_1 to β_8 = Coefficients for each firm-specific variables

ε = Residual term

From equation [8.11], it can be seen that each hedging incentive variable has its own coefficient, and the hedging decision is predicted from a combination of all the hedging incentive variables multiplied by their respective coefficient plus a residual term. Using equation [8.11], the study seeks to find the linear combination of hedging incentive variables that correlate maximally with the hedging decision. The result from the equation is a probability value that varies between 0 and 1. A value close to zero means that the hedging decision is very unlikely to have occurred, and a value close to 1 means that the hedging decision is very likely to have occurred. Given that we have collected several values of Y and X, the unknown parameters in the equation can be calculated. They are calculated by fitting a model to the data, the values of the parameters are estimated using the maximum-likelihood method, which selects coefficients that make the observed values most likely to have occurred (Field, 2001).

After running the logistic regression analysis for the model for the first time, we should check for the validity of the assumptions of the logistic regression analysis. This was done by: checking that no collinearity (or colinearity) problem exists within the

independent variables, and checking that the residuals all lie within 3 standard deviations from the mean. When collinearity increases among the independent variables, or the measurements, or indicators, it may affect the linearity and the assumption that the logistic regression coefficients are unbiased, and consequently the level of efficiency of the estimates may be poor (Menard, 2002). To avoid the problem of collinearity between the independent variables, we run a linear regression model using the same dependent and independent variables used in logistic regression model to check the tolerance statistic for each independent variable. Menard (2002) stated that a tolerance of less than .20 is cause for concern; a tolerance of less than .10 almost certainly indicates a serious collinearity problem. Table C.5 in Appendix C, confirms that the model's tolerance exceeds .80, indicating no serious problem of collinearity. To check that the residuals in the logistic regression analysis all lie within 3 standard deviations from the mean, the SSPS logistic regression analysis was used to save the standardized residuals and examine them using a boxplot, see figure, C.6 in Appendix C. The Figure shows that all the residuals lie within 2 standard deviations from the mean.

After testing the applicability of the model to be used with the logistic regression, it is possible now to evaluate the hedging incentives linear regression model. The main purpose of the following analysis is to describe how well the overall model works, by describing the relationship between all of the independent variables and the dependent variable and the strength of this relationship. It examines how much each hedging incentive variable (the independent variable) contributes to our ability to predict the hedging decision (the dependent variable), in other words which variables are stronger or weaker, better or worse predictors of the dependent variable. Finally, it is important to see if the form of the model appears to be correct, and to see if the assumptions of the model appear to be satisfied. As some of the independent variables in this study are measured in different units or in different scales and as the study aims to compare the strength of the relationship between the hedging decision and different factors that are hypothesised to affect this decision (independent variables), the study uses both standardized and unstandardized logistic regression coefficients.

A standardized coefficient is a coefficient that has been calculated for variables

measured in standard deviations units. For example, a standardized coefficient indicates how many standard deviations of change in a hedging decision (dependent variable) are associated with a 1 standard deviation increases the hedging incentive variable (independent variable) (Menard, 2002). However, Menard (2002) argues that, in presenting substantive results, it may make sense to focus on standardized coefficients for unitless scales (such as the hedging incentive indicator variables), but unstandardized coefficients for categorical variables (such as industry and markets variables), and perhaps for variables with natural units of measurement (inches, kilograms, dollars, number of occasions), as well. The coefficient for the hedging incentive variables estimated by the logistic regression model are summarised in Table 8.6. Results of the LOGIC regressions are reported in Table 8.6. The Table shows that when all hedging incentives variables were included as independent variables, the coefficients of the ratio of total sales to total assets and the ratio of total cash flows to total sales were significant at conventional level. Also the signs for both the total sales to total assets ratio and the total cash flows to total sales ratio were as expected. The result shows that firms with higher total sales to total assets ratio are more likely to hedge, and firms with lower cash flow to total sale ratio less likely to hedge.

Table 8.6: Model 1a: Logistic regression analysis results for the hedging incentive variable (accounting ratio) and hedging decision, all variables included.

Variables	Predicted Sign of Parameter Estimate	Unstandardized Logistic Regression Coefficient (*b*)	Standard Error of *b*	Wald	Statistical Significance of *b*	Standardized Logistic Regression Coefficient
Constant	Na	0.286	1.895	0.023	0.880	-
Leverage	+	0.842	1.432	0.345	0.557	0.019
Debt service coverage	-	-1.322	2.074	0.406	0.524	-0.041
Operating profit margin ratio	-	2.166	2.403	0.812	0.367	0.084
The total sale to total asset ratio	+	1.808	0.987	3.356	**0.067**	**0.178**
The expenses to total sales ratio	+	-2.271	1.797	1.598	0.206	-0.112
R&D expenses ratio	+	4.065	12.454	0.107	0.744	0.032

Variables	Predicted Sign of Parameter Estimate	Unstandardized Logistic Regression Coefficient (*b*)	Standard Error of *b*	Wald	Statistical Significance of *b*	Standardized Logistic Regression Coefficient
Tangible ratio	-	2.501	1.612	2.407	**0.121**	**0.141**
The cash flow to total assets ratio	-	-12.918	6.151	4.411	**0.036**	**-0.209**

As in the univariate analysis, logistic regression shows that the coefficients of leverage, debt service coverage, R&D ratio, the expenses to total sales ratio, and the operating profit margin ratio were not significant. Firms with larger tangible assets ratios are predicted to have a smaller incentive to hedge. The signs of the operating profit margin and the expenses to total sales ratio are inconsistent with those predicted by the theories considered. The positive coefficient for the operating profit margin implies that firms with the greater operating profit margins are more likely to hedge, and the negative coefficient for the expenses to total sales ratio implies that firms with less expenses ratio are more likely to hedge.

From the results presented in Table 8.7 we can see that $G_M = 15.246$ and is statistically significant (significance = $P = .055$), leading us to reject the null hypothesis that the independent variables, the hedging incentive variables (accounting ratio), are not related to the dependent variable, hedging decision.

Table 8.7: The logistic regression model analysis of the hedging incentives 'accounting ratio' output.

Panel A: The classification Table

The Step	Observed	Predicted		
		Hedging or non-hedging company		Percentage Correct
		Non-hedging company	Hedging company	
Step 0	Non-hedging company	48	0	100.0
The model includes only the constant	Hedging company	35	0	0.0
	Overall percentage			**57.8**
Step 1	Non-hedging company	39	9	81.3
The model includes all the independent variables	Hedging company	18	17	48.5
	Overall percentage			**67.5**

Panel B: Model Summary

Step	Initial -2 Log likelihood	Ending -2 Log likelihood "D_M"	Cox & Snell R Square	Nagelkerke R Square
1	113.018	97.772	0.168	0.226

Panel C: Association / Predictive Efficiency

G_M	R_L^2	λ_P	τ_P	d	R^2	The model improve our efficient choice to hedge or not to hedge by
15.246 (p = 0.055)	0.136	0.229	0.333	1.789 (p = 0.022)	0.133	%13.6

Panel D: Hosmer and Lemeshow Test

Step	Chi-Square	Df	Sig.
1	12.394	8	0.134

In Table 8.7 Panel C, the Hosmer and Lemeshow goodness-of-fit measure is not statistically significant, indicating that the model with only the independent variables as predictors fits the data well. $R_L^2 = 0.136$ suggesting a small association between hedging decision and hedging incentive variables. As can be seen from the Table, Panel C, λ_P, and τ_P are 0.229, and 0.333 respectively, indicating that the independent variables (hedging incentives variables) allows us to classify the cases (into hedging and non-hedging firms) with a low degree of accuracy, as reflected in the classification table, and the binomial d = 1.789, with statistical significance p = 0.022 (one-tailed), suggesting that the classification of the dependent variable (hedging decision) is not statistically significantly related to the value of the independent variables (the hedging incentive variables). Also the Table, Panel C, shows that R^2 is 0.133 indicating that the hedging incentive variables have a weak power to allow us to predict the individual hedging decision for any firms in the sample by 13 per cent perfectly.

As the main part of this study is to identify the main predictors in the different hedging decision predictor groups, and because theory in this area is not well developed, and because the number of firms in the study sample is small relative to the number of predictor variables suggested in this study, stepwise logistic regression is used. Backward elimination rather than forward inclusion was selected as the method of stepwise regression. In some cases, a variable may appear to have a statistically significant effect only when another variable is controlled or held constant (a

suppressor effect). With backward elimination, because both variables will already be in the model, Menard (2002) suggests that there is less risk of failing to find a relationship when one exists. Menard suggested that in order to prevent the failure to find a relationship when one variable exists, the usual 0.05 criterion for statistical significance probably should be relaxed. Bendel and Afifi (1977) suggested that the 0.05 criterion for inclusion appears to be too severe; based on the comparisons of goodness-of-fit and predictive efficiency statistics, more reasonable results are obtained with a more liberal cutoff point for statistical significance. They suggested that the statistically significance criterion for inclusion can be set in the range .15 to .20. However, this study will use the 0.10 criterion of statistical significance for inclusion of the independent variables in the final model. Table 8.8, presents a reduced model (model 1b) with all variables for which $p > 0.10$ are eliminated.

Table 8.8, shows that the relationship between the hedging decision and the hedging incentive variables in the reduced model (model 1b) is statistically significant, with $G_M = 12.602$ with 3 degree of freedom, $p = 0.006$. The reduced model ($p < .10$) has a smaller G_M than the full model, but the G_M in the full model (model 1a) is statistically significant at the .05 level, whereas the G_M in the reduced model ($p < .10$) is statistically significant at the .01 level. However, in the reduced model, the R_L^2 decreases to 0.112, in comparison to the full model 0.136. The reduced model has a weak predictive efficiency, $\lambda_P = .20$ and $\tau_P = .31$, and the ability of the full model to reduce the error of classifying the firms as hedging and non-hedging firms is better than with the reduced model. In this case, it could be that some variables in the full model (1b) may appear to have a statistically significant effect in the model efficiency when other variables are interacting with them.

Table 8.8: Model 1b: Logistic regression analysis results for the hedging incentive variable (accounting ratio) and hedging decision, variables with maximum p = 0.10 included .

Dependent Variable	Association/ Predictive Efficiency	Variables	Unstandardized Logistic Regression Coefficient (b)	S. E. of b	Statistical Significance of b	Standardized Logistic Regression Coefficient
Hedging Decision	G_M = 12.602 (P = 0.006)	Constant	-1.345	0.969	0.165	-
The model improve our efficient choice to hedge or not to hedge by %11.1	R^2_L = 0.112	The total sale to total asset ratio	2.104	0.915	0.021	0.207
	R^2 = 0.133					
	λ_P = 0.200	Tangible ratio	2.741	1.546	0.076	0.154
	τ_P = 0.309	The cash flow to total assets ratio	-10.757	5.682	0.058	-0.174
	The percentage of firms correctly classified by the model = 66.3%					

8.2.3 The determinants of hedging incentives (indicators analysis)

8.2.3.1 Descriptive statistics and correlation coefficients of indicator variables

This sub-section investigates measures of hedging incentives. In the previous sub-section the study measured hedging incentives in the sample using accounting ratios. This sub-section presents a more detailed description of these hedging incentives in the sample by taking the respondents' views regarding factors which may also be used as measures of the degree of hedging incentives in the firms. It should be noted that in the literature there are no specific variables that can be used to measure the level of hedging incentives other than accounting ratios. The exploratory study (Chapter 6) suggests a list of 21 factors to assess the degree of agency conflicts, financial distress costs, growth opportunities, and the corporate finance costs,. Factors were grouped in four different groups. Six factors to measure the agency conflicts, five factors to measure the financial distress costs, four factors to measure the growth opportunities, and six factors to measure the corporate finance costs. In order to find the firms' characteristics according to these factors, a list was presented to respondents, who were then asked to indicate the

extent to which these factors applied to their firm. The results are shown in Table 8.9. In order to understand the results on the table, there are four suggestions that will be considered, (a) the higher the mean the lower the agency conflict costs, (b) the higher the mean the greater the financial distress costs, (c) the higher the mean the greater the growth opportunities, and (d) the higher the mean the lower the corporate finance costs

Table 8.9: Descriptive statistics of independent incentive variables

(1 = "disagree", 5 = "agree")

Variables	Indicator number	Indicator	Mean	S.D	PR 4or5	PR 1or2
Agency Costs	1	The company's owners participate on the decision of the strategy and plan to grow the company	3.52	1.47	65.1	30.1
	2	The company's total sales have been improved	3.59	1.47	69.9	27.7
	3	Most of our company's profits are paid as dividend to the firm's owners	3.25	1.43	60.2	36.2
	4	The owners of the company satisfied with improvement in the company	3.72	1.20	61.4	21.7
	5	Our company has adopted a monitoring device system to control the relationship between managers and owners	2.70	1.40	44.6	54.2
	6	In our company the management compensation system has been linked to the corporate performance	3.18	1.40	49.4	39.4
		The average	3.33			
Financial Distress Costs	7	Our company's ability to service its debt is low	3.22	1.51	49.4	35
	8	The percentage of our firm's debt is high	3.01	1.34	49.4	44.6
	9	In our industry the probability of going bankrupt is very high	2.66	1.58	38.6	44.1
	10	We are dealing in business where the probability of gain and loss is equal	2.65	1.54	36.1	51.8
	11	The risk management tools available in the markets to hedge the foreign exchange risk are very risky	3.32	1.43	55.4	38.6
		The average	2.97			
Investment Opportunities	12	Our ability in managing the financial risk protects our expected cash flow	3.40	1.52	61.4	38.6
	13	We always have a plan to improve our investment opportunities	3.18	1.55	54.2	41
	14	The ability of our company to get over the financial problems increase our financial opportunities	3.61	1.38	63.9	20.4
	15	The investment opportunities in our market are good	3.63	1.33	59	31.3
		The average	3.46			
Corporate Finance Cost	16	We finance our investment by increasing the company's capital or asking the owners for help	2.88	1.59	47	48.2

17	We present our financial statements in a way which can increase our probability to receive more flexible external finance	2.54	1.55	30.1	57.8
18	We have more flexibility to get external fund under a flexible conditions	2.82	1.53	43.4	50.6
19	In our company the cost of external finance is low as our financial risk is low	3.12	1.54	50.6	41
20	Our cash flows have been improved	3.24	1.39	54.2	39.7
21	From our normal activities we can generate enough cash flow for future investments	2.89	1.47	43.4	54.2
	The average	2.92			

The descriptive statistics in table 8.9 reveal that the level of agency conflicts on firms' sample are found to be low (mean = 3.33). On the agency costs variable, the item number 2 'the company's capital and total sales have been improved' is considered to be a very important factor in affecting the degree of agency conflicts; 69.9 percent of respondents in the sample were indicating a score of 4 or 5 as opposed to 27.7 percent who rather disagreed (by indicating a score of 1 or 2). The respondents also showed great agreement on item number 1 'the company's owners participate on the decision of the strategy and plan to grow up the company' (mean = 3.52); 65.1 percent of the respondents agree with this statement (by indicating a score of 4 or 5). While, the owners or shareholders in 65 percent of the firms in the sample can participate on the strategic decision, only 42 percent of the firms in the sample were hedging their foreign exchange risk. The investment opportunities on the sample were seen to be high (mean = 3.46). 63.9% agreed that 'the ability of their companies to get over the financial problems increases their investment opportunities (item 14 in investment opportunities).

The suggestion at the beginning of this sub-section, indicates that the higher the mean the lower the corporate finance costs, showing that corporate finance costs in the firms sample were slightly over the average with a mean of 2.92. One of the most important findings in the corporate finance cost variables is that 47 percent of the respondent companies were financing their investments mainly by increasing their companies' capital or by asking the owners for additional funding. 50.6 percent of the respondent companies were facing difficulty in obtaining external financial resources. Finally, the results on the table also show that the mean average of the financial distress cost variables is 2.97, which indicates that the financial distress costs are not high. These findings are consistent with the finding that only 49 percent of the respondent

companies described their debts to be high, while another 49 percent also described their companies' ability to service their debts to be at an acceptable level.

The Spearman correlation coefficients in Table 8.10 reveal that there are significant and positive correlations between most of the agency cost factors. The agency cost factor number 1 is the only agency cost factor that is not significantly correlated to other factors in the group. It can be seen that there is a significant and positive correlation between adopting a monitoring device system between managers and owners and the improvement of a company's total assets. It is clear that there is a relationship between the companies which adopted monitoring device systems to control the relationship between managers and shareholders, and the level of an improvement in their total sales. Also there is a significant and positive association between the ability to manage financial risk and having a monitoring system between managers and shareholders in companies. There is a significant and positive correlation between the satisfaction of shareholders with the level of improvement in the company, and dividend payment and the improvement of the company's total sales ($p<0.01$). These findings may affect the rationale of using all of these group factors as indicators for agency conflicts in the sample. The table shows that there is a significant and positive correlation between the level of monitoring and device system between managers and shareholders in companies and the company's ability to manage the financial risk ($p<0.01$). It also appears that the level of satisfaction by shareholders is also significant and positively correlated with the investment opportunities available to the company, also there is a significant and positive correlation between the level of investment opportunities in the market and the level of the improvement in total sales. There is also a significant and positive correlation between the role that the shareholders play in the company's decisions and the ability to get over the financial problems. Surprisingly, the degree of shareholders feeling satisfied with company managers appears to be positively correlated with a company's total debt though this correlation is not significant.

All the four investment opportunities factors are positively correlated to one another. There is significant and positive correlation at the 0.01 level, between Saudi firms' ability in managing their financial problems and, risk and the possibility of protecting the expected cash flows which may increase the investment opportunities. At the same

time, there is a significant and positive correlation between the firms' ability to get over the financial problems and the cost of external funds. It is suggested that companies can get external funding with low cost when the investment opportunities in their market are good, this result is significantly supported at the 0.01 level. An unexpected finding from the table is that there is a significant and negative association between having good investment opportunities and the ability to generate enough cash flow from the normal activity. For the five factors of financial distress costs, four of them are positively correlated, although the correlation is not statistically significant. The only financial distress cost indicator which is not correlated to all indicators in the group is X21, 'the risk management tools available in the market to manage foreign exchange risk are very costly'. There are significant and positive correlation between the availability of risk management tools for some companies, and the probability of going bankrupt, and being in a business where the probability of gains and losses are equal. There is a negative correlation between the availability of risk management tools for some companies and a company's ability to service its debt. Two of the financial distress costs factors have a large, significant and positive correlation between them, a high probability of going bankrupt and to be in a business where the probability of a gain and a loss are equal ($p<0.01$).

The correlations between most of the six indicators of corporate finance costs are significant and positive. The level of improvement in the company's cash flows 'X16' is the only indictor which is positively correlated to some of the corporate finance costs indicators X15 and X18, but not significantly, and negatively correlated to the indicators X14, X10 and X20, but not significantly. These findings may affect the rationale of using this group of indicators to describe the corporate finance costs in the sample.

Table 8.10: Spearman correlation coefficients of proxy variables

	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15	X16	X17	X18	X19	X20
X1	1																			
X2	0.03	1																		
X3	0.09	0.68**	1																	
X4	0.08	-0.06	0.06	1																
X5	0.10	0.18	0.16	0.45**	1															
X6	-0.05	0.43**	0.40**	-0.11	0.08	1														
X7	0.05	0.72**	0.71**	-0.01	0.11	0.36**	1													
X8	0.04	0.62**	0.51**	0.06	0.19	0.34**	0.46**	1												
X9	0.10	0.18	0.19	0.08	0.24*	0.05	0.07	0.27*	1											
X10	-0.03	0.03	-0.04	-0.04	0.13	-0.09	-0.07	-0.02	0.36**	1										
X11	-0.01	0.07	0.09	-0.02	0.13	0.08	0.01	0.15	0.73**	0.28*	1									
X12	-0.20	-0.10	0.00	0.39**	0.21	0.06	-0.14	-0.09	-0.01	0.04	0.09	1								
X13	0.15	-0.08	-0.06	0.36**	0.33**	-0.17	-0.07	-0.09	0.12	0.10	0.12	0.71**	1							
X14	-0.08	0.04	-0.16	-0.08	0.44**	0.05	-0.02	0.00	0.16	0.55**	0.17	-0.12	-0.06	1						
X15	-0.03	0.00	-0.09	-0.12	0.06	0.06	-0.06	-0.07	0.14	0.59**	0.19	-0.07	-0.04	0.51**	1					
X16	0.13	-0.06	-0.03	-0.13	0.08	0.01	-0.17	0.03	0.17	-0.05	0.21	-0.01	0.00	-0.09	0.10	1				
X17	0.20	0.30**	0.19	0.04	0.25*	0.28*	0.14	0.18	0.57**	0.21	0.41**	0.07	0.10	0.24*	0.14	0.15	1			
X18	-0.12	-0.10	-0.13	-0.11	0.01	0.12	-0.13	-0.30**	-0.07	0.43**	0.05	0.08	0.00	0.40**	0.54**	0.12	0.02	1		
X19	-0.10	-.19	0.22*	0.00	0.22*	0.13	0.29**	0.13	0.41**	0.19	0.74**	0.06	0.09	0.21	0.25*	0.01	0.30**	0.12	1	
X20	-0.09	-0.03	-0.14	-0.02	0.02	-0.02	-0.06	-0.12	0.16	0.63**	0.19	-0.09	0.00	0.62**	0.49**	-0.04	0.04	0.55**	0.21	1
X21	0.22	-0.03	-0.04	-0.13	0.01	0.05	-0.10	-0.11	-0.01	0.04	0.12	0.33**	0.34**	-0.08	0.11	0.12	0.01	0.00	0.11	-0.06

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

X1: In our company the management compensation system has been linked to the corporate performance

X2: The company's owners participate in the decision strategy and plan to make the company grow
X3: The company's total sales have been improved
X4: The company's ability to service its debt is low
X5: The percentage of the firm's debt is high
X6: Most of the company's profits were paid as dividend to the firm's owners
X7: The owners of the company are satisfied with improvements in the company
X8: The company has adopted a monitoring device system to control the relationship between managers and owners
X9: The ability in managing the financial risk protect the expected cash flow
X10: We finance our investment by increasing the company's capital or asking the owners for help
X11: We always have a plan to improve our investment opportunities
X12: In our industry the probability of going bankruptcy is very high
X13: We are dealing in business where the probability of a gain and a loss are equal
X14: We present our financial statements in a way which can increase our probability to receive more flexible external finance
X15: We have more flexibility to get external funding under flexible conditions
X16: Our cash flows have been improved
X17: The ability of our company to get over the financial problems increases our financial opportunities
X18: In our company the cost of external finance is cheaper as our financial risk is low
X19: The investment opportunities in our market are good
X20: From our normal activities we can generate enough cash flow for future investments
X21: The risk management tools available in the markets to hedge foreign exchange risk are very risky

Using a group of indicators to measure certain variables raises the question of whether each of these indicators measures a single variable. In order to explain and examine the rationale of using these different groups of indicators to measure the different variables, Table 8.11, provides the internal reliability of using these different indicators to measure the defined variables. Internal reliability is particularly important in connection with multiple-item scales[1]. The reliability of these measures refers to their consistency to measure the specific variable, and can answer the question of the possibility of using these indicators to measure a specific variable. To estimate the internal reliability, Cronbach's alpha[2] is used and the results presented in Table 8.11. The table gives the average of all possible split-half reliability coefficients for the different groups of indicators.

Table 8.11: Reliability analysis for different variables indicators

Indicators	N of cases	N of items	Alpha
Agency cost indicators	83	6	0.78
Financial distress cost indicators	83	5	0.71
Investment opportunities indicators	83	4	**0.82**
Corporate finance indicators	83	6	0.77

As seen from table 8.11, the investment opportunities indicators are internally reliable since the coefficient is 0.82, and can be used to measure the investment opportunities in the sample. The table suggests also that the agency cost indicators, financial distress cost indicators, and corporate finance indicators may be internally reliable since the coefficients are 0.78, 0.71, and 0.77 respectively. However, as these coefficients have a less than a preferable correlation coefficient (at over 0,8), a strategy of dropping one or more indicators can be used in order to increase the internal reliability of the indicators. Table 8.12, shows the alpha reliability levels when each constituent indicator is deleted from the different groups. From the table, in the case of investment opportunities indicators, this step would not be necessary since the internal reliability is over 0.8. For the agency cost indicators if we delete the indicator number 6 the internal reliability increases from 0.78 to 0.85 and is more acceptable. Table 8.12 shows that if we delete the indicator number 5 from

[2] To examine whether different indicators is measuring a single idea or variable, the internal reliability of the *Cronbach's alpha* can be calculated in SPSS (Bryman and Cramer, 2001). The *Cronbach's alpha* essentially calculates the average of all possible split-half reliability coefficients.

the financial distress cost indicators list in Table 8.4, this increases the internal reliability of these indicators as a measure of the financial distress cost on the sample from 0.71 to 0.77 and is more acceptable. The internal liability of the corporate finance cost indicators, can be increased from 0.77 to 0.85 by deleting the indicator number 5.

Table 8.12: The reliability of the different group

Indicators	Indicator number	Alpha if item deleted
Agency cost indicators	1	0.68
	2	0.68
	3	0.77
	4	0.77
	5	0.72
	6	0.85
Financial distress cost indicators	1	0.69
	2	0.67
	3	0.55
	4	0.55
	5	0.77

Indicators	Indicator number	Alpha if item deleted
Investment opportunities indicators	1	0.69
	2	0.70
	3	0.80
	4	0.82
Corporate finance indicators	1	0.70
	2	0.72
	3	0.69
	4	0.71
	5	0.85
	6	0.69

8.2.3.2 Univariate analysis

The decision to hedge or not to hedge, which is the subject of our investigation, will be based on and influenced by a number of hedging incentive factors. As discussed in section (7.3) there are four variables to measure a firm's incentives to hedging decision which are; agency costs, financial distress costs, growth opportunities, and corporate finance costs. These variables have been identified in the literature as determinants for the hedging decision, as detailed in Chapter Three. In order to define the effect of these incentive variables in the hedging decision, the respondents were asked to indicate their agreement concerning a list of given indicators.

Firms may have different perceptions regarding the impact of foreign exchange rate movements on the firm's value. FT indicates that, hedging can reduce expected agency costs, financial distress, underinvestment problems, and corporate finance costs. Accordingly, in order to analyse the effect of these four variables on the hedging decision, respondents were asked to indicate the extent to which they agree with each variable. Table 8.13, presents a summary of respondents' responses regarding a list of five agency cost indicators, four financial distress indicators, four investment opportunities indicators, and

five corporate finance cost indicators. In order to understand the Table, we should clarify the relationship between the hedging incentive variables and the means. These relationships were built on four conditions, as detailed in section (8.2.2.1). One of the premises of this section is to discern whether the foreign exchange risk management decision made by managers might be consistent with shareholder value maximization. The alternative possibility is that foreign exchange risk management decision made by managers might reduce agency conflicts between them and shareholders. As indicated in theory, Table 8.13 shows that, the over all mean average for the agency conflicts in hedging firms is higher than that in non-hedging firms (3.46 vs. 3.28), which can be interpreted as meaning that the agency conflicts in hedging firms is less than that in non-hedging firms. It can be seen that the companies' shareholders in hedging firms participated in decision making and plan to make the company grow, more than those in non-hedging companies (3.74 vs. 3.35), although the difference is not statistically significant. In addition, respondents of hedging companies agree more than non-hedging respondents that their companies have adopted a monitoring device system to control the relationship between managers and owners (item (5): mean = 2.97 vs. 2.50). However, the difference between the two groups is not statistically significant. These findings are consistent with the hypothesis that hedging activities are in the interest of the shareholders. These results show that shareholders in hedging firms do value their company's strategies and systems, and prefer to hedge the foreign exchange risk. This is also supported by the strong agreement from respondents in hedging firms that their owners have been satisfied with improvement in their companies (item (4); hedging firms mean = 3.89, and non-hedging mean = 3.60). There is a strong agreement in hedging firms to item number (2) that the company's total sales have been improved (mean = 3.80) providing evidence that hedging may help these firms to decrease the volatility of their total sales.

Item (3) in Table 8.13, by contrast, shows that the percentage of non-hedging firms indicate a relatively high level of agreement (mean = 3.52) on the strategy of paying most of the profits as a dividend. As the Table shows, the Mann-Whitney Test of difference in mean indicates that the mean of "most of the companies' profit were paid as dividend" differs significantly between firms that hedge and those that do not at the 5% significant level. The Mann-Whitney test gives a weak support to the hypothesis (H2) that firms with high agency conflicts are more likely to hedge.

At the beginning of this section, it is suggested that firms with a high mean should have greater financial distress costs. This suggests that the various financial distress cost indicators for the sample of hedging firms should be higher than those of non-hedging firms. From the results of the entire sample reported in Table 8.13, the hedging firms' means for the four financial distress indicators are higher than those for non-hedging firms. The results in Table 8.13 are consistent with the explanation that firms in the hedging group hedge to avoid the costs of financial distress.

According to Table 8.13, item (7) indicates that 62.9 percent of hedging firms agreed that the percentage of their companies' debt is high, while only 39.6 percent of non-hedging firms agreed that their companies' debt is high. The mean for a high percentage of debt for hedging a firm is '3.34' compared to a mean of '2.77' for those that do not hedge, with the difference statistically significant. Tufano (1996) argued that instead of managing risk with financial contracts, managers could adopt conservative financial policies such as maintaining low leverage. Some of the evidence shows that firms with a high level of debt associated with low ability to service this debt will be more likely to hedge. This also, as indicated in Table 8.13, is associated with being in a business where the probability of a gain and a loss are equal. Hedging firms agreed that the probability of a gain and a loss in their business are equal (item (9); mean = 3.11) and this becomes a good reason for firms to hedge. It seems that hedging firms perceived themselves as facing higher financial distress costs, in that they were more likely to agree that the probability of bankruptcy in their business is very high, with a mean of 2.86 than those firms that do not hedge (mean = 2.52), although the difference in the mean is not statistically significant. The Mann-Whitney Test gives strong support to the hypothesis (H1) that firms with high financial distress costs are more likely to hedge.

Table 8.13 reports evidence that supports the investment opportunities hypothesis. The mean difference in investment opportunity indicators between the two groups show that for three of the four indicators of the investment opportunities indicators (numbers 10, 11, and 12) the hedging firms mean are higher than those in non-hedging firms. One exception of this result is that non-hedging firms and hedging firms both agree that the investment opportunities in their markets are good (item (13), mean = 3.60 vs. 3.65 respectively).

Table 8.13: The univariate analysis of the hedging incentive determinants (Indicator analysis)

The hedging firms sample contains 35 firms, and the non-hedging firms contains 48 firms. The Z-statistic is based on the non-parametric Mann-Whitney Test mean between the group of firms that hedge and those that do not hedge foreign exchange risk. (1 = 'disagree', 5 = 'agree). As one of the major issues of the study was to ascertain difference in the determinants between the hedging and non-hedging groups taking part in the survey, the Mann-Whitney analysis of mean (variance) was selected as being the most appropriate method. This test decides whether the differences found in values signifies that the samples are drawn from different populations, or whether the difference is simply than the random difference which might normally be expected in samples drawn from the same population.

Variables	Indicator Number	Indicator	Hedging Firms				Non-hedging Firms				Z-statistic
			Mean	S.D	PR 4or5	PR 1or2	Mean	S.D	PR 4or5	PR 1or2	
Agency Costs	1	The company's owners participate on the decision of the strategy and plan to grow up the company	3.74	1.42	68.6	28.6	3.35	1.49	52.5	39.2	0.53
	2	the company's total sales have been improved	3.80	1.39	74.3	22.8	3.44	1.53	56.7	41.2	0.18
	3	Most of our company's profits were paid as dividend to the firm's owners	2.89	1.53	48.5	51.4	3.52	1.30	68.8	15.0	**0.04**
	4	the owners of the company satisfy with improvement in a company	3.89	1.11	74.3	25.7	3.60	1.27	52.1	23.0	0.20
	5	our company has adopted a monitoring device system to control the relationship between managers and owners	2.97	1.34	48.5	48.6	2.50	1.43	31.7	68.3	0.42
		Means Average	3.46				3.28				
Financial Distress Costs	6	our company's ability to service its debt is low	3.69	1.47	68.6	25.7	2.88	1.45	35.4	41.6	**0.02**
	7	The percentage of our firm's debt is high	3.34	1.39	62.9	34.3	2.77	1.26	39.6	52.1	**0.05**
	8	In our industry the probability of going bankruptcy is very high	2.86	1.73	45.7	51.4	2.52	1.46	33.3	56.3	0.30
	9	we are dealing in business where the probability of gain and loss is equal	3.11	1.55	48.6	40.0	2.31	1.46	27.1	60.4	**0.02**
		Means Average	3.25				2.62				
Investment Opportunities	10	Our ability in managing the financial risk protect expected cash flow	3.71	1.38	71.4	28.6	3.17	1.59	54.2	45.8	0.14
	11	We always have a plan to improve our investment opportunities	3.40	1.58	60	34.3	3.02	1.52	50	45.8	0.25

Variables	Indicator Number	Indicator	Hedging Firms				Non-hedging Firms				Z-statistic
			Mean	S.D	PR 4or5	PR 1or2	Mean	S.D	PR 4or5	PR 1or2	
	12	the ability of our company to get over the financial problems increases our financial opportunities	4.06	1.06	77.1	22.8	3.29	1.50	54.2	31.3	**0.05**
	13	the investment opportunities in our market are good	3.60	1.44	62.9	27.1	3.65	1.26	64.6	27.1	0.23
		Mean Average	3.69				3.28				
External & Internal Finance	14	we finance our investment by increasing the company's capital or asking the owners for help	2.97	1.62	54.3	45.7	2.81	1.58	41.7	50.1	**0.01**
	15	we present our financial statements in a way which can increase our probability to receive more flexible external finance	2.49	1.54	21.4	62.8	2.58	1.57	29.1	54.2	0.80
	16	We have more flexibility to get external funding under a flexible conditions	2.49	1.44	28.5	62.8	3.06	1.56	54.2	41.7	**0.07**
	17	in our company the cost of external finance is cheaper as our financial risk is low	2.80	1.53	42.8	51.5	3.35	1.52	56.3	33.4	0.10
	18	from our normal activities we can generate enough cash flow for future investments	2.66	1.55	34.3	65.7	3.06	1.39	50	45.9	.60
		Mean Average	2.68				2.97				

It can be seen from the table, that hedging firms have greater growth opportunities (mean = 3.69) than non-hedging firms (mean = 3.28, the higher the mean the more the investment opportunities available to a firm). The Mann-Whitney Test indicates that there are no significant differences between hedging and non-hedging firms for the investment opportunities indicators (numbers 10, 11, and 13). These findings provide weak support for the hypothesis (H3) that hedging activity increases with the firm's investment opportunities.

Table 8.13, shows that the corporate finance costs in hedging firms are higher than that in non-hedging firms. In that non-hedging firms confirm that they have more flexibility to get external funding under flexible conditions (mean = 3.06). Also the non-hedging respondents agreed more than the respondents in hedging firms that the cost of external funding is cheaper. In addition, the respondents from non-hedging firms agreed more than those from hedging firms that their firms can generate enough cash flow for future investment from their normal activities. Table 8.13, represents the use of internal financing source in both hedging and non-hedging firms. It can be seen from the table an unexpected result which appears to show that hedging firms agree in financing their investment by increasing the company's capital or asking the owners for help (mean = 2.97), or in other words they are more likely to use internal source of finance than to use external ones. By hedging, Saudi exporters and importers can protect their future expected cash flows from exchange rate volatility. The Mann-Whitney Test in the Table, indicates that in most of the corporate finance cost indicators (indicators number 15, 17, and 18) there are no significant difference between hedging and non-hedging firms. The test shows that indicators numbers 14 and 16 were significantly different between hedging and non-hedging firms. This finding implies low support for the hypothesis (H4) that firms with high corporate finance costs are more likely to hedge.

8.2.3.3 Multivariate analysis

To provide evidence on the conditional relationship for the hedging incentives indicators, the study employs a logistic regression analysis. This can be done clearly if we write [8.11] as:

$$\text{In}\left(\frac{Pi}{1-Pi}\right) = \beta_0 + \beta_1 \text{Agency1} + \beta_2 \text{Agency2} + \beta_3 \text{Agency3} + \beta_4 \text{Agency4} + \beta_5 \text{Agency5}$$

$$+\beta_6 \text{Distress1} + \beta_7 \text{ Distress2} + \beta_8 \text{Distress3} + \beta_9 \text{Distress4} + \beta_{10} \text{Opportunity1}$$
$$+\beta_{11} \text{Opportunity2} + \beta_{12} \text{Opportunity3} + \beta_{13} \text{Opportunity4} + \beta_{14} \text{Finance1}$$
$$+\beta_{15} \text{Finance2} + \beta_{16} \text{Finance3} + \beta_{17} \text{Finance4} + \beta_{18} \text{Finance5} + \varepsilon \quad [8.12]$$

Where as

β_0	Constant term
Agency1	The company's owners participate in the decision strategy and plan to make the company grow
Agency2	The company's total sales have been improved
Agency3	Most of our company's profits were paid as dividend to the firm's owners
Agency4	The owners of the company satisfied with improvement in a company
Agency5	Our company has adopted a monitoring device system to control the relationship between managers and owners
Distress1	Our company's ability to service its debt is low
Distress2	The percentage of our firm's debt is high
Distress3	In our industry the probability of going bankrupt is very high
Distress4	We are dealing in business where the probability of a gain and a loss are equal
Opportunity1	Our ability in managing the financial risk is to protect expected cash flow
Opportunity2	We always have a plan to improve our investment opportunities
Opportunity3	The ability of our company to get over the financial problems increases our financial opportunities
Opportunity4	The investment opportunities in our market are good
Finance1	We finance our investment by increasing the company's capital or asking the owners for help
Finance2	We present our financial statements in a way which can increase our probability to receive more flexible external finance
Finance3	We have more flexibility to get external funding under flexible conditions
Finance4	In our company the cost of external finance is cheaper as our financial risk is low
Finance5	From our normal activities we can generate enough cash flow for future investments
β_1 to β_{18}	Coefficients for each firm-specific variables
ε	Residual term

After running the hedging incentive indicators logistic regression model for the first time, we analysed the standardized residuals using the boxplot, see figure C1, Appendix C. The Figure shows that the residuals lie within the accepted area (within 3 standard deviation from the mean). For the hedging incentive indicators model, all of the tolerances exceed .24, indicating no serious problem of collinearity, see Table C1, Appendix C.

The maximum likelihood estimates of a logic regression are reported in Table 8.14. The signs of the indicators for each hedging incentive variables were mixed. This evidence does not support the argument that hedging decision increases a firm's value. While using the univariate analysis, the study found that hedging and non-hedging firms were

significantly different in indicator number 3, 'Most of our company's profits were paid as dividend to the firm's owners', with a standardized coefficient of -0.571. However, the logistic regression analysis shows that the unstandardized coefficient and standardized coefficient for indicator 3 is negatively significant (as expectedin theories) and for indicator 5 positively significant (opposite from that expected by theories) at the 5% confidence level. This evidence does not support the hypothesis that firms with high agency conflicts are more likely to hedge. The evidence from the unstandardized coefficients for the other agency cost indicators (1, 2, and 4) is not significant. Consistent with the univariate analysis, the coefficients for the financial distress cost indicators number 6, and 9 are positive and significant at the 5% confidence level. This means that firms with less ability to service their debt, and those that deal in businesses where the probability of a gain and a loss are equal, will be more likely to hedge. The mixed sign of the results provide mixed support to the argument that hedging firms have high financial distress costs.

Table 8.14: Model 2a: Logistic regression analysis results for the hedging incentive variable (the indicators) and hedging decision, all variables included.

(the dependent variable from 0 'non-hedge' to 1 'hedge', and independent variable from 1 'disagree' to 5 'agree').

The variable	The number of the indicator	The indicator (the independent variable)	Unstandardized Logistic Regression Coefficient (*b*)	S. E.	Wald (W_K^2)	probability value (*p* value)	Standardized Logistic Regression Coefficient
The Constant			2.438	1.677	2.113	0.146	-
Agency Costs	1	The company's owners participate in the decision strategy and plan to make the company grow	-0.192	0.377	0.260	0.610	-0.112
(the expected sign for the coefficient is negative)	2	the company's total sales have been improved	0.108	0.399	0.074	0.786	0.062
	3	Most of our company's profits were paid as dividend to the firm's owners	-0.976	0.333	8.596	**0.003**	**-0.571**
	4	the owners of the company satisfied with improvements in a company	0.650	0.450	2.089	0.148	0.343
	5	our company has adopted a monitoring device system to control the relationship between managers and owners	0.620	0.314	3.904	**0.048**	**0.300**
	6	our company's ability to service its debt is low	0.661	0.297	4.967	**0.026**	**0.412**

The variable	The number of the indicator	The indicator (the independent variable)	Unstandardized Logistic Regression Coefficient (*b*)	S. E.	Wald (W_K^2)	probability value (*p* value)	Standardized Logistic Regression Coefficient
	7	The percentage of our firm's debt is high	-0.242	0.334	0.526	0.468	-0.134
	8	In our industry the probability of going bankrupt is very high	-0.668	0.405	2.719	0.099	-0.438
	9	we are dealing in business where the probability of a gain and a loss are equal	0.810	0.404	4.012	**0.045**	**0.515**
Investment Opportunities *(the expected sign for the coefficient is positive)*	10	Our ability in managing the financial risk protection expected of the cash flow	-0.555	0.456	1.483	0.223	-0.348
	11	We always have a plan to improve our investment opportunities	1.032	0.492	4.394	**0.036**	**0.660**
	12	the ability of our company to get over the financial problems increases our financial opportunities	1.087	0.412	6.966	**0.008**	**0.610**
	13	the investment opportunities in our market are good	-0.974	0.442	4.851	**0.028**	**-0.543**
The corporate Finance costs *(the expected sign for the coefficient is negative)*	14	we finance our investment by increasing the company's capital or asking the owners for help	0.582	0.317	3.377	**0.066**	**0.382**
	15	we present our financial statements in a way which can increase our probability to receive more flexible external finance	0.179	0.306	0.344	0.558	0.114
	16	We have more flexibility to get external funding under flexible conditions	-0.574	0.331	3.011	**0.083**	**-0.365**
	17	in our company the cost of external finance is cheaper as our financial risk is low	0.274	0.330	0.692	0.406	0.174
	18	from our normal activities we can generate enough cash flow for future investments	-0.722	0.392	3.390	**0.066**	**-0.438**

Consistent with univariate analysis, the unstandardized coefficient for the investment opportunities indicator number 12 is positive and significant at the 1% confidence level, which means that a firm with more ability to get over financial problems is also more likely to hedge. It seems that the firm with high ability to manage financial problem will be more likely to hedge currency exposure. Firms with qualified staff to manage a financial problems appear to be more engaged in currency risk management activity. The logistic regression result shows that the firm which always has a plan to improve its

investment opportunity is more likely to hedge, this is statistically significant with $p < 0.036$. The unexpected result is that the unstandardized coefficient for the investment opportunities indicator number 13 is negatively significant, meaning that a firm with good investment opportunities in its markets is less likely to hedge. The contradictory signs for the investment opportunity indicators coefficients, suggest a mixed result regarding the argument that a firm with more investment opportunity is more likely to hedge. Consistent with univariate analysis, the coefficients for the corporate finance cost indicators numbers 14, 16, and 18 are statistically significant. This evidence, as in the univariate analysis, supports the arguments that a firm with more flexibility to get external funding under flexible conditions and with ability to generate enough cash flow for its future investment from it normal activities, is less likely to hedge, whereas the firm which finances its future investments by increasing its capital or asking the owners for help is more likely to hedge. However, the mixed signs for the coefficients of the corporate finance cost indicators gave little support for the argument that a firm with high corporate finance costs is more likely to hedge.

Table 8.15, shows that the model predicts 79.5 % of the firms correctly. The Table also indicates that we can reject the null hypothesis that hedging incentive indicator variables are unrelated to the hedging decision, based on the $G_M = 44.615$ with 18 degree of freedom, $p = .000$. The measures of the strength of association between the dependent variable and the independent variable, $R_L^2 = 0.395$, and $R^2 = .293$, indicate a moderately strong relationship between the dependent variable and its hedging incentive indicators as hedging decision predictors. The indices of predictive efficiency also indicate a model that reduces the error of classification of firms as hedging and non-hedging firms by over half: $\lambda_p = 0.514$ and $\tau_p = 0.580$.

Table 8.15: The logistic regression model analysis of the hedging incentive Indicators output.

Panel A: The classification Table

The Step	Observed	Predicted		
		Hedging or non-hedging company		Percentage Correct
		Non-hedging company	Hedging company	
Step 0	Non-hedging company	48	0	100.0
The model includes only the constant	Hedging company	35	0	0.0
	Overall percentage			**57.8**
Step 1	Non-hedging company	39	9	81.3
The model includes all the independent variables	Hedging company	8	27	77.1
	Overall percentage			**79.5**

Panel B: Model Summary

Step	Initial -2 Log likelihood	Ending -2 Log likelihood "D_M"	Cox & Snell R Square	Nagelkerke R Square
1	113.018	68.403	0.461	0.559

Panel C: Association / Predictive Efficiency

G_M	R_L^2	λ_P	τ_P	R^2	The model improve our efficient choice to hedge or not to hedge by
44.615 (p = .000)	0.395	0.514	0.580	0.293	%39.5

Panel D: Hosmer and Lemeshow Test

Step	Chi-Square	df	Sig.
1	8.301	8	0.405

Table 8.16, presents the reduced model 2b with all variables for which $p > .10$ were eliminated. The results reported in the Table showed that the relationship between dependent variable and the independent variables is statistically significant: $G_M =$ 27.752 with 5 degrees of freedom, ($p = .000$). Measures of the strength of association between the dependent variable and independent variables, $R_L^2 = .246$, and $R^2 = .293$, indicates a moderate association between dependent variable and independent variables. The indices of the predictive efficiency, $\lambda_P = 0.314$, and $\tau_P = 0.407$, indicates a model that predicts well.

Table 8.16: Model 2b: Logistic regression analysis results for the hedging incentive variable (the indicators) and hedging decision, variables with maximum $p = 0.10$ included .

Dependent Variable	Association/ Predictive Efficiency	Variables	Unstandardized Logistic Regression Coefficient (b)	S. E. of b	Statistical Significance of b	Standardized Logistic Regression Coefficient
Hedging Decision	G_M = 27.752 (p = 0.000)	Constant	1.717	1.030	0.096	-
The model improve our efficient choice to hedge or not to hedge by %24.6	R_L^2 = 0.246 R^2 = 0.293 λ_P = 0.314 τ_P = 0.407	Agency Costs				
		"Our company has adopted a monitoring device system to control the relationship between managers and owners".	0.633	0.230	0.006	0.306
		"Most of our company's profits were paid as dividend to the firm's owners".	-0.763	0.251	0.002	-0.450
		Financial Distress Costs				
		"We are dealing in business where the probability of a gain and a loss are equal".	0.358	0.181	0.048	0.228
		Investment Opportunities				
		"The ability of our company to get over the financial problems increases our financial opportunities".	0.824	0.272	0.002	0.462
	The percentage of firms correctly classified by the model = 71.1%	"The investment opportunities in our market are good".	-0.396	0.242	0.102	-0.221

8.3 The Determinant of Managerial Risk Averse

8.3.1 Introduction

The Finance Theory proposes that corporate hedging is attributable to managerial risk aversion. The main objective of this section is to find the relationship between managerial risk aversion factors in Saudi firms and the hedging decision. This section focuses on the possible role of managerial risk aversion as a determinant of hedging decision, as predicted by FT, by examining the relationship between organizational form, a firm's control, ownership structure, managerial compensation arrangement, and manager age and hedging decision. Tufano (1996, p. 1097) stated that "theorists have constructed two classes of explanations for managers' choices of risk management activities on behalf of their firms. One class of explanation focuses on risk management as a means to maximize shareholder value, and the second focuses on risk management as a means to maximize managers' private utility". To document the extent to which the hedging decision is endogenously determined by managerial risk aversion, this study

extends previous empirical studies (e.g., Tufano, 1996; Haushalter, 2000). Most importantly, this study includes previous studies' variables (such as manager ownership, and the firm's compensation system) and the factors that we found from the results of the exploratory study such as the firm's control, the ownership structure, the manager age, and the Islamic view. This study also uses new measures to measure the managerial compensation level, such as the performance ideal monetary compensation system, the attractive managerial high salary unrelated to result, and equity compensation system, designed to control the level of managerial risk aversion. The differing levels of managerial compensation across countries may affect the level of incentive to a hedging decision. While the academic literature has focused mostly on the effect of the managers' compensation contract in the hedging decision in developed countries, this study examines the relationship in one of the developing countries, Saudi Arabia. This section is divided into two sub-sections. The first sub-section presents a univariate analysis for management risk aversion variables. The second sub-section contains a multivariate analysis of the management risk aversion variables.

8.3.2 Univariate analysis for management risk aversion variables

The specific objective for this section is to classify firms according to the degree of managers' risk aversion sensitivity, hence to measure their degree of influence on the hedging decision. It will concentrate on a preliminary empirical investigation of the relationship between organization form, the level of shareholders' and managers' ownership, control, manager compensation system, and manager's age and the hedging decision of Saudi firms. Since the behaviour of a firm is largely a function of the basic value of its shareholders, and since most highly concentrated shareholders in Saudi Arabia are concerned with the long- term growth of the firms in which they invest, these values are expected to influence corporate strategy and policy. It has been suggested in section (7.3) that the hedging decision may also be motivated by the management risk aversion sensitivity. Testing the validity of this argument is obviously not an easy task, since most firms are run by managers who are not full owners.

It is important in this study to establish some criteria to explain the relationship between the manager and the different forms of firm ownership structure and its effect on the firm's control. Pondy (1969) believed that the extent to which stockholders can enforce their goals effectively on management is a function primarily of how closely or widely

the stock is held. This study has used five critical variables to measure the effect of the management risk aversion level on the hedging decision, see Table 8.17. The first variable is the firm's ownership structure which can be measured using three dimensions: individual, family, and shareholder firms. The second variable is firm control. In that, firms can also be classified as owner- controlled firms if one or more of its owners have 10% or more of the firm's equity. A firm can be classified as manager-controlled firm if none of its owners has 10% or more of the firm's equity. This criterion provides two groups of firms, which are sufficiently different to determine if the type of control has any effect upon the hedging decision. The third variable is regarding the managerial ownership, in that firms can be divided into two groups according to the managerial ownership in the firms, in these groups we distinguish between where the managers of the firms hold 10% or more of the firm's stock and between the managers who have less that 10% of the firm's stock. The fourth variable is the managerial compensation system. In this study we distinguish between a performance related monetary compensation system, and a fixed manager annual salary to examine whether managerial short-term compensation arrangements affect the hedging decision. This study uses also the equity compensation system to examine whether managerial long-term compensation affects the hedging decision. The last variable is managerial age.

Table 8.17: Classification of managerial risk aversion variables

Classification	Deemed to exist when:
Organization Form	• Individual owned company • Family owned company • Shareholder owned company
Firm control	• Firms can be classified as owner- controlled firms if one or more of its owners have 10% or more of the firms' equity. • Firms can be classified as manager- controlled firms if no one of its owners has 10% or more of the firms' equity.
Managers Ownership	1. Managers owns less than 10% of the firm's equity. 2. Managers owns more than 10% of the firm's equity.

Classification	Deemed to exist when:
Managerial compensation system	1. The level of the firm's performance ideal monetary compensation system (No, low, or high). 2. The availability of equity compensation system (No or yes). 3. The level of a fixed manager's annual salary (The manager's annual income is less than 50000 pounds, The manager's annual income is between 50000 and 150000 pounds, and The manager's annual income is more than 150000 pounds).
The Islamic view	• The derivative contracts (forward, future, option, and swap contracts) are prohibited from Islamic "Shariah" • As there are no acceptable financial contracts (from Islamic 'Shariah') in the market to hedge currency exposure does affect the ability to hedge.
The manager age	• Less than 40 years old • Between 41 and 50 years old • Over 51 years old

In the survey, the respondents were requested to identify whether their organizations' form could be classified as shareholders individual, or family firm. The responses about their firms' structural form are shown in Table 8.18. As can be seen from the table, firms that had their shares trading in a stock exchange were less likely to hedge, in that 65.7% of shareholder firms were not hedging their FX risk. About 72.2% of the family companies in the sample, assumed to be more controlled by a small number of individual owners, hedged their FX risk. These results are consistent with the ownership structure argument, and as stated on section (7.3), this research would expect that family and individual firms to have a greater propensity to hedge than shareholder firms. The probability of hedging in family firms were very high in comparison with the same probability in shareholder and individual firms, so the expectation that the family firms are more likely to hedge than shareholder and individual firms is supported. In contrast with the expectation that most of the individual firms will hedge their foreign exchange risk as a result of a small number of individual owners, table 8.18 shows that 66.7 percent of individual firms were not hedging. To see if there is a significant difference between hedging and non-hedging firms regarding the organisation form (Hypothesis, H5), the Chi-Square is used. The test shows that there is a significant difference on the organization form between the hedging firms and non-hedging firms. In that the calculated p value (0.01) is less than the critical p value (0.05).

Table 8.18: Management risk avers and hedging decision determinant.

The variables	The measurement	Predicted Hypothesis	Hedging Firms		Non-Hedging firms		Total		Chi-Square Test	Mann-Whitney Test
			No.	%	No.	%	No.	%		
Organisation Form	Shareholder owned company	Na	12	34.3	23	65.7	35	100		
	Individual owned company	Na	10	33.3	20	66.7	30	100	**0.01**	-
	Family owned company	Na	13	72.2	5	27.8	18	100		
Firm Control	Manager-controlled firms	Na	3	15	17	85	20	100		
	Owner-controlled firms	Na	32	50.8	31	49.2	63	100	**0.01**	-
Managerial ownership	Manager owns less than 10% of the firm's equity	HD < NHD	12	25.5	35	74.5	47	100		
	Manager owns more than 10% of the firm's equity	HD > NHD	23	63.9	13	36.1	36	100	**0.00**	-
Managerial compensation system	No monetary compensation system	HD < NHD	1	33.3	2	66.7	3	100		
	Low monetary compensation system	Na	23	56.1	18	43.9	41	100	-	**0.03**
	High monetary compensation system	HD > NHD	11	28.2	28	71.8	39	100		
	No equity compensation system	HD < NHD	13	26.5	36	73.5	49	100		
	There is an equity compensation system	HD > NHD	22	64.7	12	35.3	34	100	**0.001**	-
	The manager annual income is less than 50000 pounds	Na	11	55	9	45	20	100		
	The manager annual income is between 50000 and 150000 pounds	Na	15	45.7	19	54.3	34	100	-	0.17
	The manager annual income is more than 150000 pounds	Na	8	30.8	17	69.2	25	100		
The manager age	Less than 40 years old	Na	13	59.1	9	40.9	22	100		
	Between 41 and 50 years old	Na	15	41.7	21	58.3	36	100	-	**0.046**
	Over 51 years old	Na	7	28	18	72	25	100		

The basic hypothesis to be tested here is that owner- controlled firms are more likely than manager- controlled firms to hedge their foreign exchange risk. In order to test these arguments using a classification close to that used in previous studies, the researcher classified the firms into two new groups. The first group contains the firms, which their owners own 10% or more of the firm's stock even if some of them work in the firms' management team. The second group involves the firms in which their owners own less than 10% of the firm's stock. To test this hypothesis, the respondents were asked to point out if any of firm's owner or shareholder has 10% or more of the firm's stocks while not being one of the management teams.

When the two groups of firms are compared, after each firm has been classified as owner-controlled firm or manager- controlled firm, as in Table 8.18, we found that 85% of manager- controlled firms were not hedging their foreign exchange risk. In contrast, 49.2% of the owner- controlled firms were not hedging their foreign exchange risk. Whereas, 50.8 percent of the firms whose owners hold 10% or more of the firm's stock were hedging their foreign exchange risk. It seems that these owners were affecting the manager's idea against exchange risk and encouraging them to hedge. There are some differences between owner-controlled firms and manager-controlled firms regarding their behaviour towards foreign exchange risk management. In order to find out to what extent the differences between these two groups are statistically significant, the Chi-Square Test is employed (see table 8.18). The result revealed that there are significant differences between hedging and non hedging firms with respect to the firm's control ($p < 0.05$). The Hypothesis (H6) that there are significant differences between hedging and non hedging firms with respect to the firm's control can be accepted.

We now turn to examine the effect of the manager's ownership on the hedging decision. Katz and Niehoff (1998) found that the level of ownership affects the strategies chosen because strategic decisions are affected by different degree of risk- sharing between owners and managers. It has been suggested that managers with small proportion or no stockholding in the firms fail to maximize shareholder wealth because they have an incentive to consume prerequisites (Jensen and Meckling, 1976). In order to explain the effect of managerial ownership on the firm's risk management strategy, the respondents were asked to point out the percentage of stockholding that their managers have in the firm. From table 8.18, it can be seen that in particular high levels of managerial

ownership might be the optimal incentive arrangement for hedging activity in a firm with high level of risk. It can be seen from the Table, 8.18 that the firms which their managers owned more than 10% of the firm's equity, were hedging their foreign exchange risk. Generally, most of the managers' wealth and human capital were invested in their firms. While there are some differences between hedging and non-hedging firms on the percentage of stockholding by managers the idea is to find whether these differences are statistically significant or not. The Chi-Square test results shown in Table 8.18, reveal that there are significant differences on the percentage of manager ownership between hedging and non-hedging firms, the calculated p value (0.00) is less than the critical p value (0.05). This allows us to accept the hypothesis (H7) that there is a significant difference between hedging and non-hedging firms on the percentage of equity owned by a manager.

As can be seen from Table 8.18, 71.8 percent of the firms with a high level of performance related monetary manager compensation were not hedging their foreign exchange risk, so that only 28.2 percent of firms with high level of performance related monetary manager compensation were hedging. In other words, there are 58.3 of the non-hedging firms with a high level of performance related monetary compensation program, whereas only 31.4 percent of hedging firms have a high level of monetary performance related compensation programme. In addition, according to the table, 65.7 percent of the respondents in hedging firms indicated that their firm's monetary compensation system was very low, and consequently not to be attractive and an encouragement for a good management performance. In order to examine whether the hedging and non-hedging firms are different regarding the level of performance related monetary compensation, the Mann-Whitney Test was used. The test, in table 8.10, revealed that the respondents of the two groups differed significantly with respect to the performance related monetary compensation arrangements for managers ($p = 0.03$). The hypothesis (H8) that there are significant differences in the management performance related monetary compensation arrangements between hedging and non-hedging firms, can be accepted.

This study also tests to see whether the managerial stockholding reward system and their salary are powerful influences on managers' behaviour. With a managerial stockholding reward system, any unfavourable movements of the exchange rate will affect the firm's cash flows and would also affect the personal wealth of managers

holding shares of the companies they manage. The greater the effect of foreign exchange risk in the firm's cash flow and the greater the manager's stockholdings, and the more their personal wealth would be affected, thus, the more likely they would adopt corporate hedging activity.

From Table 8.18, we can see that hedging firms were mainly using an equity compensation system in order to encourage managers to take a decision which will maximize the shareholders' wealth. 64.7 percent of the firms with an equity compensation programme, managers were hedging their firms' foreign exchange risk. It can be seen from the Table, that 75 percent of the respondents in non-hedging firms stated that their firms did not have an equity compensation programme for managers. In order to explore whether the differences in the hedging and non-hedging firms regarding the management equity compensation are statistically significant, the Chi-Square test was used. The Chi-Square Test reveals that there was statistically significant difference in the management equity compensation programme between the two groups, the calculated p value (0.001) is less than the critical p value (0.05). The hypothesis (H9) that there is significant difference between hedging and non-hedging firms regarding their management equity compensation programme can be accepted.

As discussed in section (7.3.2.2) and found above, regardless of the motivational effects of stock holding reward on a manager's hedging decision, the need for consistent feedback for different aspect of a reward system remains crucial. Thus, salary should reinforce value-maximizing manager performance independent of the effect of stock holding reward. As salary is an independent reward system its relationship to hedging decision warrants individual study. As the data on managers' salary compensation is not publicly available, the data about salaries was gathered from the questionnaire. The major proportion of managers' total income comes from their employment income, which consists of the employment salaries, bonuses, profit- sharing schemes, and the value of a firm's stock held by managers. The risk, which will affect the firm's value, is closely related to the manager's total income. If their firm failed to avoid certain risk this may affect their wealth and seriously hurt their future employment. It follows that with hedging, the manager's job and income will become more stable. To predict the effect of management salary reward on the hedging decision, the managers responsible for the hedging decision were asked to indicate their annual salaries in the firm during the year. In the exploratory study with 15 firms, three categories were identified to

classify managers' salaries. In the exploratory study, there were 6 firms in which managers received less than 50,000 pounds yearly, 5 firms where managers received between 50,000 and 150,000 pounds yearly, and 4 firms where their managers received more than 150,000 yearly. In the final questionnaire the same categories are used to classify managers' salary. In order to find out the difference between respondents in hedging and non-hedging firms regarding the manager's salary, a list of three levels of yearly salaries were presented to them, and then were asked to indicate their yearly salary. Table 8.18 presents the effect of the changes in annual income salary figures on the hedging decision. Four respondents were eliminated from the data of salary reward cited in the table as they did not answer this question.

From Table 8.18, we can see that 69.2 percent of the respondents with high annual income salary were not hedging their firms' foreign exchange risk, with only 30.8 percent of the high annual income salary hedging. Also, it can be seen from the table that 32.4 percent of the respondents in hedging firms had an annual income of less than 50000 pounds, in contrast to only 20 percent of the respondents in non-hedging firms pointing out that their annual income being less than 50,000 pounds. The large number of hedging firms in the sample with managers with a smaller average amount of salary than those in non-hedging firms, suggests that managers salaries may not be related to a firm's earning performance.

There is a difference in the overall medium and high level annual income between hedging and non-hedging firms, in that 67.6 percent of the respondents in the hedging firms received a medium or high level annual income, on the other hand there are 80 percent of the respondents in the non-hedging firms who received medium and high annual income. As there are 35.4 percent of non-hedging firms controlled by managers (see table 8.18), the boards of directors in these firms may use salary as a mechanism for controlling managers. Overall, it seems that the difference is not that high in order to play a role in directing the management risk management strategy. In order to explore the extent to which the differences between the respondents annual income from salaries of the two groups are statistically significant, the Mann-Whitney Test for exploring differences was used. The Mann-Whitney Test in Table 8.18 shows that there are *no statistically significant differences* in the annual income from salaries between the respondents of the hedging and non-hedging firms, the p value (0.17) is higher than the critical p value (0.05). The hypothesis (H10) that there are significant differences in the

annual income from salaries between respondents in hedging and non-hedging firms, can not be accepted.

The managers' age, also might be used as a proxy for risk aversion, in that older managers who are nearly to be retirement from their jobs may prefer to minimize any random fluctuations in their portfolio, and more likely to use hedging activity (Tufano, 1996). The research respondents were given a list of three levels of age, and asked to specify their age group level. As can be seen from Table 8.18, most of the young respondent managers less than 40 years old (nearly 60 percent) chose to hedge their firms' foreign exchange risk. Also, we can see that 72 percent of the old respondent managers (over 50 years old) were not hedging their firms' foreign exchange risk. These results are inconsistent with Tufano's prediction. From these results, it can be argued that hedging issues are probably greatest for young managers, where by managers of that age look to build their reputation and improve their experience by adopting and encouraging new ideas in the organization. On the other hand, an old manager who may have more experience in his job is often less sensitive to corporate risk, and may decide to ignore some of the firm's risks. It seems that young managers are more likely to be entrepreneurs with significant human capital investment in the firm and may have more uncertain prospects compared to old managers. Old managers who are over 50 year old might be more cautious in using hedging instrument contracts, and hence young managers might be more attracted to new hedging techniques in order to establish themselves. One of the interviewed financial mangers said in the pilot study that the director in his firm was over 50 years old, and for that reason he did not feel that he was happy to understand derivatives. In order to find whether the differences in the responses in age of the two participating groups are statistically significant, the Mann-Whitney Test was used. The Mann-Whitney Test shows that there is a significant difference between the respondents in hedging firms and non-hedging firms regarding their age. In that the calculated p value (0.046) is less than the critical p value (0.05). We can accept the hypothesis (H11) that there is a significant difference between hedging and non-hedging firms regarding the age of the manager.

The Islamic view

As found in the exploratory study, most of the interviewees in the non-hedging firms argued that the financial contracts available in the markets to hedge currency risk were unacceptable under the Islamic view. This problem needs to be considered using a large sample in order to see if this problem is more general. The respondents were asked two questions; first, if they think that the derivative contracts are prohibited in Islamic "Shariah", second, if there are no acceptable financial contracts (in Islamic 'Shariah') in the markets to hedge currency exposure, does this affect their ability to hedge currency exposure? To estimate the internal reliability of using these two questions to reflect the effect of the Islamic view on the hedging decision, Cronbach's alpha was calculated. The result shows a high internal reliability of using these two questions as a measure for one variable, the Alpha = .97. The high internal reliability made it possible to combine these indicators with each other to generate one variable (we call it the Islamic view). Table 8.19, presents the respondents answers regarding the new variable (the Islamic view).

Table 8.19: The Islamic view and hedging decision.
(from 1 'disagree' to 5 'agree')

Variables	Indicator	Hedging Firms				Non-hedging Firms				Mann-Whitney Test
		Mean	S.D	PR 4or 5 %	PR 1or2 %	Mean	S.D	PR 4or5 %	PR 1or2 %	
The Islamic view	The derivative contracts (forward, future, option, and swap contracts) are prohibited from Islamic "Shariah" and this affects our strategy against currency exposure.	2.23	1.14	17.1	65.7	3.85	1.25	66.7	16.7	0.000

As can be seen from the Table, 66.7 per cent of the respondents in non-hedging firms agreed that the Islamic 'Shariah' regulation affected their attitude against currency exposure. The Mann-Whitney Test indicates that there is significant difference between hedging and non-hedging firms regarding the effect of the Islamic view in their hedging decision. The hypothesis (H12) that there is significant difference between hedging and non-hedging firms regarding the effect of the Islamic view in their hedging decision, can be strongly accepted.

8.3.3 Multivariate analysis

The study estimates the managerial risk aversion of the firms in the sample using equation [8.11]. It was expected that managerial risk aversion might be affected by the firm's structure, the firm's control, manager ownership, manager compensation system, manager's age, and the Islamic view. All of these factors are used in equation [8.13] in order to generate the managerial risk aversion hedging model. The study includes all managerial risk aversion factors in the cross-sectional regression equation shown below:

$$\text{In}\ \left(\frac{Pi}{1-Pi}\right) = \beta_0 + \beta_1 \text{Structure} + \beta_2 \text{Control} + \beta_3 \text{Ownership} + \beta_4 \text{Comoney} + \beta_5 \text{Comequity} + \beta_6 \text{Comsalary} + \beta_7\ \text{age} + \beta_8 \text{Islamlaw} + \varepsilon \qquad [8.13]$$

Where as

β_0	Constant term
Structure	Firm structure
Control	Firm control
Ownership	The manager stockholding in the firm
Comoney	The monetary compensation system
Comequity	The equity compensation system
Comsalary	The manager annual income
Age	The manager's age
Islamlaw	The Islamic view
β_1 to β_8	Coefficients for each firm-specific variables
ε	Residual term

In order to examine if the collinearity problem exists between the independent variables in the model, the linear regression model was applied using the same dependent and independent variables used in the logistic regression. The linear regression model shows that all of the tolerances exceed .43, indicating no serious problem of collinearity, see Table C.2, Appendix C. Also the test for the residuals shows there are no serious problems as most of the standardized residuals lie within 2 standard deviations from the mean, see Figure C.2, Appendix C. The results of the logistic regression are shown in Table 8.20. In the equation there are seven categorical variables (structure, control, ownership, comoney, comequity, comsalary, and age).

Table 8.20: The logistic regression for the managerial risk aversion variables model (model 3a).

The variable	The Indicator	Unstandardized Coefficient (B)	S.E.	Sig.	Odds ratio Exp(B)	95.0% C.I. for EXP(B) Lower	Upper
Firm structure	Shareholder firms (the reference)			.465			
	Individual firms (1)	-.258	1.129	.819	.772	.084	7.065
	Family firms (2)	1.791	1.789	.317	5.997	.180	200.013
The firm control	The manager-controlled firms (1)	-4.761	2.089	**.023**	.009	.000	.514
Managerial ownership	Manager owned more than 10% of the firm's equity (1)	.851	1.242	.493	2.343	.205	26.749
Managerial compensation system	No monetary compensation system (the reference)			**.020**			
	Low monetary compensation system (1)	7.063	3.253	**.030**	1167.477	1.987	685845
	High monetary compensation system (2)	3.473	2.840	.221	32.226	.123	8428.90
	The manager annual income less than 50000 pounds (the reference)			.095			
	The manager annual income between 50000 – 150000 pounds (1)	-.242	1.186	.838	.785	.077	8.027
	The manager annual income more than 150000 pounds (1)	-3.092	1.506	**.040**	.045	.002	.870
	There is an equity managerial compensation system (1)	3.476	1.389	**.012**	32.315	2.124	491.604
The manager age	Less than 40 years old (the reference)			**.018**			
	Between 41 – 50 years old (1)	-2.559	1.405	.068	.077	.005	1.214
	Over than 51 years old (2)	-5.010	1.772	**.005**	.007	.000	.215
The Islamic view	The derivative contracts (forward, future, option, and swap contracts) are prohibited from Islamic "Shariah" and this affect our strategy against currency exposure.	1.953	.625	**.002**	7.053	2.073	23.990
The Constant		-8.842	2.935	**.003**	.000	-	-

The first category of a firm's structure is a shareholder firm, and this has been used as the reference group. The first coefficient (structure (1) in Table 8.20) therefore reports the log odds difference between the reference group (shareholder firms) and those who are individual firms, the family firms were nearly 6 times more likely to hedge (indicated by the odds ratio of 5.997) than were the shareholder firms. However, while the univariate analysis reported that there was a statistically significant difference

between hedging and non-hedging firms regarding the firm's structure, the logistic regression shows that this difference is not statistically significant. Consistent with univariate analysis, Table 8.20 shows that the coefficient for the manager-controlled firms was negative and high, indicating that manager-controlled firms were less likely to hedge, and this was statistically significant at the 5% confidence level.

A surprising result is observed between manager shareholding in the firm and the hedging decision. While the univariate analysis showed that there are statistically significant differences between hedging and non-hedging firms regarding managers' shareholding level in firms, the results in Table 8.20, show little support for the argument that a firm which its manager owned more than 10% of the firm's shares will be more likely to hedge. The odds ratio tells us that in the sample firms where a manager owned more than 10% of a firm's shares, they are 2.343 times as likely as firms where managers owned less than 10% of the firm's shares to hedge. Also the 95% CI's indicates a 95% certainly that in the population, firms whose managers owned more than 10% of the firm's shares, are between .205 times to 26.749 times as likely as firms whose managers owned less than 10% of the firm's shares to hedge. However, the Table reports that the difference between firms which managers owned more than 10% of the firms' shares and those where managers owned less than 10% of the firms' shares regarding the hedging decision is not statistically significant.

Consistent with univariate analysis, Table 8.20 shows that firms with low managerial performance related monetary compensation arrangements are more likely to hedge (indicated by the high odds ratios), and this result is significant at the 5% confidence level. The findings in the Table support the hypothesis that hedging and non-hedging firms are different regarding the managerial equity compensation system, in that the coefficient for the firms with managerial equity compensation system is positively and significant compared to the reference group (firms which do not have managerial equity compensation system) and this difference is statistically significant with p value less that the critical p value (0.05). The odds ratio indicates that firms with management equity compensation system are 32.315 times as likely as firms without managerial equity compensation system to hedge currency exposure. Similar to the findings in the univariate analysis, the logistic regression does not find any significant effect for the managerial fixed annual income on the hedging decision.

The negative unstandardized coefficients for the managers age over 41 years old, indicates that a manager's age may play a role in the management attitude against currency risk. The logistic regression evidence accepts the hypothesis that younger managers are more likely to hedge, and this finding is statistically significantly. One of the main important findings in Table 8.20, which appears to have a significant affect on the firm's hedging decision is the effect of the Islamic view. As a high percentage of the respondents in the sample believe that derivative contracts are prohibited from Islamic "Shariah", this affects their decision to hedge the currency exposure.

Table 8.21: The logistic regression model (model 3a) analysis of the managerial risk aversion model output.

Panel A: The classification Table

The Step	Observed	Predicted		
		Hedging or non-hedging company		Percentage Correct
		Non-hedging company	Hedging company	
Step 0 The model includes only the constant	Non-hedging company	48	0	100.0
	Hedging company	35	0	0.0
	Overall percentage			**57.8**
Step 1 The model includes all the independent variables	Non-hedging company	43	5	89.6
	Hedging company	5	30	85.7
	Overall percentage			**88.0**

Panel B: Model Summary

Step	Initial -2 Log likelihood	Ending -2 Log likelihood "D_M"	Cox & Snell R Square	Nagelkerke R Square
1	113.018	36.436	.603	.81

Panel C: Association / Predictive Efficiency

G_M	R_L^2	λ_P	τ_P	R^2	The model improve our efficient choice to hedge or not to hedge by
76.582 (p = .000)	0.678	0.714	0.753	0.711	%66.9

Panel D: Hosmer and Lemeshow Test

Step	Chi-Square	df	Sig.
1	7.142	8	.52

Table 8.21, reported the managerial risk aversion model output. Overall, the model shows a high percentage of accuracies in classifying the firms in the sample as hedging and non-hedging firms. The model classified 88 per cent of the firms in the sample correctly. The Table, Panel C, shows that we can reject the null hypothesis that

managerial risk aversion variables are unrelated to hedging decision, based on a high G_M = 76.582 and is statistically significant (p = 0.000). Also R_L^2 = 0.678, and R^2 = 0.711, suggesting a high association between the managerial risk aversion variables and the hedging decision. Both λ_P = 0.714, and τ_P = 0.753 are high, indicating that the managerial risk aversion variables allows us to classify the firms into hedging and non-hedging firms with a very high degree of accuracy. Table 8.22, presents a reduced model (model 3b) from the managerial risk aversion model (model 3a) with all variables for which p > .10 were eliminated. Table 8.22, shows that the odds ratio for most of the variables is increased, and the reduced model correctly classified 88% of the firms in the sample as hedging and non-hedging firms, the same as the full model. Table 8.22 shows that in the reduced model the G_M = 73.978, R_L^2 = .655, and R^2 = .702, indicates that the reduced model (model 3b) is better than the full model (model 3a) in generating a strong relationship between the managerial risk aversion variables and hedging decision. Both the reduced model and the full model show the same ability in classifying the sample into hedging and non-hedging firms. Overall, the reduced model looks to be more effective than the full model.

Table 8.22: Model 3b: Logistic regression analysis results for the managerial risk aversion variables and hedging decision, variables with maximum p = 0.10 included .

Dependent Variable	Association/ Predictive Efficiency	Variables	Unstandardized Logistic Regression Coefficient (*b*)	Sig.	Odds ratio Exp(B)	95.0% C.I. for EXP(B) Lower	
Hedging Decision	G_M = 73.978 (P = 0.000)	The manager-controlled firms (1)	-4.673	.013	.009	.000	.375
	R_L^2 = 0.655	No monetary compensation system (the reference)		.012			
The model improve our efficient choice to hedge or not to hedge by %65.5	R^2 = 0.702	Low monetary compensation system (1)	7.313	.021	1500.395	2.997	751096.596
	λ_P = 0.714	High monetary compensation system (2)	4.299	.132	73.613	.275	19730.766
	τ_P = 0.753	The manager annual income less than 50000 pounds (the reference)		.119			
	The percentage of firms correctly classified by the model = 88%	The manager annual income between 50000 – 150000 pounds (1)	-.350	.740	.705	.089	5.594

Dependent Variable	Association/ Predictive Efficiency	Variables	Unstandardized Logistic Regression Coefficient (*b*)	Sig.	Odds ratio	95.0% C.I. for EXP(B)	
					Exp(B)	Lower	
		The manager annual income more than 150000 pounds (1)	-2.467	.051	.085	.007	1.010
		There is an equity managerial compensation system (1)	3.636	.003	37.928	3.401	422.955
		Less than 40 years old		.009			
		Between 41 – 50 years old (1)	-2.789	.043	.061	.004	.916
		Over than 51 years old (2)	-5.370	.002	.005	.000	.141
		The derivative contracts (forward, future, option, and swap contracts) are prohibited from Islamic "Shariah" and this affect our strategy against currency exposure.	2.036	.000	7.662	2.457	23.894
		The Constant	-9.728	.001	.000		

Table 8.23, shows the effect of each variable in the reduced model (model 3b) if the variable is removed. The Table reports the amount that each exploratory variable contributes to the reduced model. The Table shows that the Islamic view has the highest effect on the reduced model (28.1%).

Table 8.23: The effect on the reduced model (model 3b) if variable removed.

Independent Variable	Model Log Likelihood	Change in -2 Log Likelihood	df	Sig. of the Change□	The percentage of the contribution*□
The firm control	-23.830	8.619	1	.003	7.6%
Managerial monetary compensation system	-26.974	14.909	2	.001	13.2%
Managerial annual income	-22.102	5.164	2	.076	4.6%
Managerial equity compensation system	-26.342	13.645	1	.000	12.1%
Manager age	-27.942	16.845	2	.000	14.9%
The Islamic view	-35.378	**31.716**	1	.000	**28.1%**

Not: * Calculated as (2 Log Likelihood df Sig. of the Change / the initial -2 log likelihood).

8.4 The Conclusion

This chapter has found little empirical support for the predicted power of FT factors which have been suggested in previous studies to view risk management as a means to maximize shareholder value. The results show moderate and mixed empirical support for the hypothesis that currency exposure management can be used to increase the firm's value by reducing agency conflicts, increasing investment opportunities, reducing the financial distress costs. Also the findings in this chapter reveal no support for the predictive theory that currency risk management can be used as a means to decrease corporate finance costs using the indicators used to measure the firm's corporate finance costs. We found strong support when using accounting ratios to measure the firm's corporate finance costs. The results in this chapter have important implications for corporate hedging. The main finding is that all of the managerial risk aversion factors were found to be significantly affected the currency hedging decision. The surprising result is that the empirical evidence has shown little support for the predictive power of theory which views the currency exposure management as affected by the manager's shareholding level. This finding provides little support to the suggestion that managerial shareholding may be an effective incentive mechanism to induce managers to make value-maximizing investment decisions. Within the hedging firms, we found that the levels of managerial equity ownership, the improvement in the firm, the level of the shareholders' participation, and the managerial equity compensation contract are interrelated in a manner consistent with systematic efforts to reduce agency costs.

The chapter has suggested that the high sensitivity of a manager's wealth to shareholder's wealth in hedging firms plays an important role in driving the hedging decision. We may conclude that while firms' management risk aversion plays a role in driving the risk management decision, we are inclined to conclude that a firm's control, the Islamic view, and the management stockholding reward programme in the firm are more significant related to the risk management decision.

The next chapter will examine the effect of the contingent theories in the currency exposure hedging decision. The chapter will examine the effect of the firm's need and ability to hedge in the hedging decision.

Chapter Nine

The Determinants of Hedging Decision: Empirical Evidence (Part Two)

9.1 Introduction

The aim of this chapter is to analyse the effect of the contingent factors found in the exploratory study on the currency exposure hedging decision. Chapter Six and Seven have shown that the contingent factors can be classified into two groups; the firm's need to hedge and the firm's ability to hedge. The chapter examines whether there is empirical support for the predictive power of contingency theory that view currency risk management as a contingent to the firm's context.

The objective of this chapter is to analyse the effect of the firm's needs and its ability to hedge in its risk management policy. For that purpose, the Chapter is divided into four sections. The aim of the next section is to examine the relationship between the foreign exchange risk hedging decision and the determinants of the need for that hedging decision. The third section analyses the effect of the firm's ability to hedge. The final section outlines the main conclusions of the Chapter.

9.2 The Determinants of The Firm's Need to hedge

9.2.1 Introduction

The theoretical framework, discussed in Chapter 7, suggested that there are nine determinants on the firm's need to hedge, see Figure 7.4 (section, 7.3.2). As shown in the previous Chapter, to hedge or not to hedge decision can be determined by the managerial risk aversion level in the firm. This section examines new group of determinants which may affect the hedging decision. These variables are industry, markets, diversification, the magnitude of foreign exchange exposure, the relevance of the risks, competition, the firm's operational sensitivity to foreign exchange rate movements, accounting methods, and market and currency regulation.

9.2.2 General descriptive statistics and correlation coefficient of proxy variables

This subsection generally describes some factors which can be used to measure the firm's need to hedge. The purpose is to describe the hedging needs variables and to see the degree of correlation between these variables and their proxies and to examine the rationale of using some proxies as a group to measure specific hedging need variables. The study uses eight variables to measure the effect of the firm's level of need to hedge, Table 9.1 provides a description of how this study measures the different variables.

Table 9.1: Classification of hedging need variables

Classification	Definition
Industry	1. Firms can be classified to different industries
Markets	1. Competitive market 2. Price regulated market 3. Oligopolistic market
The magnitude of Foreign exchange exposure	1. The magnitude of the currency exposure from the firm's foreign currencies denominated exports 2. The magnitude of the currency exposure from the firm's foreign currencies denominated imports 3. The movements of the currencies used by the company 4. The firm's debt in foreign currencies 5. The firm's purchases in foreign currencies 6. The firm's sales in foreign currencies
The Competition	1. The sensitivity of the main products' demand to changes in price 2. The difference between the firm's products and those of their competitors 3. Competitors with their costs on the same currencies as the firm 4. Number of competitors in the markets
Accounting approach	1. To what extent the firm tends to use an accounting approach which minimize the negative effect of the exchange rates movements on the data presented to shareholders and analysts
Market and Foreign exchange policys	1. The extent to which market policy reduce the impact of the foreign exchange rates movements 2. The extent to which currency policy hinders foreign exchange risk management 3. The extent to which market policy hinders foreign exchange risk management 4. The extent to which currency policy reduce the impact of foreign exchange rate movements
The firm's operation sensitivity to foreign exchange rate movements	1. The sensitivity of sales volume to changes in exchange rates 2. The sensitivity of purchase volume to changes in exchange rates 3. The sensitivity of profit margin to changes in exchange rates 4. The sensitivity of costs to changes in foreign exchange rates 5. The sensitivity of cash flows to changes in exchange rates

Before examining the differences between hedging and non-hedging firms, Table 9.2 presents descriptive data for the hedging need variables in the sample. The respondents were asked to indicate their view about the different measurements of the hedging need variables. The descriptive statistics in Table 9.2 shows that this study covered seven different industrial groups. From the Table, we can see that chemical and oil, electric and electronic, cement and building tools, and furniture industry present the highest proportion of participants in this study, 20.5%, 22.9%, and 18.1% respectively. The firms in the sample were divided into three different markets, competitive, price regulated, and oligololistic. As can be seen from the table, half of the firms in the sample appeared in the oligololistic market (50.6 per cent), 45.8 per cent of the firms in the sample were competitive markets, whereas only 3.6 per cent of the firms dealt with price regulated markets. In order to define the degree of the diversification in the firms in the sample, the respondents were asked to choose from the list of different currencies the ones that their firms used in exporting and importing (see questionnaire section 3 in Appendix B). This study further distinguishes firms in the sample on the basis of diversification: (1) firms which trade using one or two currencies are classed as less diversified; and (2) firms which trade using three or more currencies are classed as diversified firms. As can be seen from Table 9.2, most of the firms (57.8 per cent) were not diversified. Most of the firms in the sample were exporting and importing using only one or two currencies.

To measure the firm's foreign exchange exposure magnitude, six measurements were used, (a) the magnitude of the foreign denominated exports; (b) the magnitude of the foreign denominated imports; (d) the volatility of the currencies used by the company; (e) debt in foreign currencies; (f) purchases in foreign currencies; (i) the company's sales in foreign currencies.

In order to identify the magnitude of the firm's foreign currency denominated exports, the respondents were asked to define using a scale (no, some, most, all) the level of their exports in Saudi riyal and U. S. dollar, and the level of their exports using other currencies. According to their answers, firms were classified into four groups; (i) no exposure if the firm export using only Saudi riyal or U. S. dollar; (ii) small exposure if the firm makes limited use of other currencies; (iii) medium exposure if the firm uses a mixture of Saudi riyal, US dollar and other currencies; and (iiii) large exposure if the exports using only other currencies. The same categories are used to classify the firm's

exposure to foreign currency denominated imports. According to the Table, we can see that 42.2 per cent of the firms did not have any exposure to foreign currency denominated exports, and that only 16.9 per cent of the firms in the sample had a high percentage of foreign currency denominated exports. This means that the foreign currency denominated exports do not have a high level of effect on the hedging decision. In contrast, most of the firms in the sample were affected by the amount of exposure to foreign denominated imports. About 55.4 per cent of the firms were heavily engaged in importing activity, and only 2.4 per cent of the firms in the sample were not exposed to foreign currency denominated imports. From the table we can see that 61.5 per cent of the firms described foreign exchange rates used in international trading as very moderately vulnerable, with only 4.8 per cent of them describing their international trading as totally invulnerable to the movements in foreign exchange rates.

Table 9.2: Descriptive statistics of independent hedging needs variables For the Sample

Panel A

The variables	The Measurement	No.	%
Industries	Chemical & Oil	17	20.5
	Food & Drink	9	10.8
	Electric & Electronic	19	22.9
	Cement and building tools & Furniture	15	18.1
	Mining	6	07.2
	Medical treatments & Tools	7	08.3
	Cars & Equipment	10	12
	Total	83	100
Markets	Competition market	38	45.8
	Price regulated market	3	03.6
	Oligopolistic market	42	50.6
Diversification	The number of foreign currencies used for international trade		
	One foreign currency	10	12.0
	Two foreign currencies	38	45.8
	Three foreign currencies	24	28.9
	Four or more foreign currencies	11	13.3
	Non diversified firms	48	57.8
	Diversified firms	35	42.2
The magnitude of Foreign exchange exposure	The magnitude of the currency exposure from the firm's foreign denominated exports		
	Large exposure	14	16.9
	Medium exposure	10	12
	Small exposure	24	28.9
	No exposure	35	42.2

The variables	The Measurement	No.	%
	The magnitude of the currency exposure from the firm's foreign denominated imports		
	Large exposure	46	55.4
	Medium exposure	32	38.6
	Small exposure	3	03.6
	No exposure	2	02.4
	The volatility of the foreign exchange rates that a firm uses in international trading		
	Very volatile	15	18.1
	Moderately volatile	36	43.4
	Slightly volatile	28	33.7
	Totally volatile	4	04.8

Table 9.2, Panel B

Variables	Measurement	Mean	S.D	PR 1or2	PR 4or5
The magnitude of foreign exchange exposure [1]	The company's debt in foreign currencies	2.53	079	38.6	4.8
	The company's purchases in foreign currencies	3.67	0.98	6.0	54.2
	The company's sales in foreign currencies	2.43	1.23	45.8	20.5
The relevance of the risks [2]	Debt risk	3.39	1.14	24.4	46.3
	Interest risk	3.44	1.29	18.3	43.9
	Commodity price risk	3.85	1.10	11.0	64.7
	Political risk	3.24	1.28	28.0	37.8
	Foreign exchange risk	3.35	1.21	22.0	47.5
	Industry risk	3.26	1.33	26.8	48.8
Competition	The sensitivity of the main products' demand to the changes in price [3]	3.04	1.61	50.6	47
	The difference between the company's products and those of their competitors [4]	3.10	1.61	47.0	51.8
	Company's competitors who their costs on the same currencies with your firm [1]	2.99	1.25	28.9	29
	Number of competitors on the markets [5]	4.40	1.73	15.7	54.3
The firm's operational sensitivity to foreign exchange rates movements [6]	The sensitivity of purchase volumes to changes in foreign exchange rates	3.32	1.08	21.4	51.4
	The sensitivity of sale volumes to changes in foreign exchange rates	3.22	1.12	27.7	45.7
	The sensitivity of profit margins to changes in foreign exchange rates	3.37	1.06	19.3	54.2
	The sensitivity of costs to changes in foreign exchange rates	3.90	1.03	14.5	71
	The sensitivity of cash flows to changes in foreign exchange rates	3.71	0.98	15.7	68.7
Accounting approach [7]	The firm tends to use an accounting approach which minimizes the negative effect of the exchange rate movements on the data presented to shareholders and analysts	3.24	1.36	34.9	51.8
Market and Foreign	The market policy reduces the impact of the foreign exchange rate movements	2.72	1.29	34.9	47.0

The variables	The Measurement				No.	%
exchange policy[7]	The currency policy hinders foreign exchange risk management	2.88	1.43	39.8		36.1
	The market policy hinders foreign exchange risk management	2.76	1.26	41		33.7
	The currency policy reduces the impact of the foreign exchange rate movements	3.00	1.04	31.6		53.4

Not:

1. The summary statistics relate to the scores obtained where respondents were asked to select a score from a 5-point scale where 1 = No, 3 = 21% - 50% , 5 = 81% - 100%.
2. The summary statistics relate to the scores obtained where respondents were asked to select a score from a 5-point scale where 1 = not relevant, 3 = Natural, 5 = Highly relevant.
3. The summary statistics relate to the scores obtained where respondents were asked to select a score from a 5-point scale where 1 = Inelastic demand, 3 = Not sure, 5 = elastic demand.
4. The summary statistics relate to the scores obtained where respondents were asked to select a score from a 5-point scale where 1 = highly different, 3 = Natural, 5 = The same.
5. The summary statistics relate to the scores obtained where respondents were asked to select a score from a 5-point scale where 1 = No, 3 = Two or three competitors, 5 = More than four competitors.
6. The summary statistics relate to the scores obtained where respondents were asked to select a score from a 5-point scale where 1 = Highly insensitive, 3 = Natural, 5 = Highly sensitive.
7. The summary statistics relate to the scores obtained where respondents were asked to select a score from a 5-point scale where 1 = disagree, 3 = not sure, 5 = agree.

In order to see how relevant and important the foreign exchange risk is to the firms in the sample, the respondents were provided with six different risks (debt risk, interest risk, commodity price risk, political risk, foreign exchange risk, and industry risk) and asked to identify the degree of relevance of each risk to their firm. It can be seen from Table 9.2, that commodity price risk is the most relevant risk for the Saudi firms with a mean = 3.85 (1 = 'not relevant, and 5 = very relevant). The foreign exchange exposure comes in fourth place of the relevant risks with a mean = 3.35, which may explain why a small percentage of firms hedge foreign exchange exposure (35 firms out off 83 firms in the sample). The firm's competitive situation was measured using four indicators, (1) the sensitivity of the main products' demand to changes in price' (2) the difference between the company's products and those of their competitors; (3) the percentage of the company's competitors with their costs in the same currencies with the firm; and (4) the number of competitors in the markets. In general, Table 9.2, shows that firms in the sample faced a high competition level, in that most of the firms in the sample described the number of the competitors in their markets as more than four competitors with a mean = 4.40 (1 = 'no competitor', and 5 = more than four competitors'). From the Table we can see that 51.8 per cent of the firms in the sample described their firm's products as different from those of their competitors. The results in Table show that 47 per cent

of the firms in the sample described their demand sensitivity to price changes as elastic. From the findings about the sample firms' competitive situation, it can be argued that the sample can be used as representative for the study population as it provides to some extent a balance between firms in competitive markets and those in less competitive markets.

It has been suggested in Chapter Six that if the competitors' costs are denominated in foreign currencies it can be used as one of the competition proxies. To examine this suggestion, the respondents of the survey were asked to identify the percentage of their competitors who had their input costs denominated in the same foreign currencies they used. Five companies did not respond to this question. The reason is that respondents were unaware of the competitors' foreign exchange exposure. Table 9.2, shows that 28.9 per cent of the firms in the sample indicates that only 1-20%, of their competitors had their costs in the same currencies as their firms, 29 per cent of the firms in the sample indicating that more than 50 per cent of their competitors had their costs in the same currencies with their firms.

In order to measure the firm's operations sensitivity to the volatility of foreign exchange rates, the respondents were asked to identify the sensitivity of their purchase volumes, sale volumes, profit margin, costs, and cash flows to changers in foreign exchange rates. Table 9.2 shows that the firms' costs were highly sensitive to foreign exchange rate volatility with a mean of = 3.90 and SD = 1.03 (1 = 'highly insensitive', and 5 = 'highly sensitive'). The firm's cash flows in the sample were also described as being more sensitive to the foreign exchange rates volatility (mean = 3.71, and SD = 0.98). This study also examined the extent to which firms used an accounting approach for minimizing the negative effect of exchange rate movements on the data which was presented to shareholders and analysts. The table shows that 51.8 per cent of the firms in that sample disagreed slightly with the view that they used an accounting approach in order to minimize the effect of exchange rate volatility on the data.

To measure the market and currency policy, the study used four indicators which are; (1) market policy reduces the impact of the foreign exchange rate movements; (2) currency policy hinders foreign exchange risk management; (3) market policy hinders foreign exchange risk management; (4) currency exchange policy reduces the impact of foreign exchange rate movements. As can be seen from Table 9.2, 53.4 per cent of the firms in the sample agreed that currency policy reduced the impact of foreign exchange

rates movements, with 31.6 per cent of the firms disagreeing that currency policy reduced the impact of the foreign exchange rate movements. This finding can be explained by currency policy in Saudi Arabia which links the U. S. dollar to the Saudi riyal (1$ = 3.75 SR). Also 47 per cent of the firms in the sample agreed that this market policy reduced the impact of foreign exchange rate movements.

The Spearman correlation coefficients (nonparametric correlations) in Table 9.3 reveal that the industry variable is significantly correlated to the markets. The foreign exchange exposure magnitude, and competition position. All the six indicators of the foreign exchange exposure magnitude, from X4 to X9 (see Table 9.3), were associated with each other except for the indicator (X6) 'the volatility of the company's foreign exchange rates'. This raises the question of the necessity of using all six indicators as a group to measure the firm's foreign exchange exposure magnitude.

From the Table we can see that the importance that firms give to the foreign exchange risk is associated with the effect of that risk on the firms' output and input (purchase volumes, sale volumes, profit margin, costs, and cash flows). These firms recognize the amount of effect that foreign exchange exposure has upon their operations, and that this may affect their risk management strategy. As can be seen from the Table the four indicators which measure the competition level of the firms were statistically, significantly, and positively associated with each other, which supports the validity of using them as a group of measurements to measure the competitive position of each firm in the sample. The competition variable measurements (X16 to X19) were also associated with the relevance that firms gave to foreign exchange risk and with the volatility of the firm's foreign exchange rates. This is consistent with the suggestion that competitive position has a positive relationship with the foreign exchange exposure (Bradley, 1998). Also competition variables are significantly associated with market and industry variables.

Table 9.3: Spearman correlation coefficients of the firm's need to hedge proxy variables

	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15	X16
X1	1															
X2	.30**	1														
X3	.17	-.25*	1													
X4	.35**	-.11	.19	1												
X5	.21	-.09	.07	.19	1											
X6	.19	.37**	.10	.04	.12	1										
X7	.21	-.21	.13	0.17	.37**	.05	1									
X8	.20	-.19	-.09	.30**	.47**	.11	.48**	1								
X9	-.56**	-.09	.08	.40**	.21	-.13	-.28*	-.37*	1							
X10	.17	-.16	.05	.22*	-.16	.20	.22*	.25*	-.20	1						
X11	.10	-.17	.21*	.10	-.06	-.22	.19	.22*	-.07	.39**	1					
X12	-.09	.18	.20*	.13	.23*	.22	.09	.31*	.02	.22*	.23*	1				
X13	-.01	-.01	.07	.08	-.14	.00	-.04	.11	.02	.14	.05	.19	1			
X14	.16	-.15	.24*	.19	-.19	.21	.23*	.12	-.15	.25*	.27*	.22*	-.02	1		
X15	-.39**	.28**	-.11	-.12	.05	.15	.05	-.08	.23*	-.22	-.26*	.23*	.20	.17	1	
X16	.24*	-.29**	.21	.13	-.20	.27*	-.07	.08	-.10	.19	.07	-.26*	-.04	23*	-.20	1
X17	.20	-.24*	.19	.07	.22	.30**	.14	.09	-.15	.21	.15	.09	.17	.20	-.08	.46**
X18	.09	-.25*	.14	.00	-.32**	.20*	.13	.28*	-.05	.08	-.03	.24*	.10	.19	-.28*	.15
X19	.36**	-.65**	.23*	-.04	-.07	.34**	.07	.15	.11	.14	.15	22*	.26*	.23*	-.16	.38**
X20	.18	.12	-.17	.23*	.34**	.17	-.28*	-.17	-.01	.21	.02	.25*	.08	.18	.03	.18
X21	.21	-.16	-.09	28*	.32**	.20	-.19	-.09	-.11	.20	.00	.19	-.10	.19	-.01	.25*
x22	.20	.23*	-.20	.35*	.44**	.22	-.22*	-.09	-.03	.09	.01	.17	-.03	.26*	.06	.31**
X23	-.17	.21*	-.04	.18	.46**	.19	-.25*	.15	-.12	-.23*	.04	-.13	-.10	.24*	.10	.19
X24	-.12	.18	-.19	.29*	.27*	.20	-.11	-.12	-.03	.08	.01	.18	-.04	.19	.09	.11
X25	-.04	.05	-.12	.02	-.01	.09	-.12	-.08	.13	-.04	-.13	.18	.17	.17	.11	.07
X26	0.12	.00	.02	.09	-.16	.26*	.16	.18	-.09	.13	.04	-.09	.16	.16	.02	.27*
X27	.19	-.11	-.12	.10	0.07	-.06	-.04	-.11	-.01	.01	.03	-.06	-.08	-.08	-.12	-.08
X28	.15	-.09	.10	.12	0.15	.11	.08	.29**	-.03	-.11	.00	.03	.06	.06	-.01	.15
X29	.22	-.23*	.11	.18	.22	.28*	.16	.15	-.05	.10	.15	-.05	.08	.23*	.00	.33**

	X17	X18	X19	X20	X21	X22	X23	X24	X25	X26	X27	X28
X17	1											
X18	.16	1										
X19	.42**	.13	1									
X20	.27*	.08	0.20	1								
X21	.21	.03	.31*	.63**	1							
x22	..31*	.10	.29*	.85**	.61**	1						
X23	.12	.06	.11	.42**	.34**	.59**	1					
X24	.22*	-.11	.14	.50**	.48**	.67**	.68**	1				
X25	.05	-.12	.06	-.11	.15	-.05	-.03	-.08	1			

	X17	X18	X19	X20	X21	X22	X23	X24	X25	X26	X27	X28
X26	.21	.04	**.22***	.19	.10	.08	.09	-.06	-.08	1		
X27	-.19	.02	-.01	.01	.07	.06	-.11	.06	.02	**-.43****	1	
X28	.01	-.06	.05	-.06	-.03	-.09	-.16	-.21	.17	.10	-.16	1
X29	.20	.08	**.29***	**-.23***	.18	-.17	-.19	**-.25***	-.10	**.74****	**-.53****	.08

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).
X1: Industries
X2: Markets
X3: Diversification
X4: The magnitude of the firm's foreign denominated exports
X5: The magnitude of the firm's foreign denominated imports
X6: The volatility of the company's foreign exchange rates
X7: The company's debt in foreign currencies
X8: The company's purchases in foreign currencies
X9: The company's sales in foreign currencies
X10: Debt risk
X11: Interest risk
X12: Commodity price risk
X13: Political risk
X14: Foreign exchange risk
X15: Industry risk
X16: The sensitivity of the main products' demand to the changes in price[3]
X17: The difference between the company's products and those of their competitors
X18: Company's competitors who their costs on the same currencies with your firm
X19: Number of competitors on the markets
X20: The sensitivity of purchase volumes to changes in foreign exchange rates
X21: The sensitivity of sale volumes to changes in foreign exchange rates
X22: The sensitivity of profit margins to changes in foreign exchange rates
X23: The sensitivity of costs to changes in foreign exchange rates
X24: The sensitivity of cash flows to changes in foreign exchange rates
X25: Accounting approach
X26: The market policy reduce the impact of the foreign exchange rates movements
X27: The currency policy hinders foreign exchange risk management
X28: The market policy hinders foreign exchange risk management
X29: The currency policy reduce the impact of the foreign exchange rates movements

Table 9.3 indicates that the correlation between the five indicators which measure the sensitivity of the firm's operations to the changes in foreign exchange rates, are significantly and positively correlated to each other at the 0.01 level. These findings indicate the correlation coefficients were relatively strong in the positive direction, and that the level of significance of each measure was sufficient to provide statistical support for the validity and reliability of these measures. This supports the rationale of using these indicators to measure the sensitivity of the firm's operations to the changes in foreign exchange rates. It also gives an indication that changes in foreign exchange risk are in general affecting the firm operational variable presented in table 9.1 in the same direction. It could be seen from the Table that the effect of changes in foreign exchange rates on the firm's purchase volumes, sale volumes, profit margin, costs, and cash flows are significantly and positively associated with the foreign exchange exposure magnitude caused by exporting and importing internationally. For the four indicators of currency and market policy, three of them were statistically significantly correlated. The only currency and market policy indicator not correlated to all the other indicators in the group is (X28) ' the market policy hinders foreign exchange risk management'. These findings show no correlation between indicators X28 and other measurement indicators (X26), (X27), and (X29) may affect the rationale of using these indicators as a group to describe the effect of market and currency policy on the hedging decision.

As mentioned in the beginning of the previous chapter, using a group of indicators to measure certain variables may raise the question as to whether indicators measure this variable. The correlation analysis shows that some of the chosen indicators to measure specific variables were not associated with each other to generate a group of measurements. In order to explain and examine the rationale of using these different groups of indicators to measure the different variables, we should test the internal reliability of each group of indicators. Table 9.4 shows the results of a test of the internal reliability of using these different indicators to measure the defined variables. The reliability of these measures refers to their consistency to measure the specific variable, and can answer the question of the possibility of using these indicators to measure specific variables. To estimate the internal reliability, Cronbach's Alpha was used. The calculated values in table 9.4 show the average of all possible split-half reliability coefficients for the different groups of indicators.

Table 9.4: Reliability analysis for different variables indicators

Indicators	N of cases	N of items	Alpha
The magnitude of foreign exchange exposure indicators	83	6	0.70
The competition position indicators	83	4	0.71
The firm's operations sensitivity to changes in foreign exchange rates indicators	83	5	0.84
The market and currency policy indicators	83	4	0.68

As can bee seen from table 9.4, the firm's operations sensitivity to changes in foreign exchange rate indicators are internally reliable since the coefficient is 0.84, and can be used to measure the firm's operations sensitivity to changes in foreign exchange rates in the sample. The table suggests also that the magnitude of the foreign exchange exposure indicators, the competition position indicators, and the market and currency policy indicators are not so internally reliable since the coefficients are 0.70, 0.71, and 0.68 respectively. From the Table it can be seen that the coefficients for these indicators are less than the preferable correlation coefficient (at over 0.7), a strategy of dropping one or more indicators can be used in order to increase the internal reliability of the indicators. Table 9.5, shows the alpha reliability levels when each constituent indicator is deleted from different groups. From the table, in the case of the foreign exchange exposure magnitude indicators, if we delete indicator number 3 'the volatility of the company's foreign exchange rates', the internal reliability increases from 0.70 to 0.75 and indicators 1, 2, 4, 5, and 6 are more acceptable as measures for the foreign exchange exposure magnitude.

However, while the reliability test leads us to reject the volatility of the company's foreign exchange rates as one of the foreign exchange exposure magnitude indicators, the important effect of this indicator upon the markets and the firm's competitive position may indicate that this indicator can be used as a new separate variable that may affect the hedging decision. The Spearman correlations, Table 9.3, show a significant and positive correlation between the volatility of the company's foreign exchange rates and the level of competition that a firm experience. From Table 9.3 we see that the volatility of the exchange rates used by a company is positively associated with the foreign exchange rates movements' effect on the firm's operation, but the correlation is not significant. For the competition position indicators, if we delete indicator number 3 the internal reliability is increased from 0.71 to 0.78 and the indicators 1, 2, and 4 are more acceptable to measure each firm's competition position in the sample. Table 9.5

also shows that if we delete indicator number 3 from the market and currency policy indicators list in table 9.1, will increase the internal reliability of these indicators as a measure of the financial distress cost on the sample from 0.68 to 0.74 and become more acceptable.

Table 9.5: The reliability of the different group of indicators if each constituent indicator is deleted.

Indicators	Indicator number	Alpha if item deleted
The magnitude of foreign exchange exposure indicators	1	0.70
	2	0.73
	3	**0.75**
	4	0.69
	5	0.72
	6	0.68

Indicators	Indicator number	Alpha if item deleted
The competition position indicators	1	0.68
	2	0.71
	3	**0.78**
	4	0.73
The market and currency policy indicators	1	0.69
	2	0.67
	3	**0.74**
	4	0.70

9.2.3 Univariate analysis

In this subsection, as in the previous chapter, respondents were divided into two groups, hedging and non-hedging firms, they were described and compared regarding the factors influencing the two groups' need to hedge foreign exchange exposure. A concentration on the effect of industries, markets, diversification, the magnitude of foreign exchange exposure, the relevance of the foreign exchange risk, the competition, the accounting methods, and the market and currency policy, on the firm's need to hedge. The specific objective of this subsection is to investigate if there are any differences between hedging and non-hedging firms on the degree of their need to hedge foreign exchange exposure.

The Industry

It has been suggested in section (7.3) that hedging firms and non-hedging firms are different in their need to hedge their exposure. One of the main purpose of this section is to establish if there are any notable industrial sector differences regarding foreign exchange risk hedging decision in Saudi Arabia. Table 9.6, uses the questionnaire

results to compare the industrial membership profile for both groups of hedging and non-hedging companies.

Table 9.6: The firm's industry and hedging decision

The variables	The measurement	Hedging Firms		Non-Hedging firms		Total		Chi-Square Test
		No.	%	No.	%	No.	%	
Industries	Chemical & Oil	3	17.6	14	82.4	17	100	
	Food & Drink	8	88.9	1	11.1	9	100	
	Electric & Electronic	7	36.8	12	63.2	19	100	0.00
	Cement and building tools & Furniture	4	26.7	11	73.3	15	100	
	Mining	2	33.3	4	66.7	6	100	
	Medical treatments & Tools	3	42.9	4	57.1	7	100	
	Cars & Equipment	8	80	2	20	10	100	
	Total	35	42.2	48	57.8	83	100	

In Table 9.6 some of the evidence shows that there are possible relationships between the food and drink, and cars and equipment sectors and the hedging of foreign exchange risk. In that, 8 out of 9 food and drink companies and 8 of 10 cars & equipment companies in the sample were hedging their foreign exchange risk. Geczy *et al.,* (1997) found that firms in the electric and electronic and consumer goods sector are the most frequent users of hedging activities. However, in contrast with their findings the situation in the electric and electronic for Saudi firms is that only 36 per cent of the Saudi electronic firms were hedging their foreign exchange exposure. From the same table, we can see that there are possible relationships between the chemical and oil, and cement, building tools and furniture in non hedging decision, in that 82.4% of the chemical and oil respondents and 73.3% of the cement, building tools and furniture chose not to hedge their foreign exchange risk.

The fact that oil and chemical firms are less likely to hedge, can be explained by the fact that crude oil was priced 100% US dollar. However, these firms still have some currency exposure as they are heavily dependent upon the import of technology and many manufactured components from developed economies. In order to find whether the differences in the responses of the two participating groups regarding the form of industry are statistically significant, the Chi-Square test was used. The Chi-Square test shows that there is a significant industrial difference between the hedging firms and

non-hedging firms. In that the calculated p value (0.00) is less than the critical p value (0.05). It is widely agreed that industry characteristics affect firms strategy differently as industry contexts differ, and that there are substantial industry effects in strategic management in general (e.g. Johnson and Thomas, 1987). The hypothesis (H13) that there is a significant difference between hedging and non-hedging firms regarding the industry can be accepted.

The magnitude of foreign exchange exposure

The larger the firm's activities in foreign markets, the larger its transaction currency exposure is expected to be. This predicts a positive relationship between the hedging decision and the magnitude of a firm's transaction exposure. In order to examine the effect of the magnitude of foreign exchange exposure on the hedging decision, the respondents were asked to identify their company's foreign sales as a percentage of total sales, foreign purchases as a percentage of total purchases and the foreign debt as a percentage of their total debt (where 1= nothing and 5= 81-100%). As can be seen from Table 9.7 Panel B, the mean of the foreign debt in hedging firms (mean = 2.66, S.D = 0.84) was higher than that in non hedging firms (mean = 2.44, S. D = 0.74). This is consistent with the findings in section 8.2 in the previous chapter that hedging firms have higher financial distress costs than non-hedging firms. It could be that hedging firms minimise the effect of foreign exchange rate movements on their cash flows in order to protect their ability to repay their foreign debt.

The foreign exchange exposure of the firm should be positively related to the ratio of foreign sales to total sales and the ratio of foreign purchases to total purchases. While the table shows that hedging firms have higher foreign purchases than non-hedging firms (mean = 3.77 in hedging firms versus mean = 3.60 in non-hedging firms), it also shows that non-hedging firms have higher foreign sales than hedging firms (mean =2.50 versus Mean = 2.34).

Table 9.7: The foreign exchange exposure magnitude and hedging decision

Panel A

The variables	The measurement	Hedging Firms		Non-Hedging firms		Total		Chi-Square Test
		No.	%	No.	%	No.	%	
The magnitude of the currency exposure from the firm's foreign denominated exports	Large exposure	5	35.7	9	64.3	14	100	
	Medium exposure	7	70	3	30	10	100	0.48
	Small exposure	10	41.7	14	58.3	24	100	
	No exposure	13	37.1	22	62.9	35	100	
The magnitude of the currency exposure from the firm's foreign denominated imports	Large exposure	22	47.8	24	52.2	46	100	
	Medium exposure	11	34.4	21	65.6	32	100	0.29
	Small exposure	0	00	3	100	3	100	
	No exposure	2	100	0	00	2	100	

Panel B

Indicator	Hedging Firms				Non-hedging Firms				Mann-Whitney Test
	Mean	S.D	PR 1or2 %	PR 4or5 %	Mean	S.D	PR 1or2 %	PR 4or5 %	
The company's debt in foreign currencies	2.66	0.84	28.6	8.6	2.44	0.74	45.8	2.1	0.13
The company's purchases in foreign currencies	3.77	1.1	8.6	62.9	3.60	0.9	4.2	48	0.26
The company's sales in foreign currencies	2.34	1.14	45.7	11.5	2.50	1.31	45.8	27.1	0.54
Average	2.92				2.85				

However, a high level of foreign sales or purchases does not necessarily mean that firms face a high level of exposure. For example, Saudi firms which purchase from foreign markets using the Saudi riyal or U. S. dollar face little exposure. For that reason, the respondents were asked to identify the proportion of their foreign exports and imports which were priced using Saudi riyal, U. S. dollar, and other foreign currencies.

Table 9.7 on panel A, shows the magnitude of the currency exposure from the firm's foreign exports and imports where, (1) firms with all of their exports or imports priced in foreign currencies other than U. S. dollar described as having a large exposure, (2) firms with most of their exports or imports priced in foreign currencies other than U. S. dollar described as having a medium exposure, (3) firms with some of their exports or imports priced in foreign currencies other than U. S. dollar are described as having a small exposure, and (4) firms which none of their exports or imports priced in foreign currency other than Saudi riyal, or U. S. dollar are described as having no exposure. It

can be seen from Table 9.7 Panel A, that only 5 out of 14 firms who described themselves as having a large exposure to foreign exports were hedging this exposure. In addition, the same table shows that 52 per cent of firms with large exposure on foreign imports and 65 per cent of firms with medium exposure on foreign imports did not hedge. From this it can be concluded that, there are only small differences between hedging firms and non-hedging firms regarding the magnitude of the exposure that they experience. The Mann-Whitney test (see table 9.7) revealed that there are no significant differences between hedging and non hedging firms with respect to the level of the firm's foreign exchange exposure. The calculated *p* value for the magnitude of a firm's foreign exports (0.48) and the calculated *p* value for the magnitude of a firm's foreign imports (0.29) are both higher than the critical *p* value (0.05). This means that both hedging and non-hedging firms have small differences of exposure level from foreign sales and foreign purchases. In addition, foreign exchange exposure associated with foreign currency denominated debt is not a significant determinant of a firm's decision to hedge, the calculated *p* value of the company's debt in foreign currencies (0.13) is higher than the critical *p* value (0.05). The hypothesis (H14) that there are significant differences between hedging and non-hedging firms regarding the magnitude of the firm's foreign exchange exposure can be rejected.

The Market

One of the main hypotheses that this study seeks to examine is the effect of foreign exchange exposure upon the firm which may be affected by the type of markets that the firm trades in. The degree of competition faced in the market may become an important determinant in the manager's choice to hedge or not to hedge. To test this hypothesis, the respondents were asked to choose the market classification that their firms operated in. The market classifications are competitive markets, price regulated markets, and oligolpostic markets. As can be seen from Table 9.8, 68.6% of all the hedging firms (24 firms out of 35 firms) traded in competitive markets, and 63.2 per cent of the firms trading in competitive markets hedged their foreign exchange risk. On the other hand only 23.8 per cent of the respondents who described their markets as oligopolistic markets hedged their foreign exchange exposure. Supporting the hypothesis on the relationship between markets and the hedging decision, the evidence in the Table shows that most of the non-hedging firms traded in oligopolistic markets and that 76.2 per cent of these firms did not hedge their foreign exchange exposure.

Table 9.8: The market and hedging decision

The variables	The measurement	Hedging Firms		Non-Hedging firms		Total		Chi-Square Test
		No.	%	No.	%	No.	%	
The Market	Competition market	24	63.2	14	36.8	38	100	0.000
	Price regulated market	1	33.3	2	66.7	3	100	
	Oligopolistic market	10	23.8	32	76.2	42	100	

The Chi-Square test in table 9.8 reveals that there are statistically significant differences in the trading markets between hedging and non-hedging firms, the calculated p value (0.00) is less that the critical *p* value (0.05). The hypothesis (H15) that there are significant differences between hedging and non-hedging firms regarding their trading markets can be accepted.

The Competition

Since little theoretical attention and even less empirical research has focused on the effects of competition on the hedging decision, the present study explores further this potentially important source of influence. To understand how the industry competition level affects the hedging decision, and particularly the competitive level across firms and industries, this research seeks to identify a particular firm's competitive characteristics that may influence the exposure level and the tendency to hedge. This study focused on the influence of three important competition characteristic measurements. The three measures used as independent variables are; product differences, the relationship between price and the demand in the firm's market, and the number of competitors in the firm's main markets. This section simply uses the measures that are suggested by the interviewees to explain the firm's competition level. Taking into account that foreign exchange rate movements might affect the firm's competitive power in the market and this effect is different from one firm to another, this study suggests that the firm's sensitivity to that movement may depend on the firm's competitive advantages. For example, a firm with inelastic demand for its products may have an advantage in transferring the unfavourable effect of foreign exchange rate movement to the customer than a firm with elastic demand.

In Chapter 7 it was suggested that a firm in a highly competitive position will be more likely to hedge than a firm facing low competition. The competitive level for each firm

was measured using three proxies (see section 9.2.2). As can be seen from Table 9.9, the main products' demand sensitivity to changes in the prices in hedging firms is higher than in non-hedging firms (Mean = 3.46 versus Mean = 2.73). Non-hedging firms have more inelastic demand than hedging firms, which gives them the flexibility to change the product prices in order to offset the unfavourable effect of exchange rate variations.

Table 9.9: Competition and the hedging decision.

Variables	Indicator	Hedging Firms				Non-hedging Firms				Mann-Whitney Test
		Mean	S.D	PR 1or2 %	PR 4or5 %	Mean	S.D	PR 1or2 %	PR 4or5 %	
The Competition	The sensitivity of the main products' demand to the changes in price	3.46	1.48	37.1	60	2.73	1.65	60.5	37.5	**0.04**
	The difference between the company's products and those of their competitors	3.66	1.47	31.4	68.6	2.69	1.6	58.3	39.6	**0.00**
	Number of competitors on the markets	4.83	1.74	22.8	68.6	4.1	1.67	31.3	43.8	**0.02**
	Average	3.98				3.17				

While managers in non-hedging firms can transfer the cost effect of exchange rate movements to the customers, managers in hedging firms may not have the same opportunity as any change in product prices may affect the level of demand for their products. The firm's ability to minimize the effect of movements in the foreign exchange rate on its prices depends on both the firm's hedging activity and the elasticity of demand for its products, which in turn depends on the degree of product differentiation (Sundaram and Black, 1991). The reason behind the hedging behaviour in a firm with sensitive demand is as explained by Bradley (1998). She found a significant relationship between the firm's product sensitivity to changes in price and economic currency exposure. From the Table , we can see that 60.5 per cent of the hedging firms described demand as being price elastic or slightly price elastic, whereas, on the other hand, 60 per cent of the non-hedging firms described demand as being price inelastic or slightly inelastic. This finding is consistent with the theoretical prediction that a firm's exchange rate exposure depends on its demand elasticity.

After demonstrating that the level of demand and price sensitivity affects the hedging decision, we examined whether the difference of the firm's product from that sold by its competitors is associated with the hedging decision. When asking the respondents of the survey about the differences between their products and those presented by their competitors, 68.6 per cent of the hedging firms confirmed that their products appear close or exactly the same as their competitors sell in markets. In contrast, nearly 60 per cent of the non-hedging firms have products different from those of their competitors. These differences may give these firms the opportunities to transfer the unexpected movements in exchange rates to the customers, whereas, this may not be the situation for hedging firms.

The above results are confirmed by the next measure of competition: firms with more competitors in the markets tend to be more likely to hedge. We observe a positive relationship between firms with more competitors in the markets and hedging decision. As shown in Table 9.9, 68.6 per cent of the hedging firms have four or more competitors in the market, in contrast to only 43.8 per cent of the non-hedging firms in relation to their competitors in the market. The increasing number of competitors in the market will increase the market competition situation. The level of competition in the market sometimes encourages a firm to practice new ideas to improve its competitive position in the market even if this new idea has its own risk. In a competitive market, any unexpected movements in foreign exchange rates may affect the firm's operations in the market. Managers in a competitive market may decide to hedge their firm's exposure in order to protect their firm's position in the market and this may provide them with a competitive advantage from those who did not hedge. In order to test whether the differences in the hedging and non-hedging firms regarding the competitive positions is significant, the Mann-Whitney test was used. The Mann-Whitney test in table 9.9, reveals that there is statistically significant difference in the competitive level between the two groups ($p < 0.05$). The hypothesis (H16) that there are significant differences between hedging and non-hedging firms regarding their competitive positions can be accepted.

The effect of the foreign exchange rate movements

One of the main determinants of the hedging decision specified in this subsection is to analyse whether there is any relationship between the hedging decision and the effect of

fluctuations in foreign exchange rates on the firms' cost, profit, sale volume, purchase volume, and cash flows volatility. The respondents of the survey were asked to specify the effect of exchange rate movements on their firm's costs, profit margin, sales volume, purchase volume, and cash flows. From Table 9.10, we can see that there is little difference between hedging firms and non-hedging firms regarding the firm's sales volume sensitivity to exchange rate fluctuations (Mean = 3.1 versus Mean = 3.3).

Table 9.10: The firm's operation sensitivity to foreign exchange rates movements and hedging decision.

where 1 = Highly insensitive, 3 = Natural, 5 = Highly sensitive

Variables	Hedging Firms				Non-hedging Firms				Mann-Whitney Test
	Mean	S.D	PR 1or2 %	PR 4or5 %	Mean	S.D	PR 1or2 %	PR 4or5 %	
The sensitivity of purchase volumes to changes in foreign exchange rates	3.31	1.28	22.9	60	3.54	1.01	16.7	62.5	0.58
The sensitivity of sales volume to changes in foreign exchange rates	3.1	1.21	37.1	45.7	3.3	1.04	20.9	35.8	0.35
The sensitivity of profit margins to changes in foreign exchange rates	3.26	1.2	22.9	54.3	3.46	0.94	16.7	54.2	0.64
The sensitivity of cost to changes in foreign exchange rates	3.80	1.1	20	74.3	3.98	1.02	10.4	68.8	0.43
The sensitivity of cash flows to changes in foreign exchange rates	3.43	1.01	22.9	60.1	3.92	0.92	10.4	75	**0.03**

The main difference found here is that while 45.7 per cent of the hedging firms agreed that foreign exchange rate movements affected their firms' sales volume, only 35.8 per cent of the non-hedging firms agreed that their firms' sales volume were affected by foreign exchange rate movements. As can be seen from Table 9.10 there are small differences between hedging firms and non-hedging firms regarding the sensitivity of their purchase volumes to changes in foreign exchange rates, in that the Mean = 3.31 in hedging firms is slightly smaller than those in non-hedging firms (Mean = 3.54). A high percentage of hedging and non-hedging firms agreed that their purchase volumes were sensitive to the changes in foreign exchange rates (60%, 62.5%, respectively). Only 16.7 per cent of non-hedging firms and 22.9 per cent of hedging firms disagreed that their purchase volumes were not affected by foreign exchange rate movements.

A large percentage of non-hedging firms indicated that their purchase volumes were affected by changes in foreign exchange rates, but they still did not hedge their exposure. This means that there are reasons other than the effect of foreign exchange

exposure on the purchase volume which may affect the firm's decision to hedge or not to hedge. Only 45.7 per cent of Saudi firms indicated that their sales volume was affected by changes in foreign exchange rates. This may lead to the assumption which supports the argument that different firms in different countries may be differently affected by changes in exchange rates. Bradley and Moles (2001) found that a substantial majority (64 per cent) of the UK firms in their sample indicated that companies' sales were relatively or highly insensitive to foreign exchange movements. Within Saudi firms only a small proportion of respondents rated their sales volume as being highly sensitive to foreign exchange rates. The table also shows that the sensitivity of profit margins to changes in foreign exchange rates were similar in both hedging and non hedging firms (Mean = 3.26, and S.D = 1.2 versus Mean = 3.46 and S.D = 0.94). There is similar percentage of the hedging firms and non-hedging firms who agreed that their profit margin is sensitive to foreign exchange rate movements (54.3 per cent versus 54.2 per cent). As can be seen from Table 9.10, there is no statistically significant difference between hedging firms and non-hedging firms regarding the sensitivity of their costs to the changes in foreign exchange rates, the calculated p value (0.43) is larger than the critical p value (0.05). There is some difference between the hedging firms and non-hedging firms regarding the sensitivity of their firms' cash flows to changes in foreign exchange rates (mean = 3.43 versus mean = 3.92). In order to explore the extent to which the differences between the two groups of respondent firms' cash flows are statistically significant, the Mann-Whitney test is presented in table 9.10. There is a statistically significant difference in the firm's cash flows sensitivity to the changes in foreign exchange rates between the respondents of the hedging and non-hedging firms, the p value (0.03) is less than the critical p value (0.05). This result is consistent with Hekman (1985) findings that currency fluctuations affect the firm's cash flows and value.

From these findings, it seems that the amount of exposure and its negative effects on the firms' costs, sale volumes, and profit margin was not enough to force non-hedging firms to adopt hedging activity. It could be that besides the effect of the changes in foreign exchange rates on the firm's operations, there are other important reasons which direct the decision to hedge or not to hedge, such as industry, competitive position, and markets, as found in this subsection. The Mann-Whitney test results, in table 9.10, show that with the exception of the sensitivity of the firm's cash flows to the changes in exchange rates, there are no significant differences between the sensitivity of both

groups' costs, sales volume and profit margin to the changes in exchange rates ($p >$ 0.05). For the sensitivity of both groups' cash flows to the changes in exchange rates, table 9.10 shows that there is statistically significant difference between the two groups, the calculated p value (0.03) is less than the critical p value (0.05). However, the non-hedging firms agreed more that their cash flows were more sensitive to changes in the exchange rates (75 per cent selected number 1 'agree' and 2 'slightly agree') than those of hedging firms (60.1 per cent). While more non-hedging firms agreed that changes in exchange rates affected their cash flows than hedging firms, this reason alone can not affect their risk management strategy. In general, the hypothesis (H17) that hedging and non-hedging firms are significantly different regarding the sensitivity of their operations to the changes in exchange rates can not be accepted.

Currency and market policy

In this section the effect of the exchange control and market policy on the hedging decision are discussed. The respondents to the survey were asked to what extent they agreed that currency and market policy were affecting their choice to hedge or not to hedge their foreign exchange exposure. The hedging and non-hedging firms' perceptions to this policy are presented in Table 9.11. The Table shows that the market policy plays a significant role in reducing the impact of foreign exchange rate movements on non-hedging firms' point of view, 60.4 per cent of them agreed that the market policy reduced the impact of foreign exchange rates movements on their firms' operations. With, only 28.5 per cent of the respondents in hedging firms agreeing that the market policy reduced the impact of the foreign exchange rate movements. The foreign exchange rate and market policy decreased the effect of the foreign exchange rate movements on the firm. These 'primary' effects of policy should reduce the firm's need for risk management activity. While a high percentage (54.2 per cent) of non-hedging firms saw that currency policy reduced the impact of foreign exchange rate movements, only 20 per cent of the hedging firms stated that currency policy reduced the foreign exchange exposure management.

While the percentage of non-hedging firms who see currency policy as one of the reasons that reduced their foreign exchange exposure and minimized the need for hedging decision, 57.2 per cent of the respondents in hedging firms saw currency policy as not playing an important role in reducing the effect of the changes in the foreign exchange rates on their exposure.

Table 9.11: Exchange and market policy and hedging decision.

From 1 'disagree' to 5 'agree'

Variables	Hedging Firms				Non-hedging Firms				Mann-Whitney Test
	Mean	S.D	PR 4or5 %	PR 1or2 %	Mean	S.D	PR 4or5 %	PR 1or2 %	
Market policy reduce the impact of the foreign exchange rates movements	2.89	1.26	28.5	48.6	3.56	1.25	60.4	25.1	**0.02**
Currency policy hinders foreign exchange risk management	3.20	1.39	37.2	34.3	3.06	1.47	35.5	42.8	0.61
Currency policy reduce the impact of the foreign exchange rates movements	2.63	1.09	20	57.2	3.27	1.40	54.2	37.5	**0.04**

As can been seen also from Table 9.11, only a small percentage of hedging firms 37.2 per cent and non-hedging firms 35.5 agreed that currency policy hinders foreign exchange exposure management. It can be argued that, while there is 37.2 per cent of hedging firms who agreed that currency policy hindered their activity to manage their foreign exchange exposure, a higher percentage than non-hedging firms (35.5 per cent), the respondents in hedging firms stated that currency policy did not prevent them from hedging their exposure and that only 34.3 per cent of the respondents in hedging firms agreed that currency policy was not to be a reason to prevent them from managing their foreign exchange risk.

However, while US markets are one of the main destinations for Saudi exports and sources of imports and that the Saudi riyal is fixed against US dollar (1$ = 3.75 Riyals), the results show that most of the respondents in the survey did not believe that they benefited from currency policy. The main explanation is that one of the main conditions in choosing the study sample is that respondents should not only trade using US dollar as firms which only export and import using US dollars have little or no currency exposure. Although it is obvious that there must be some differences between hedging and non-hedging firms in the perception against the market and currency policy, the idea is to find whether these differences are statistically significant. The Mann-Whitney test results shown in Table 9.11, reveal that, there are statistically significant differences between hedging and non-hedging firms regarding the impact of the currency and market policy to reduce the foreign exchange exposure, the calculated p value (0.02 and 0.04, respectively) is less than the critical p value (0.05). In general, the hypothesis

(H18) that there is a significant difference between hedging and non-hedging firms in their perception of the effect of market and currency policy on the foreign exchange exposure and management can be accepted.

Accounting method

Do managers expect their treasury and accountant departments to manage the foreign exchange losses in their financial statements to avoid reporting losses or large swings that would have to be explained to shareholders and investors? To examine this hypothesis, the respondents were asked to indicate the extent to which they agreed that one of the main reasons of using specific accounting approaches were to affect the presentation of their financial statements regarding any bad effect from foreign exchange rate exposure. Table 9.12, shows that there is no big difference between the mean in hedging firms (mean = 2.74) and the mean in non-hedging firms (mean = 2.77). It can be seen that 54.2 per cent of the respondents in hedging firms and 50 per cent of respondents in non-hedging firms disagreed that their firms tended to use an accounting approach to minimize the negative effect of exchange rate movements in the data that was presented to shareholders and analysts.

Table 9.12: The effect of accounting method in the hedging decision.

From 1 'disagree' to 5 'agree'

Variables	Hedging Firms				Non-hedging Firms				Mann-Whitney Test
	Mean	S.D	PR 4or5 %	PR 1or2 %	Mean	S.D	PR 4or5 %	PR 1or2 %	
The firm tends to use an accounting approach which minimize the negative effect of the exchange rates movements on the data which was presented to shareholders and analysts	2.74	1.34	31.4	54.2	2.77	1.39	37.5	50	0.97

In order to examine whether the hedging and non-hedging firms are different regarding their opinion about the use of an accounting approach to minimize the effect of exchange rate exposure on the data presented to shareholders and analysts, the Mann-Whitney test was used. The Mann-Whitney test, on table 9.12, reveals that the respondents of the two groups were not statistically significantly different with respect to their tendency to use an accounting method which minimizes the negative effect of

exchange rate movements on the data presented to shareholders and analysts ($p = 0.97$), the hypothesis (H19) can be rejected.

Diversification

The benefits of international currency diversification have received considerable attention in the corporate hedging literature. This study distinguishes firms in the sample on the basis of their currency diversification: (1) firms which trade using one or two currencies will be less diversified; and (2) firms which trade using three or more currencies will be presented as diversified firms. For each firm, currency diversification was measured by the level of the firm's import or export diversification. The respondents were asked to specify the different currencies that their firms used in international trading. The result of this question is presented in Table 9.13. The diversification currency theory predicts that in a firm which exports in many different currencies, the effect of the foreign exchange risk on the firm's operating income will be small, and it will have little benefit from hedging. Rahgozar and Najafi (2003) found that diversification has a stronger effect on risk reduction.

Table 9.13: The currency diversification and hedging decision

The variables / The measurement	Hedging Firms		Non-Hedging firms		Total		Chi-Square Test
	No.	%	No.	%	No.	%	
One foreign currency	4	40	6	60	10	100	
Two foreign currencies	14	36.8	24	63.2	38	100	
Three foreign currencies	11	45.8	13	54.2	24	100	0.54
Four or more foreign currencies	6	54.5	5	45.5	11	100	
Non diversified firms	18	37.5	30	62.5	48	100	
Diversified firms	17	48.6	18	51.4	35	100	

The results in Table 9.13, is somewhat surprising and inconsistent with the theoretical prediction which was presented in detail in Chapter Three, in that only 37.5 percent of the undiversified firms were hedging their exposure. The Table also shows that the hedging decision in the Saudi sample is unrelated to the hypothesis of diversification and hedging decision relationship, in that 48.6 per cent of the diversified firms were hedging their foreign exchange exposure, with non hedging firms representing 51.4 per cent of the diversified firms in the sample. There is little difference between the average numbers of currencies used by firms in both groups. The Mann-Whitney test result shows that there is no significant difference in the international currency diversification

between the hedging firms and non-hedging firms. The calculated p value (0.54) is larger than the critical p value (0.05). The hypothesis (H20) that there is a significant difference between hedging and non-hedging firms regarding the international currency diversification can therefore be rejected. However, since the extent of exposure in any used currency is not identified, the measure adopted to measure diversification may be inappropriate.

The relevance of the foreign exchange risk

Firms may face too many risks to hedge all of their costs effectively. In this case firms may compare the risks and their effects on the firm's operation and choose from them the ones that should be hedged. In order to find out if this strategy was adopted by Saudi firms, the respondents were presented with some of the important risks that firms may experience and were asked to indicate their perception on the relevance of the different kind of risk to their firms. Table 9.14 presents the degree of relevance of different risks for both groups hedging and non-hedging firms. From the table we can see that hedging firms describe commodity price risk as the main risk they faced (mean = 3.76), interest rate risk as the second important risk (mean =3.68), the foreign exchange risk is in third place of the most relevant risks for the hedging firms (Mean = 3.56).

Table 9.14: The relevance of foreign exchange risk and hedging decision.

From 1 'not relevant' to 5 'very relevant'

Variables	Hedging Firms				Non-hedging Firms				Mann-Whitney Test
	Mean	S.D	PR 4or5 %	PR 1or2 %	Mean	S.D	PR 4or5 %	PR 1or2 %	
Debt risk	3.41	1.01	22.9	48.6	3.38	1.23	25.1	43.8	0.94
Interest risk	3.68	1.12	8.6	42.9	3.27	1.38	25	43.8	0.24
Commodity price risk	3.76	1.18	11.4	57.2	3.92	1.05	10.4	68.7	0.62
Political risk	3.24	1.37	28.5	34.3	3.25	1.23	27.1	39.6	0.94
Foreign exchange risk	3.56	1.05	10.7	51	3.33	1.2	27.1	39.6	0.34
Industry risk	3.06	1.15	25.7	40	3.40	1.44	27.1	54.2	0.17

On the other hand, non-hedging firms have the same worries about commodity price risk and choose it as the main risk which their companies suffered from (mean = 3.92), the second relevant risk is Industry risk (mean = 3.40), and the third relevant risk is debt risk (Mean = 3.38), with foreign exchange risk came fourth for their firms (Mean = 3.33). From the Table it can be seen that 51 per cent of the hedging firms and 39.6 per cent of non-hedging firms agreed that foreign exchange risk is relevant to their firms.

However, only 19 out of 48 non-hedging firms agreed that their firms were facing problems with foreign exchange risk but they did not take any action to minimize that risk. The possible explanation for that result is that the currency hedging decision is not solely related to currency risk and that there are other reasons behind the hedging decision. A company with uncontrollable non-financial risks may be highly risk averse with regard to currency exposure simply because this is one area that can be controlled. It should be mentioned that the way that the study used to present the question on the survey may have affected the result. While the purpose of the question was to identify the degree of the foreign exchange exposure faced by the respondent firms, the respondents may have understood the question's purpose as to rank these risks from the highest relevant one to the lowest. The Mann-Whitney Test shows that there is no significant difference in the level of relevance of foreign exchange risk to their firms between the hedging firms and non-hedging firms. The calculated p value (0.34) is larger than the critical p value (0.05), which means that we can reject the hypothesis (21) that there is a significant difference between hedging and non-hedging firms regarding the relevance of foreign exchange risk to their firms.

The Volatility of foreign exchange rates

The decision to hedge or not to hedge may also be related to the degree of volatility of foreign exchange rates. In order to recognize the effect of the foreign exchange rate volatility in hedging decisions, the respondents were asked to identify the volatility level of their foreign exchange rate. Using a scale of four measures (1 = 'totally not volatile', and 4 = 'very volatile'), the respondents described the volatility of their foreign exchange rates in international trading. Table 9.15 shows that there is a difference between the description of the respondents about their firm's foreign exchange rate volatility between hedging and non-hedging firms. The respondents in non-hedging firms saw their foreign exchange rates as less volatile than the foreign exchange rates in hedging firms, in that 45.8 percent of the non-hedging firms (22 firms out of 48 firms) described their foreign exchange rates as totally or slightly not volatile in contrast to only 14.3 per cent in hedging firms. However, 54.2 per cent of the non-hedging firms (26 firms out of 48 firms) described their foreign exchange rate to be moderate or very volatile, but these firms still did not hedge their exposure. Since these non-hedging firms agreed that their foreign exchange rates were volatile but still they did not take any action there are other reasons, in addition to volatility, affecting the hedging

decision. In order to find if the differences between hedging and non-hedging firms regard foreign exchange rate volatility, the Mann-Whitney Test was used.

Table 9.15: The volatility of the firm's foreign exchange rates and hedging decision

The variables / The measurement	Hedging Firms		Non-Hedging firms		Total		Chi-Square Test
	No.	%	No.	%	No.	%	
Totally not volatile	0	00	3	100	3	100	
Slightly volatile	5	20.8	19	79.2	24	100	
Moderately volatile	21	52.5	19	47.5	40	100	0.01
Very volatile	9	56.3	7	43.7	16	100	

The Mann-Whitney Test results in table 9.15 show that there is a statistically significant difference in trading the foreign exchange rates volatility between hedging and non-hedging firms, the calculated p value (0.01) is less than the critical p value (0.05). The hypothesis that there are significant differences between hedging and non-hedging firms regarding foreign exchange rate volatility is accepted.

9.2.4 Multivariate Analysis

Although the above results did not provide any indication of the relative importance of the different factors, in this section, the determinants of the firm's needs to hedge variables are examined simultaneously in a multivariate logic analysis. To examine the effect of the firm's needs to hedge variables on the hedging decision the logic model is reported in the same way that has been used with the firm's incentive variables model presented in section (8.2) equation [8.11]. The logic model for the firm's need to hedge variable is presented in the next equation:

$$\text{In}\left(\frac{Pi}{1-Pi}\right) = \beta_0 + \beta_1 \text{ Diversification} + \beta_2 \text{ Magnitude1} + \beta_3 \text{ Magnitude2} + \beta_4 \text{ Foreign1} + \beta_5 \text{ Foreign2} + \beta_6 \text{ Foreign3} + \beta_7 \text{ Relevant} + \beta_8 \text{ Salesens} + \beta_9 \text{ Purchasens} + \beta_{10} \text{ Costsens} + \beta_{11} \text{ Cashsens} + \beta_{12} \text{ Industry} + \beta_{13} \text{ Market} + \beta_{14} \text{ Vulnerability} + \beta_{15} \text{ Cpmpetition1} + \beta_{16} \text{ Cpmpetition2} + \beta_{17} \text{ competitor} + \beta_{18} \text{ Acconmethod} + \beta_{19} \text{ Curpolicy1} + \beta_{20} \text{ Curpolicy2} + \beta_{21} \text{ Markpolicy} + \varepsilon \quad [9.1]$$

Where as

β_0	Constant term
Diversification	The number of foreign currencies used for international trade
Magnitude1	The magnitude of the currency exposure from the firm's foreign denominated exports
Magnitude2	The magnitude of the currency exposure from the firm's foreign denominated imports
Foreign1	The company's sales in the foreign markets
Foreign2	The company's purchases from the foreign markets
Foreign3	The company's debt in the foreign currencies
Relevant	The relevant of the currency risk
Salesens	The sensitivity of the sales volume to changes in foreign exchange rates
Purchasens	The sensitivity of the purchase volume to changes in foreign exchange rates
Costsens	The sensitivity of the costs to changes in foreign exchange rates
Cashsens	The sensitivity of the cash flow to changes in foreign exchange rates
Industry	The firm industry
Market	The description of the markets that firms trade in
Volatility	The volatility of the firm's foreign exchange rates
Cpmpetition1	The sensitivity of the firm's products demand to the changes in prices
Competition2	The difference between the firm's products and those of their competitors.
competitor	The number of competitors in the markets
Acconmethod	The probability of using the accounting to minimize the effect of the currency exposure
Curpolicy1	The effect of the currency policy in reducing the impact of foreign exchange rates movements
Curpolicy2	The effect of the currency policy in hindering the currency exposure management
Markpolicy	The effect of the market policy in reducing the impact of foreign exchange rates movements
β_1 to β_{21}	Coefficients for each firm-specific variable
ε	Residual term

Using all the hedging needs variables presented in the univariate analysis, the study examined whether any collinearity problem exists between the independent variables. Table C3, in Appendix C, shows that collinearity problems exist between two independent variables, 'The sensitivity of the purchase volume to changes in foreign exchange rates' and 'The sensitivity of the profit margin to changes in foreign exchange rates'. In Table C3, the variable 'The sensitivity of the purchase volume to changes in foreign exchange rates' has a tolerance value of .135, which is less than the excepted level of more than .20. In order to minimize the effect of the collinearity problem, this variable was excluded from the model. The linear regression model was run again and the tolerances for the independent variables were checked again and this time no linearity problem was found, see Table C3, Appendix C. Also after running the logistic regression, the standardized residuals were saved and checked, the Figure C3, on Appendix C, shows that all the residuals lie within 2 standard deviations from the mean.

The result of the logistic regression analysis is presented in Table 9.16. The Table shows that firms in the chemical and oil industry are less likely to hedge than firms in other industrial sectors in Saudi Arabia. As found in the univariate analysis, the logistic analysis reveals that firms in the food and drink, and cars and equipment industries, are more likely to hedge than firms in other industries, this result is statistically significant. Consistent with univariate analysis, the logistic regression also shows that firms in competitive markets are more likely to hedge. The negative sign on the coefficients of the price regulated market and oligopolistic market, therefore, for the log odds differences between them and competitive markets (the reference), indicate that the priced regulated market and oligopolistic market were significantly less likely to hedge. The 95% confidence internal results show a 95% certainty that in the population, firms in oligopolistic markets are between 0.3% and 48% as likely as firms in competitive markets to hedge. Consistent with the univariate analysis, the difference between hedging and non-hedging firms regarding the currency diversification is not statistically significant.

While, the univariate analysis found a statistically significant difference between hedging and non-hedging firms regarding the degree of volatility of the firms' foreign exchange rates, results in Table 9.16 imply that firms were more likely to hedge when their foreign exchange rate movements increased. Firms with very volatile foreign exchange rates were 577 times as likely to hedge as firms with totally stable foreign exchange rates. However, this result is not statistically significant. Overall, the Table shows that firms with more foreign exchange exposure are more likely to hedge, but this result is not statistically significant. This replicates the same result as found in the univariate analysis.

The coefficients for the competition indicators have positive signs, providing support for the hypothesis that firms in competitive markets are more likely to hedge, but this support is also not statistically significant. Table 9.16, shows that firms with purchase volume, and costs which are highly sensitive to changes in exchange rates are more likely to hedge. Inconsistent with univariate analysis, the logistic regression results show that firms with sales volume and cash flow highly sensitive to changes in exchange rates are more likely not to hedge. Also inconsistent with the univariate analysis, currency and market policy do not have any significant effect on the hedging decision.

Table 9.16: The logistic regression for the hedging needs variables model (model 4a).

The variable	The Indicator	Unstandardized Coefficient (B)	Sig.	Standardized Coefficient	Odds ratio Exp(B)	95.0% C.I. for EXP(B)	
						Lower	Upper
The Industry	Chemical & Oil (the reference)		.204				
	Food & Drink (1)	7.305	**.012**	6.356	1487.444	5.052	437956
	Electric & Electronic (2)	1.503	.204	1.308	4.494	.152	132.8
	Cement, building tools, and furniture (3)	.002	.999	0.002	1.002	.026	38.3
	Mining (4)	2.618	.277	2.278	13.708	.123	1532.4
	Medical treatments & Tools (5)	2.134	.324	1.857	8.449	.121	588.5
	Cars dealer & Equipments (6)	5.732	**.018**	4.988	308.715	2.704	35249
The Markets	Competitive market (the reference)		**.038**				
	Price regulated market (1)	-7.511	.381	-2.876	.001	.000	10798
	Oligopolistic market (2)	-3.295	**.011**	-1.261	.037	.003	.476
Diversification. (from 1 'one currency' to 4 'four currencies or more')		-.832	.149	-0.283	.435	.140	1.348□
The volatility of the firm's foreign exchange rates	Totally not volatile (the reference)		.329				
	Slightly volatile (1)	4.711	.885	1.421	111.177	.000	4969067
	Moderately volatile (2)	7.673	.813	2.314	2148.626	.000	8974396
	Very volatile (3)	6.359	.845	1.918	577.799	.000	24257
The magnitude of the currency exposure from the firm's foreign denominated exports. (From 1 'no exposure' to 4 'large exposure')		1.023	.148	0.443	2.782	.695	11.136
The magnitude of the currency exposure from the firm's foreign denominated imports. (From 1 'no exposure' to 4 'large exposure'		1.087	.209	0.290	2.966	.545	16.144
Foreign sales. (From 1 'no' to 5 '81-100%')		-.835	.249	-0.400	.434	.105	1.791
Foreign purchase. (From 1 'no' to 5 '81-100%')		-.454	.508	-0.170	.635	.166	2.430
Foreign debt. (From 1 'no' to 5 '81-100%')		.511	.485	0.156	1.668	.397	7.007
The degree of relevance for Foreign exchange risk. (From 1 'Not relevant' to 5 'Very relevant')		-.769	.188	-0.360	.463	.147	1.457
The Competition	**The sensitivity of the firm's product demand to the changes in prices** From 1 'Inelastic demand' to 5 'Elastic demand'	.211	.547	0.132	.810	1.609	
	The difference between the company's products and those of their competitors From 1 'Highly differentiated' to 5 'The same'	.750	**.031**	0.470	2.117	4.184	
Sales volume sensitivity From 1 'highly insensitive' to 5 'highly sensitive'		-.158	.816	-0.068	.853	.225	3.233
Purchase volume sensitivity From 1 'highly insensitive' to 5 'highly sensitive'		.084	.902	.0.036	1.087	.288	4.100
Cost sensitivity		.784	.431	0.312	2.189	.311	15.415

The variable	The Indicator	Unstandardized Coefficient (B)	Sig.	Standardized Coefficient	Odds ratio Exp(B)	95.0% C.I. for EXP(B)	
						Lower	Upper
From 1 'highly insensitive' to 5 'highly sensitive'							
Cash flow sensitivity From 1 'highly insensitive' to 5 'highly sensitive'		-1.385	.141	-0.530	.250	.040	1.580
The probability of using the accounting to minimize the effect of the currency exposure. (From 1 'disagree' to 5 'agree')		-.089	.836	-0.046	1.093	.470	2.545
The effect of the currency policy in reducing the impact of foreign exchange rate movements. (From 1 'disagree' to 5 'agree')		.083	.837	0.046	.921	.419	2.024
The effect of the currency policy in hindering the currency exposure management. (From 1 'disagree' to 5 'agree')		-.754	.133	-0.382	2.125	.795	5.684
The effect of the market policy in reducing the impact of foreign exchange rate movements. (From 1 'disagree' to 5 'agree')		.468	.411	0.233	.627	.205	1.912
The Constant		-2.215	.818		.109		□

Table 9.17, reports the hedging needs model (model 4a). Overall, the model can correctly classify 87.8% of the firms in the sample as hedging and non-hedging firms.

Table 9.17: The logistic regression analysis for the hedging needs model (model 4a) output.

Panel A: The classification Table

The Step	Observed	Predicted		
		Hedging or non-hedging company		Percentage Correct
		Non-hedging company	Hedging company	
Step 0 The model includes only the constant	Non-hedging company	48	0	100.0
	Hedging company	35	0	0.0
	Overall percentage			**57.8**
Step 1 The model includes all the independent variables	Non-hedging company	44	4	91.7
	Hedging company	6	28	82.4
	Overall percentage			**87.8**

Panel B: Model Summary

Step	Initial -2 Log likelihood	Ending -2 Log likelihood "D_M"	Cox & Snell R Square	Nagelkerke R Square
1	111.27	49.178	.531	.71

Panel C: Association / Predictive Efficiency

G_M	R_L^2	λ_P	τ_P	R^2	The model improve our efficient choice to hedge or not to hedge by

62.097 (p = .000)	0.558	0.714	0.753	0.495	%54.9

Panel D: Hosmer and Lemeshow Test

Step	Chi-Square	df	Sig.
1	7.524	8	.48

This result is confirmed by a high value for the measures of the goodness-of-fit of the model, G_M = 62.097, and R_L^2 = 0.558, which indicate a high relationship between hedging needs variables and the hedging decision. The predictive efficiency measures indicate that the percentage of the firms predicted incorrectly with the model differs significantly from the percentage of firms incorrectly predicted without the model. λ_P = 0.714, and τ_P = 0.753, indicating that the number of errors without the model will be large, and that the model significantly reduces the error of classification of firms as hedging and non-hedging firms. To restrict the independent variables in the model to those that have p value of .10 or less, we used the stepwise logistic regression method. Backward elimination rather than forward inclusion was selected as the method of stepwise regression. Table 9.18, presents the reduced model with all hedging needs variables for which $p > .10$ eliminated. The reduced model has only three independent variables, which are the industry, the competitive position, and the cost sensitivity to changes in foreign exchange rates.

The reduced model can correctly classify 76% of the firms in the sample as hedging and non-hedging firms, and this percentage is less than the one that the full model can achieve. The measures of goodness-of-fit, G_M = 41.114, R_L^2 = .364, and R^2 = .433, indicate a moderately strong relationship between the dependent variable and independent variables. The independent variables in a reduced model can be used to classify the firms into hedging and non-hedging firms with a moderately high degree of accuracy, λ_P = .429, and τ_P = .506. The results show that the full model (model 4a) works better than the reduced model (model 4b). It seems that the predicted power of some deleted variables affected the new model goodness-of-fit and the degree of accuracy.

Table 9.18: Model 4b: Logistic regression analysis results for the hedging needs variables and hedging decision, variables with maximum $p = 0.10$ included .

Dependent Variable	Association/ Predictive Efficiency	Variables	Unstandardized Logistic Regression Coefficient (*b*)	Sig.	Odds ratio Exp(B)	95.0% C.I. for EXP(B)	
						Lower	Upper
Hedging Decision	$G_M = 41.114$ (P = 0.000)	Chemical & Oil (the reference)		.062			
	$R_L^2 = 0.364$	Food & Drink (1)	3.678	.010	39.571	2.397	653.18
The model improve our efficient choice to hedge or not to hedge by %36.4	$R^2 = 0.433$	Electric & Electronic (2)	.737	.410	2.089	.361	12.070
	$\lambda_p = 0.429$	Cement, building tools, and furniture (3)	.295	.764	1.343	.197	9.167
	$\tau_p = 0.506$	Mining (4)	.304	.804	1.355	.122	15.051
	The percentage of firms correctly classified by the model = 75.9 %	Medical treatments & Tools (5)	1.154	.335	3.172	.304	33.114
		Cars dealer & Equipments (6)	2.813	.011	16.665	1.881	147.62
		Competitive market (the reference)		.046			
		Price regulated market (1)	-3.339	.299	.035	.000	19.394
		Oligopolistic market (2)	-1.227	.042	.293	.090	.956
		The difference between the company's products and those of their competitors.	.566	.009	1.761	1.154	2.687
		Cost sensitivity to the changes in foreign exchange rates	-.803	.023	.448	.224	.897
		The Constant	.212	.892	1.236		

9.3 The Determinants of the Firm's Ability to Hedge.

9.3.1 Introduction

The firm's ability to engage in risk management activities affects the firm's attitude to different kinds of financial risk. As predicted in the study framework, the increase in management ability and financial resources may cause firms to undertake a risk management strategy. High quality management may help the firm to practice risk management activities with less costs, low level of risk, and high level of output. This section's objective is to examine the effect of the determinants of the firm's ability to engage in risk management practice in the foreign exchange exposure management

decision. The layout of this section is as follows. The following section describes the proxies of the firm's ability variables and presenting a general description for these variables. The sub-section also describes the correlations between these variables' proxies and the reliability of using some of them as a group to measure some variables. Section 9.3.3 analyses the relationship between the firm's ability to hedge variables and the hedging decision using the univariate analysis. The last sub-section 9.3.4 presents the logistic regression analysis of the effect of the determinants of the firm's ability to engage in risk management practice in the foreign exchange exposure management decision.

9.3.2 General description and the correlation coefficient of proxy variables

Before presenting a general description for the determinants of the firm's ability variables to hedge, Table 9.19, presents a descriptive schedule to explain how the different variables can be measured. For more information on how these proxies are generated see section 7.3.

Table 9.19: Classification of hedging needs variables

Classification	Indicator or Measurement
The cost of implementing hedging strategy	1. The cost of implementing the currency exposure management 2. The distinction between hedging costs and benefit 3. The financial derivative costs
The availability of qualified staff to deal with risk management	1. The availability of qualified people in risk management 2. The availability of qualified people to use hedging tools 3. The degree of understanding the importance of currency exposure management 4. The ability to measure the currency exposure
The firm size	1. The total sales 2. The total assets 3. The capital
Management Qualification	1. The respondent qualification 2. The respondent qualification area 3. The length of time of working at the company 4. The length of time of experience in the current job 5. The length of time of experience in risk management
Management performance	1. The extent that the bank evaluates the firm's financial performance 2. The dividend payment 3. The availability of managerial performance criteria and standards 4. The degree of increasing the profit

Classification	Indicator or Measurement
Bank relationship	1. The number of the banks that companies deal with 2. The strong relationship with banks 3. The length of time of the relationship with bank
The availability of local future, forward and option markets	1. The absence of forward, future, and option markets 2. The financial contracts available is risky
The availability of risk management policy	1. The availability of risk management policy 2. The availability of derivatives use policy
The ability to forecast exposure	1. The forecast of foreign exchange rates 2. The period of the forecast
The role of operating departments in risk management	1. The participation in the currency risk management strategy 2. The degree of coordination between different departments regarding the risk management problems 3. The degree of help in currency risk management
Risk management Training program	1. The availability of training program in risk management 2. The bank's recommendation about hedging currency exposure 3. Receiving leaflets from the bank on currency exposure hedging
The risk management manager Nationality	• Saudi, American, European, East Asian, other Arabic, and others

As can be seen from Table 9.19, there are thirteen variables which can be used to determine the firm's ability to hedge. Most of these variables examine the firm's managerial and financial ability to engage in hedging activities. It is important to give a general statistical description for these variables regarding the whole of the study sample. Table 9.20, presents a general description for the determinants of the firms' ability to hedge foreign exchange exposure.

Table 9.20: The general statistical description of the firm's ability to hedge variables, Part One,

The variables	The indicator	The Measurement	No.	%
The risk manager qualification	1. The risk manager's qualification level	PhD	7	8.4
		Master	29	34.9
		Bachelor	47	56.6
	2. The risk manager's qualification area	Management & Business	41	49.4
		Finance & Economic	25	30.1
		Accounting	17	20.5
	3. Length of working in the firm	More than 10 years	23	27.7
		From 4 to 10 years	53	63.9
		Less than 3 years	7	8.4
		More than 10 years	20	24.1

The variables	The indicator	The Measurement	No.	%
	4. Length of experience in current job	From 4 to 10 years	44	53
		Less than 3 years	19	22.9
	5. Length of experience in risk management activity	More than 3 years	8	9.6
		Less than 3 years	43	51.8
		No experience	32	38.6
The risk management manager's nationality		Saudi	27	32.5
		American	4	4.8
		European	8	9.6
		East Asian	18	21.7
		other Arabic .	25	30.1
		Other nationality	1	1.2
Firm size	1. Total sales	Small size (between 30 m – 200 m)	26	31.3
		Medium size (between 210 m – 600 m)	29	34.9
		Large size (more than 610 million)	28	33.7
	2. Total assets	Small size (between 50m – 400 m)	19	22.9
		Medium size (between 410 m – 800 m)	22	26.5
		Large size (More than 810 m)	42	50.6
	3. The capital	Small size (between 5 m – 80 m)	30	36.1
		Medium size (Between 81 m – 300 m)	27	32.5
		Large size (More than 310 m)	26	31.3
Bank relationship	1. Number of the banks that firms deal with	More than 3 banks	37	44.6
		Between 2 to 3 banks	31	37.3
		One bank	15	18.1
	2. The description of the relationship with bank	Strong relationship with many banks	47	56.6
		Good relationship with one bank	26	31.3
		No special relationship with banks	10	12.0
	3. The length of the relationship with bank	More than 7 years	54	65.1
		Between 4 years to 7 years	27	32.5
		Less than 3 years	2	2.4
The forecast of foreign exchange rates	1. Forecasting the foreign exchange rates	Yes	31	37.3
		No	52	62.7
	2. The period of forecasting the future exchange rates	Forecast for one year	7	22.6
		Forecast for three months	19	61.3
		Forecast for one month	5	16.1

Table 9.20 part one shows that 43.3 per cent of the respondents responsible for risk management in the firms had qualifications above first degree (Bachelor). The importance of the risk management job in the firms' business may drive firms to employ high qualified people. Also the Table shows that nearly half of the respondents of the questionnaire had management or business degrees. While, it seems that the most appropriate person to deal with financial risk is the one who had a finance degree, only 30.1 percent of the respondents with responsibility for risk management activity a

finance background, and that 20.5 per cent of the respondents were accountants. As can be seen from the Table 9.20, part one, most of the respondents (91.6 per cent) had worked in their firms, for more than four years and 77.1 per cent of the respondents had worked in their current jobs for more than four years. However, only 24.1 per cent of the respondents who had experience in risk management practice for more than three years. Also there were 33.7 per cent of the respondents who did not have any experience in risk management practice.

Using total sales of the firms sample as one of the proxies for firm size, the table reports that the respondents were approximately split into equal groups of small, medium, and large firms,. Whereas using total assets as a proxy of a firm's size, the table shows that nearly more than half of the respondents were categorised as large size firms. As can be seen from the Table nearly half of the respondent firms (44.6 per cent) have a relationship with more than three banks, and that 56.6 per cent of the respondents described their relationship with banks as a strong one, and that 65.1 per cent of the respondents also indicated that they had relationships with banks for more than seven years. An unexpected result was that only 37.3 per cent of the firms in the study were interested in the idea of forecasting foreign exchange rates and that only 29 per cent of the respondents were interested in forecasting foreign exchange rates for a period of three months and more[1].

Table 9.21, presents the second part of the general description about the firm's ability to hedge variables. The Table shows that nearly half of the respondents indicated that their firms have risk management strategies and policy for the use of derivatives (48.2%, 49.4, respectively). Also 39.8 per cent of the firms in the sample had run some training programs in risk management. 61.4 per cent of the respondents who indicated that they had received some leaflets and documents from their banks on how to hedge foreign exchange exposure, and 65.1 per cent of the respondents stated that the treasury staff in their banks visited their firms and given seminars on how to manage currency risk and the tools available, however, there were only 42.2 per cent of the firms in the sample

[1] We should mention that rather that forecasting the foreign exchange rates, Saudi firms can use the forward market for the US dollar future exchange rates to define the magnitude of the foreign exchange risk.

who were hedging their currency risk. It may be that one possible reason for this is presented in the same Table. Nearly 57.8 per cent of the respondents agreed that implementing foreign exchange exposure management is very costly, and that 54.2% of the firms saw the cost of hedging foreign exchange exposure as exceeding the benefits that can be generated from hedging activities. In addition, 60.2% of the respondents in the sample saw the use of derivative instruments contracts as very costly hedging tools. In addition, 45.8 per cent of the respondents stated that there were no qualified staff in their firms to deal with currency exposure, and that nearly half (47%) of the firms described the financial contracts for hedging purpose as very complicated.

Table 9.21: The general statistical description of the firm's ability to hedge variables, part two,

The summary statistics relate to the scores obtained where respondents were asked to select a score from a 5-point scale where **1 = disagree, 3 = not sure, 5 = agree.**

Variables	The Indicators	Mean	S.D	PR 4or5	PR 1or2
The risk management policy	The firm has a policy in the derivative use	3.04	1.41	49.4	45.8
	The firm has risk management strategies	3.11	1.47	48.2	45.8
Training program in risk management	The firms run some training programs in risk management	2.92	1.41	39.8	48.2
	The bank's treasury staff visit the firm to give advice on how to manage the currency exposure	3.60	1.60	65.1	28.9
	The bank provide the firm with leaflets and documents on how to manage currency exposure	3.47	1.60	61.4	31.3
The foreign exchange exposure management cost	Implementing the foreign exchange exposure management is not costly	2.61	1.35	32.5	57.8
	We feel the benefit of hedging currency exposure is exceeding the cost	2.77	1.38	36.1	54.2
	Using derivatives contracts in hedging are not costly	2.57	1.42	33.7	60.2
The availability of qualified stuff to deal with currency risk	We have qualified staff to deal with currency exposure	3.07	1.39	47	45.8
	We have qualified staff to deal with derivative contracts	3.04	1.45	42.2	47
	We understand the relevance and importance of our currency exposure	2.70	1.44	38.6	55.4
	We are able to measure and evaluate our currency exposure	2.75	1.43	39.8	53
The availability of risk management tools	The absent of forward, future, and option markets do not affect our ability to hedge currency exposure	2.05	1.09	14.5	74.6
	The financial contracts available in the markets for hedging have small amount of risk	2.46	1.26	27.7	61.4
Managerial Performance	We always pay dividend to our shareholders	3.25	1.37	55.4	38.5
	We have some criteria and standards to evaluate the management performance	3.22	1.44	49.4	41
	our company's financial performance is usually evaluated by banks in order to receive external finance	3.08	1.47	44.1	45.9
	Our profit has been increased during the last years	3.18	1.47	48.2	41
The role of operating	In the company the operation departments such as sales, operation, marketing department have participated in the preparation of risk management strategies	2.73	1.35	38.6	55.4

Variables	The Indicators	Mean	S.D	PR 4or5	PR 1or2
department in risk management practice	There is a high level of coordination between the different departments in the company regarding the risk management problems	2.72	1.41	36.1	55.4
	Other departments usually provide us with information regarding the company's currency exposure	2.61	1.31	33.7	59

Further, it can be seen from the table that 55.4 per cent of the firms in the sample confirmed that they have difficulty in understanding the relevance and importance of their currency exposure and that 53 per cent of the firms agreed that they did not have the ability to measure their currency exposure with necessary accuracy. An important finding from Table 9.21 was that, 74.6 per cent of the respondents agreed that the absence of local forward, future, and option markets affected their ability to engage in hedging activities. The Table also shows that 49.4 per cent of the firms in the sample stated that they employ criteria and standards to evaluate management performance. Finally Table 9.21 shows that 55.4 per cent of respondents agreed that the operating department in their firms did not participate in the preparation of the firms' risk management strategy.

The Spearman correlation coefficients between all the firms' ability to hedge variables are next calculated. Table 9.22 shows that there is a positive and significant correlation between the proxies of the hedging costs which may give a rationale of using them as a group to measure the hedging cost. The hedging cost indicators are significantly correlated to the availability of qualified staff in risk management, the managerial performance and the ability to measure the currency exposure. As can be seen from the correlation Table, there is a positive and significant correlation between the risk management staff quality, the qualified staff to use derivative contracts, the understanding of the currency risk problem, and the ability to measure currency exposure. There are positive and significant associations between the firm size proxies, total sales, total assets, and the capital. Unexpected results are the associations between the management qualification proxies, in that, the Table shows that the correlations between the management qualification proxies are not significant with mixed signs. The only exception is that there is a positive and significant correlations between the managers' period of work in the company and the period of work in the current job (significant at the 0.01 level).

Table 9.22: Spearman correlation coefficients of proxy variables

	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15	X16
X1	1															
X2	.874**	1														
X3	.874**	.855**	1													
X4	.548**	.530**	.559**	1												
X5	.502**	.482**	.509**	.929**	1											
X6	-.110	-.058	-.100	-.138	-.129	1										
X7	-.071	-.059	-.056	-.158	-.140	.713**	1									
X8	.010	-.058	-.021	-.168	-.189	.511**	.402**	1								
X9	.170	.192	.084	.064	.146	.001	.090	-.023	1							
X10	-.143	-.161	-.154	-045	-.018	.186	.231*	-.059	.077	1						
X11	.068	.100	.127	.128	.170	-.144	.004	-.219*	.136	-.016	1					
X12	.038	-.057	-.026	.017	.036	-.173	-.091	-.193	.049	-.043	.604**	1				
X13	.276*	.240*	.303**	.562**	.525**	-.119	-.131	-.052	.143	-.082	-.040	-.044	1			
X14	-.049	-.002	-.049	-.131	-.157	.054	.124	.084	-.138	.133	-.278*	-.349**	.034	1		
X15	-.231*	.289*	.251*	.342**	.421**	.026	-.003	.016	.074	-.002	.054	-.009	.074	-.051	1	
X16	.247*	.281*	.247*	.253*	.256*	.063	.087	.065	.090	-.061	.061	-.108	.071	.029	.820**	1
X17	.173	.196	.143	.247*	.232*	-.041	.002	-.036	:131	.022	.043	-.060	.046	.026	.797**	.911**
X18	.164	.185	.072	.038	.067	-.029	-.107	-.020	.065	.086	.019	-.253*	.142	.040	.001	.096
X19	.057	.088	-.004	.111	.045	-.039	-.067	-.061	.072	-.086	-.131	.044	.157	-.050	-.053	-.005
X20	.131	.201	.122	-.039	-.027	-.144	-.052	-.134	-.119	-.129	.193	-.012	.112	.100	-.267*	-.150
X21	.452**	.440**	.361**	.105	.116	-.066	-.062	.108	.190	-.220*	-.077	-.131	.085	-.087	.056	.046
x22	.433**	.480**	.412**	.102	.128	-.121	-.115	.066	.176	-.273*	-.082	-.107	.095	-.153	.276*	.278*
X23	.137	.226*	.163	.617**	.546**	-.027	-.047	-.133	-.005	-.036	.080	-.012	.362**	.032	.322**	.247*
X24	.191	.267*	.238*	.550**	.618**	-.036	-.068	-.154	.017	-.052	.145	.048	.311**	.015	.373**	.239*

	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15	X16
X25	-.181	-.118	-.049	.013	-.002	.210	.214	.075	**-.234***	.132	.005	-.014	**-.270***	-.055	-.017	-.153
X26	-.150	-.182	-.121	-.147	-.186	**.237***	**.353****	.103	-.120	.041	-.134	-.121	-.157	.065	**-.344****	**-.322****
X27	.201	**.234***	.172	**.382****	**.390****	**-.254***	**-.231***	**-.216***	.084	**-.264***	.064	-.026	**.334****	.024	.212	**.317****
X28	.159	.202	.144	**.379****	**.322****	**-.266***	**-.223***	-.186	.157	**-.252***	.087	-.027	**.380****	.073	.159	**.308****
X29	.204	**.246***	.155	**.351****	**.336****	**-.291****	**-.318****	-.182	.061	**-.277***	-.004	-.010	**.424****	.052	.134	**.231***
X30	.082	.013	.083	-.084	-.055	**-.331****	-.200	-.153	.015	-.106	.003	.111	.056	.053	-.103	-.059
X31	.083	.042	.061	.101	.084	**-.482****	**-.392****	**-.299****	.076	-.004	.105	-.005	.177	-.035	-.028	-.073
X32	.163	.089	.156	.055	.002	**-.373****	**-.256***	**-.315****	.129	.208	.76	.040	.147	-.062	-.179	-.139
X33	-.065	-.012	-.075	-.002	-.009	**.255***	.196	.028	-.156	**.249***	.007	-.097	-.128	.136	.047	.008
X34	**.503****	**.506****	**.520****	**.659****	**.616****	-.006	.091	.008	.115	-.039	.175	-.048	-.102	**-.090**	**.294****	**.251***
X35	**.588****	**.577****	**.594****	**.649****	**.582****	.068	.122	.019	.157	-.129	**.242***	.019	**-.075**	-.050	**.271***	**.248***

	X17	X18	X19	X20	X21	X22	X23	X24	X25	X26	X27	X28	X29	X30	X31	X32	X33	X34
X17	1																	
X18	.094	1																
X19	.028	.732**	1															
X20	**-.237***	.134	.226*	1														
X21	.015	**.219***	.071	.070	1													
x22	**.277***	**.268***	.077	-.053	**.599****	1												
X23	**.239***	.082	**.226***	-.009	.069	-154	1											
X24	.215	.100	.159	-.020	.053	.158	**.909****	1										
X25	-.180	**.286***	**-.371****	-.114	-.132	**-.263***	-.116	-.089	1									
X26	**-.344****	.067	.146	-.075	-.064	-.149	-.102	-.192	-.163	1								
X27	**.346****	.085	.111	.134	.095	**.232***	**.467****	**.473****	**-.332****	**-.359****	1							
X28	**.302****	.109	.161	.154	.143	**.231***	**.488****	**.433****	**-.355****	**-.265***	**.870****	1						

	X17	X18	X19	X20	X21	X22	X23	X24	X25	X26	X27	X28	X29	X30	X31	X32	X33	X34
X29	.193	.094	.038	.190	.188	**.251***	**.418****	**.391****	**-.302****	**-.367****	**.775****	**.772****	1					
X30	.013	**-.215***	**.219***	.199	.040	-.004	-.097	-049	**-.261***	.043	-.024	-.017	.045	1				
X31	.014	.058	.107	.191	**.231***	.057	.147	.159	-.169	-.127	.125	.173	.179	**.490****	1			
X32	-.092	.023	**.232***	.178	.034	-.014	.003	.015	**-.222***	.140	-.050	.017	.039	**.542****	**.696****	1		
X33	-.012	.067	-.110	.026	-.179	**-.238***	.111	.062	.213	.026	-.129	-.069	-.180	-.145	-.127	-.177	1	
X34	.129	.008	-.013	-.055	**.227***	**.244***	.056	.046	.100	.035	-.061	-.074	-.072	-.051	.028	.123	-.009	1
X35	.170	.029	.044	-.015	**.261***	.275	.008	.070	.002	-.047	-.033	-.058	-.053	.029	-.026	.095	-.035	**.922****

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

X1: Implementing the foreign exchange exposure management is not costly
X2: We feel the benefit of hedging currency exposure is exceeding the cost
X3: Using derivatives contracts in hedging are not costly
X4: In the company we have a qualified staff to deal with currency exposure
X5: In the company we have a qualified staff to use derivative contracts
X6: The total sales
X7: The total assets
X8: The capital
X9: The respondent qualification
X10: The respondent qualification area
X11: The length of time of working at the company
X12: The length of time of experience in the current job
X13: The length of time of experience in risk management
X14: Our company's financial performance is usually evaluated by banks in order to receive external finance
X15: We always pay dividends to our shareholders
X16: We have some criteria and standards to evaluate management performance
X17: Our profit has been increased during the last years
X18: The number of the banks that company deal with
X19: The strong relationship with banks
X20: The length of period of the relationship with the bank
X21: The absent of forward, future, and option markets do not affect our ability to hedge currency exposure
X22: The financial contracts available in the markets for hedging have a small amount of risk
X23: The firm has risk management strategies
X24: The firm has a policy in the derivative use
X25: The forecast of foreign exchange rates
X26: The period of the forecast
X27: In the company the operation departments such as sales, operation, marketing department have participated in the preparation of risk management strategies
X28: There is a high level of coordination between the different departments in the company regarding the risk management problems
X29: Other departments usually provide us with information regarding the company's currency exposure
X30: The firms run some training programs in risk management
X31: The bank's treasury staff visit the firm to give advice on how to manage the currency exposure
X32: The bank provides the firms with leaflets and documents on how to manage currency exposure
X33: The respondent's nationality
X34: We understand the relevance and importance of our currency exposure
X35: We are able to measure and evaluate our currency exposure

While, there are four measures of managerial performance in the table, three of these measures were positively and significantly correlated. There are positive and significant correlation between both the extent of the dividend payment, the availability of managerial performance criteria and standards, and the profit improvement during the last few years. The correlation Table shows that the correlations between the three measures of the bank's relationship are mixed. While there is a positive and significant correlation between the numbers of banks that firms deal with, the strongest the relationship, and between the level of the relationship and the period of this relationship, there is a positive but insignificant correlation between the number of banks firms and the period of the relationship with these banks. This finding may affect the rationality of using these three measures as a group to measure the bank relationship. As expected, the two measures of the availability of risk management tools are significantly and positively correlated (at the 0.01 level). Also the three measures of the role of the operating department in risk management are positively correlated at the 1% significance level. Finally, it can be seen from the Table that the correlation between the indicators of the risk management training program is positive and statistically significant at the 1% level.

While the findings from the correlation Table gave some indication about using the expected proxies or indicators as a measurement for the firm's hedging ability variables, the study goes further and examines the internal reliability of using these different indicators and proxies to measure specific variables. To estimate the internal reliability, Cronbach's alpha is used and table 9.23 presents the average of all possible split-half reliability coefficients for the different groups of indicators. As can bee seen from table 9.23, the firm size proxies, the risk management policy indicators, the risk management training program indicators, the foreign exchange exposure management costs indicators, the availability of qualified staff to deal with currency exposure indicators, the availability of risk management tools indicators, and the role of operating department in risk management practice indicators are internally reliable since the coefficient is 0.79, 0.96, 0.82, 0.96, 0.92, 0.77, 0.93 respectively, can be used to measure these variables in the sample. The Table also shows that the risk manager's qualification proxies, the bank's relationship indicators, and the managerial

performance indicators are not internally reliable since the coefficients are 0.17, 0.64, and 0.73 respectively.

Table 9.23: Reliability analysis of the proxies and indicators of a firm's ability to hedge.

The variables	N of cases	N of items	Alpha
The risk manager's qualification	83	5	.17
Firm size	83	3	.79
Bank relationship	83	3	.64
The risk management policy	83	2	.96
Training program in risk management	83	3	.82
The foreign exchange exposure management cost	83	3	.96
The availability of qualified staff to deal with currency risk	83	4	.92
The availability of risk management tools	83	2	.77
Managerial Performance	83	4	.73
The role of operating department in risk management practice	83	3	.93

In order to use these group of proxies or indicators to measure specific variables the internal reliability should be examined, and to do that, Table 9.24, shows the alpha reliability levels when each constituent indicator or proxy is deleted for each group. From the table, in the case of the risk management qualification, we can see that deleting any of the proxies does not increase the internal reliability to the accepted level. We can say that these proxies can not be used as a group to measure the manager's qualification. In that case these proxies will be used separately to measure specific variables except for the proxy number 3, and 4 (the length of time of working at the company, and the length of experience in the current job, respectively) which can be used as proxies for one variable since the internal reliability for them is 0.75. In that case the risk manager's qualification variable proxies can be divided into four variables, The risk manager's qualification level, the risk manager's qualification area, the work experience (the length of time of working at the company, and the length of experience in the current job), and the risk management experience. For the bank relationship indicators, if we delete the indicator number 3 'the length period and relationship with the bank', the internal reliability is increased from 0.64 to 0.84 and

indicators 1, and 2 become more acceptable as a measurement of the bank's relationship.

Table 9.24: The reliability of the different group of indicators in the firm's ability variables of each constituent indicator is deleted.

The variables	Indicator number	Alpha if item deleted
The risk manager's qualification	1	.06
	2	.35
	3	-.04
	4	-.02
	5	.30

The variables	Indicator number	Alpha if item deleted
The bank relationship	1	.31
	2	.22
	3	.84
The managerial performance	1	.95
	2	.57
	3	.49
	4	.51

Table 9.24 also shows that if we delete indicator number 1 'the extent that the bank evaluates the firm's financial performance' from the managerial performance indicator list in table 9.24, will increase the internal reliability of indicator numbers 2, 3, and 4 as group to measure the managerial performance on the sample from 0.73 to 0.95 and will be more acceptable.

9.3.3 Univariate analysis

This section presents an analysis for the difference between hedging firms and non-hedging firms regarding their ability to engage in foreign exchange exposure management practice. This analysis will be presented next.

The risk manager's qualification degree and subject area

This study examines the effect of managerial knowledge as a measure of managerial ability in the hedging decision. The tests conducted used four variables: the manager's qualification level, the manager's subject of qualification, the manager's current job experience, and the risk management experience. First, this sub-section examines whether there is a difference between hedging managers and non-hedging managers regarding their qualification area and level. Table 9.25 shows that 85.7 per cent of the respondents who had PhDs were hedging currency exposure and that 65.5 per cent of the respondents who had masters degrees were hedging currency exposure. The

Bachelor degree holders represented the lowest qualification in the Table, and that 78.7 per cent of the respondent who have this degree were not hedging currency exposure. The Chi-Square test for difference in qualification level indicates that the hedging firms and non-hedging firms are significantly different.

Table 9.25: Management qualification area and level and the hedging decision.

The variables	The measurement	Hedging Firms		Non-Hedging firms		Total		Chi-Square Test
		No.	%	No.	%	No.	%	
The qualification degree	PhD	6	85.7	1	14.3	7	100	0.000
	Master	19	65.5	10	34.5	29	100	
	Bachelor	10	21.3	37	78.7	47	100	
	Total	35	42.2	48	57.8	83	100	
The qualification area	Management & Business	15	36.6	26	63.4	41	100	0.506
	Accounting	11	44	14	56	25	100	
	Finance & Economic	9	52.9	8	47.1	17	100	
	Total	35	42.2	48	57.8	83	100	

According to the Table 9.25, there is no significant difference between hedging and non-hedging firms regarding the qualification area, the calculated p value for the qualification area (0.506) is higher than the critical p value (0.05).

The work and risk management experience

The management experience is an important strategic concept, and can provide a company with lasting competitive advantage in the market. The manager's experience in both his company and risk management practice would be expected to affect the risk management behaviour in the firm. Table 9.26 presents the relationship between hedging and non-hedging decision and managerial experience. As can be seen from the Table, 72.4 percent of the respondents who had worked in the company for less than 3 years were less likely to hedge currency exposure. However, the Chi-Square test in the Table show that there are no significant differences between hedging and non-hedging firms regarding the risk manager working period in the firms and their period of experience in their current job. One of the main important findings in the Table is that there is a significant difference between hedging and non-hedging firms regarding the period of risk management experience that the person who is responsible for risk management in the firms have. In that 65 per cent of the respondents who have more than 10 years of experience in risk management practice

were hedging their currency exposure, and that 85.7 per cent of the respondents who had less than 3 years of experience in risk management practice tended to avoid engaging in a risky decision making, such as currency exposure management.

Table 9.26: Management experience and hedging decision.

The variables	The measurement	Hedging Firms		Non-Hedging firms		Total		Chi-Square Test
		No.	%	No.	%	No.	%	
The length of working on the company	More than 10 years	11	47.8	12	52.2	23	100	.650
	Between 4 to 10 years	22	41.5	31	58.5	53	100	
	Less than 3 years	2	28.6	5	**71.4**	7	100	
	Total	35	42.2	48	57.8	83	100	
The length of working in current job	More than 10 years	9	45	11	55	20	100	.954
	Between 4 to 10 years	18	40.9	26	59.1	44	100	
	Less than 3 years	8	42.1	11	57.9	19	100	
	Total	35	42.2	48	57.8	83	100	
The experience in risk management practice	More than 10 years	13	**65**	7	35	20	100	.000
	Between 4 to 10 years	18	51.4	17	48.6	35	100	
	Less than 3 years	4	14.3	24	**85.7**	28	100	
	Total	35	42.2	48	57.8	83	100	

In order to find out whether the differences in response of the two participating groups regarding the managerial qualification are statistically significant, the Chi-Square test was used. The results about the difference between hedging and non-hedging firms in managerial qualification are mixed. While there is significant difference between hedging and non-hedging firms regarding the manager's qualification level and the experience in risk management practice, the previous results showed no significant differences between hedging and non-hedging firms in the manager's qualification area, the period of work in the company, and the period of work in their current job. The respondents were asked to identify their level of agreement on the availability of qualified staff in their firms to deal with financial risk problems. In addition, the respondents were also asked to identify their agreement regarding their staff's' ability to asses the currency exposure problem. Table 9.27, shows the results of these inquiries.

Table 9.27: The availability of qualified staff to deal with financial risk and hedging decision

(1 = 'disagree', 5 = 'agree')

Variables	Indicator	Hedging Firms				Non-hedging Firms				Mann-Whitney Test
		Mean	S.D	PR 4or5 %	PR 1or2 %	Mean	S.D	PR 4or5 %	PR 1or2 %	
The availability of qualified staff to deal with Financial risk	We have qualified staff to deal with currency exposure	3.54	1.15	**60**	28.6	2.73	1.45	37.5	58.3	**.008**
	We have qualified staff to deal with derivative contracts	3.37	1.14	48.6	31.4	2.79	1.61	36.5	56.4	**.053**
	We understand the relevance and importance of our currency exposure	3.17	1.40	54.2	35.1	2.35	1.38	27.1	**68.7**	**.013**
	We are able to measure and evaluate our currency exposure	3.29	1.34	**57.1**	31.4	2.35	1.38	**25.1**	**70.2**	**.004**
	Average	3.34				2.56				

The Table 9.27, shows that 60 per cent of the hedging respondents agreed that their firms had qualified staff to deal with currency exposure, whereas, only 37.5 per cent of the non-hedging respondents agreed that their firms had qualified staff to deal with currency exposure. Also the Table shows that 56.4 per cent of the non-hedging respondents agreed that their firms do not have qualified staff in the use of derivative contracts. While nearly half of the hedging respondents (48.6%) who agreed that their firms had qualified staff in the use of derivative contracts, however, this reason does not affect these firms' decision to hedge their currency exposure. In that these firms may hedge using other hedging methods rather than derivative contracts or they may get a full support from the treasury department staff in their banks. As can be seen from the Table there are 68.7 per cent of the non-hedging respondents (the mean = 2.35) who confirm that their firms have difficulty in understanding the relevance and importance of their currency exposure. On the other hand, there are only 35.1 per cent of the hedging firms (the mean = 3.17) who have some difficulty in understanding the importance and relevance of their currency exposure. The Table shows that there are 70.2 per cent of the non-hedging firms who agreed that they are unable to measure and evaluate accurately their currency exposure but only 31.4 per cent of the hedging firms had the same difficulty. The Chi-Square test in Table 9.25, and 9.26, and The Mann-Whitney test in Table 9.27, reveal that there are significant differences between

hedging and non-hedging firms regarding the qualification and quality of managers who are responsible for currency exposure problems. To some extent the hypothesis (H22) that there are significant differences between the two groups in having a qualified staff to engage in risk management activities, can be accepted.

Managerial Performance

Increasing the managerial performance in a corporation may affect the manager's attitude toward financial risk. This sub-section examines the effect of high managerial performance on the hedging decision and how the existence of managerial performance criteria and standards affect the manager risk behaviour. The respondents were asked to identify their agreement with some managerial performance indicators. Table 9.28 shows that there is small difference in the dividend strategy between hedging firms and non-hedging firms.

Table 9.28: The managerial performance and hedging decision

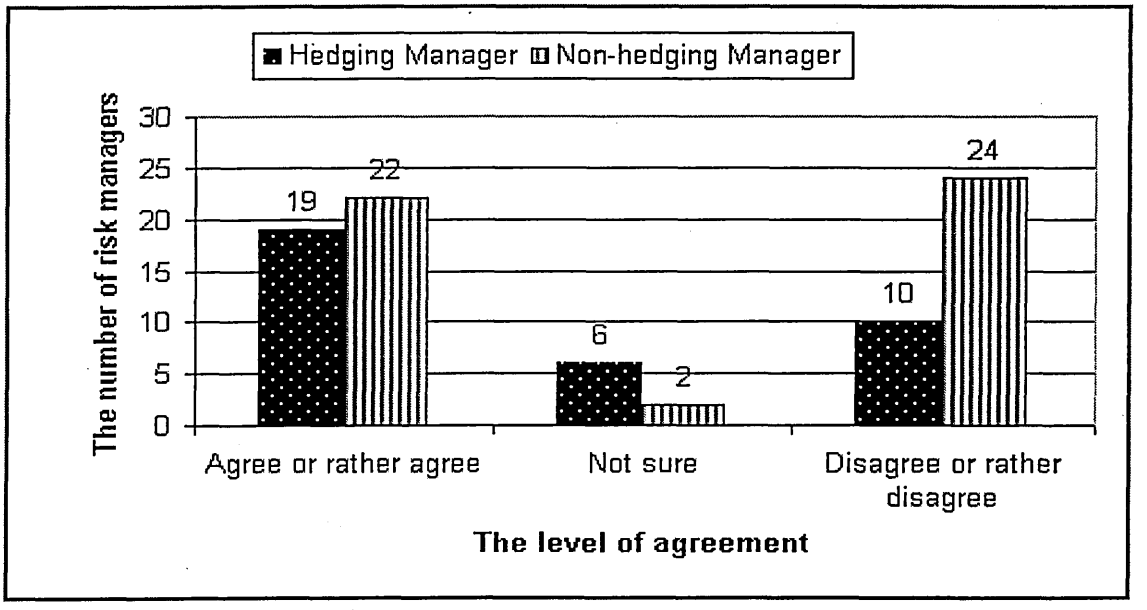
(1 = 'disagree', 5 = 'agree')

Variables	Indicator	Hedging Firms				Non-hedging Firms				Mann-Whitney Test
		Mean	S.D	PR 4or5 %	PR 1or2 %	Mean	S.D	PR 4or5 %	PR 1or2 %	
Managerial performance	We always pay dividend to our shareholders	3.49	1.15	60	31.4	3.08	1.50	52.1	43.7	.233
	We have some criteria and standards to evaluate the management performance	3.54	1.20	54.3	**28.6**	2.98	1.56	45.8	**50**	.081
	Our profit has been increased during the last years	3.57	1.17	54.3	**25.7**	2.90	1.60	43.8	**52.1**	**.041**
	Average	3.53				2.99				

An important finding from Table 9.28, is that while 50 per cent of the non-hedging firms' respondents (the mean = 2.98) indicated that there were no specific criteria and standards which can be used to evaluate management performance, only 28.6 per cent of hedging firms' respondents (the mean = 3.54) indicated that there were no specific criteria and standards that can be used to evaluate management performance in their firms.

Figure 9.1, shows that the managerial performance criteria and standards in corporate risk management have a small effect on the hedging decision since only 46.3 percent (19 managers of 41 managers) of the firms which have criteria and standards to evaluate management performance were hedging their foreign exchange risk. Another finding which may support the argument that hedging firms have more managerial performance criteria than non-hedging firms is that 52.1 per cent of the non-hedging firms' respondents stated that their firms' profit had not increased during the last years, with, only 25.7 per cent of hedging firms respondents stating that their firms' profit had not increased during the last years.

Figure 9.1: The managerial performance criteria and standards and hedging decision



In order to find out whether there are significant differences between hedging firms and non-hedging firms regarding the managerial performance indicators (Hypothesis, 23), the Mann-Whitney test result is mixed. The test result revealed that there are significant differences between hedging firms and non-hedging firms regarding profit improvement during the previous years ($p < 0.05$). Although the test showed that there are differences between hedging firms and non-hedging firms regarding the availability criteria and standards used to evaluate management performance, the difference is not statistically significant. The test also revealed that there were no significant differences between the two groups in their dividend payment to the shareholders.

Risk Management Training Programs

This subsection examines the hypothesis which focuses on the impact that risk management training has on the foreign exchange exposure management policy in a firm. The trainees learn new theories and methods about risk management. Regarding this simple idea, the trainees are challenged to apply the risk management theories and methods to real situations in their firms. The training programs invited the trainees to think about their risk management attitudes and to assess their firms' foreign exchange risk. The respondents were asked to identify whether their firms had any risk management training programs and to point out to what extent their banks helped in risk management practice, the results are presented in Table 9.29. The Table shows that 60 per cent of the hedging firms (the mean = 3.40) had run risk management training programs, while only 25 percent of the non-hedging firms (the mean = 2.56) had run risk management training programs.

Table 9.29: The risk management training program and the hedging decision.

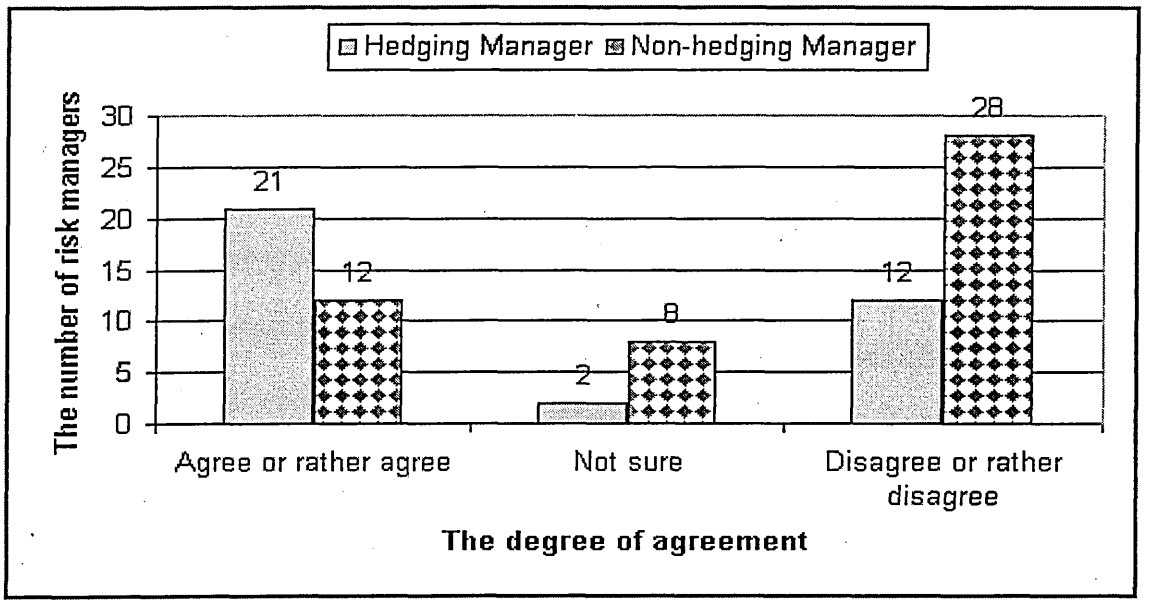
(1 = 'disagree', 5 = 'agree')

Variables	Indicator	Hedging Firms				Non-hedging Firms				Mann-Whitney Test
		Mean	S.D	PR 4or5 %	PR 1or2 %	Mean	S.D	PR 4or5 %	PR 1or2 %	
Risk management training program	We run some training program in risk management practice	3.40	1.40	**60**	34.1	2.56	1.32	**25**	58.1	**.009**
	Bank's staff visit us and tell us how to hedge currency exposure	4.20	1.41	**82.9**	14.3	3.17	1.60	52.1	39.6	**.002**
	We receive some leaflets, document, and recommendation from the bank regarding the currency exposure management	3.94	1.51	**77.1**	20	3.13	1.58	50	**39.6**	**.013**
		3.85				2.93				

Figure 9.2, shows that training programs in corporate risk management give managers a positive experience since 63.6 percent (21 managers out of 33 managers) of the managers who have had training programs were hedging their foreign exchange risk. An important finding from the table is that 82.9 percent of the respondents in hedging firms agreed that the bank's staff visited them and gave them advice on how to manage their currency exposure. In addition, 77.1 per cent of the respondents in

hedging firms agreed that they received leaflets, documents, and recommendations from their bank on how to manage currency exposure. As seen in the above analysis, differences between hedging and non-hedging firms do exist regarding the extent of the risk management training program in each group. However, the question is whether these differences are statistically significant?

Figure 9.2: The risk management training program and hedging decision



The Mann-Whitney test results show that there are significant differences between hedging and non-hedging firms regarding the extent of the risk management training programme and the advice from the bank. For the risk management training program indicators were presented in Table 9.29, the null hypothesis (H24, see Chapter 7) was accepted ($p < 0.05$).

The Banking Relationship

As found in the previous subsection, there was a significant relationship between the hedging decision and the help that firms receive a from their banks. In this subsection, the analysis will examine more deeply the effect that the relationship with banks may have on the firms' attitude towards currency risks. The respondents were asked to describe the number of banks they deal with and the level of their relationship with the banks. As seen from Table 9.30, hedging increased when firms dealt with more than one bank. However, this does not mean that firms which deal with more than three banks are more likely to be hedging firms. While 86.7% of the firms which dealt

with only one bank were non-hedging firms, 54.1% of the firms that dealt with more than three banks were also non-hedging firms.

Table 9.30: The bank relationship and hedging decision

The variables	The measurement	Hedging Firms		Non-Hedging firms		Total		Chi-Square Test
		No.	%	No.	%	No.	%	
The number of the banks that company deal with	More than three banks	17	45.9	20	54.1	37	100	.027
	Two to three banks	16	51.6	15	48.4	31	100	
	One bank	2	13.3	13	86.7	15	100	
The strength of the relationship with bank	Strong relationship with many banks	25	53.2	22	46.8	47	100	.039
	Good relationship with one bank	6	23.1	20	76.9	26	100	
	No special relationship	4	40	6	60	10	100	

One of the important advantages for hedging firms in contrast with non-hedging firms is that 71.4 percent of the hedging firms described their relationship with banks to be strong. Since the Chi-Square test reveals that there are significant differences between hedging and non-hedging firms in their level of relationship with banks, the null hypothesis (H25, there are significant differences in the banks relationship between hedging and non-hedging firms) can be accepted.

Firm Size

The size of companies is measured using three different proxies which are total sales, total assets, and capital. According to the total sales, responding companies are classified into three categories; Small (from SR30m to less than SR200m), Medium (from SR210 to less than SR 600m), and Large (more than SR 610m). Using total assets as a measure of size, the firms in the sample are also divided into, Small (from SR50m to less than SR400m), Medium (from SR410 to less than SR 780m), and Large (more than SR 790m). Regarding capital, the firms in the sample are divided into three categories, Small (from SR5m to less than SR70m), Medium (from SR80m to less than SR 300m), and Large (more than SR 310m).

Table 9.31, shows that 64.3% of large sales respondent companies (more than SR 610m) were hedging their currency exposure, with only 35.7% of the large size firms not hedging. However, using the total assets as a measure for size, we can see that

52.4 percent of the large size firms were hedging their exposure but, consistent with theoretical expectation, the table shows that 78.9 percent of the small firms were not hedging. In the same vein, this argument uses capital as a measure of size. The table shows that only 36.7% of the small size firms were hedging their currency exposure, with this percentage increasing to 53.8% for large firms.

Table 9.31: The firms' size and hedging decision.

The variables	The measurement	Hedging Firms		Non-Hedging firms		Total		Chi-Square Test
		No.	%	No.	%	No.	%	
The Total sales	Large (more than SR 610m)	18	64.3	10	35.7	28	100	.007
	Medium (from SR210 to less than SR 600m)	11	37.9	18	62.1	29	100	
	Small (from SR30m to less than SR200m)	6	23.1	20	76.9	26	100	
The Total assets	Large (more than SR 790m)	22	52.4	20	47.6	42	100	.062
	Medium (from SR410 to less than SR 780m)	9	40.9	13	59.1	22	100	
	Small (from SR50m to less than SR400m)	4	21.1	15	78.9	19	100	
The Capital	Large (more than SR 310m)	14	53.8	12	46.2	26	100	.349
	Medium (from SR80m to less than SR 300m)	10	37	17	63	27	100	
	Small (from SR5m to less than SR70m)	11	36.7	19	63.3	30	100	

While the Table shows that there are differences between hedging firms and non-hedging firms size-wise using total sales, total assets, or capital as measures for firm size, the question still remains as to whether these differences are statistically significant. The Chi-Square test results are mixed, in that, when the total sales are used as a size proxy, the test reveals that the two groups are significantly different in size. The calculated p value (0.007) is smaller than the critical p value (0.05). Whereas, the capital used as a size proxy, the test reveals that the two groups are not significantly different in size. The calculated p value (0.349) is larger than the critical p value (0.05). The Chi-square test also reveals that, when the total assets are used as a measure of a firm's size, the two groups are just significantly different in size, with the calculated p value (0.062) just over the critical p value (0.05). It can be concluded that using only the total sales as a measure of firm size, the hypothesis (H26, hedging decision is positively correlated with firm size) can be rejected.

The availability of risk management policy and local market for risk management tools

As predicted in the theoretical framework chapter 7, a firm with a risk management strategy is more likely to hedge its currency exposure. For firms to hedge they should have easy access to the local market for risk management financial tools. Having difficulty in obtaining an appropriate instrument contract to hedge, may affect the firm's attitude towards currency exposure management. In order to examine these predictions, the respondents were asked to point out the availability of risk management policies in their firms and the availability of local markets for risk management financial contracts in Saudi Arabia. Table 9.32 presents the results of the respondents' perceptions.

Table 9.32: The availability of risk management policy and local market for risk management instrument contracts and hedging decision.

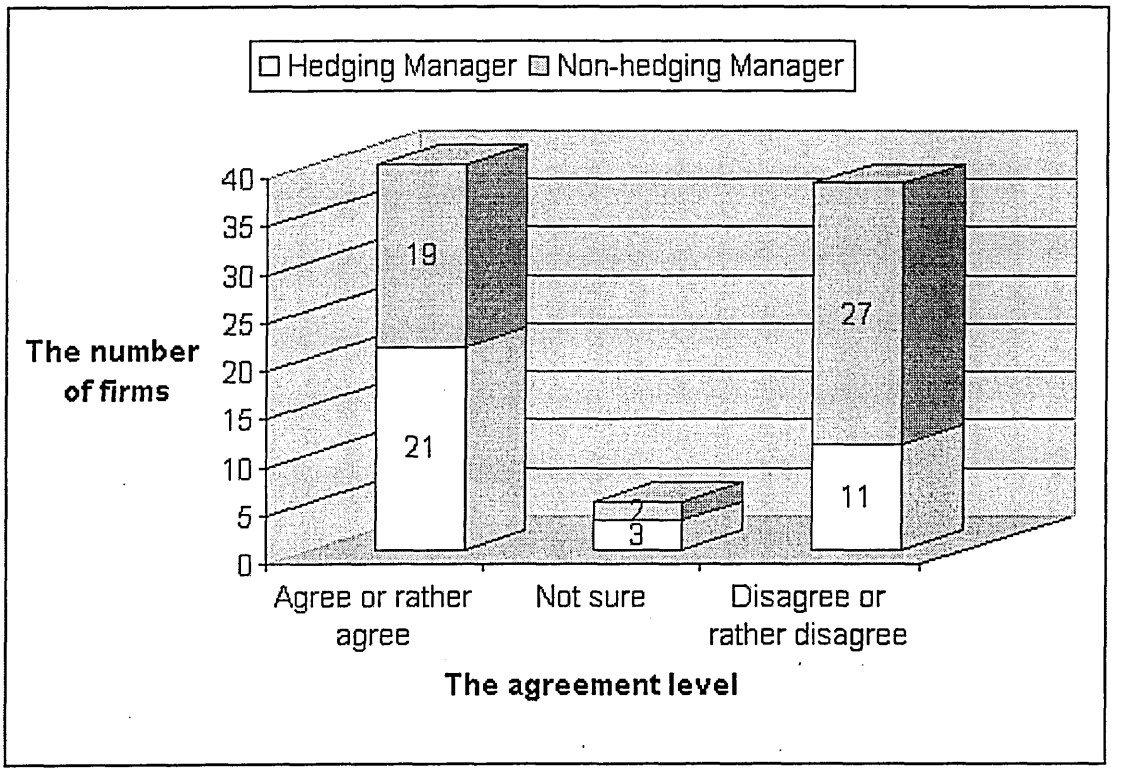
(from 1 = 'disagree' to 5 = 'agree')

Variables	Indicator	Hedging Firms				Non-hedging Firms				Mann-Whitney Test
		Mean	S.D	PR 4or5 %	PR 1or2 %	Mean	S.D	PR 4or5 %	PR 1or2 %	
The availability of risk management policy	The firm has risk management policies	3.54	1.27	**60**	31.5	2.79	1.53	39.6	56.3	**.021**
	The firm has a policy in the derivative use	3.51	1.22	**61.9**	27.5	2.69	1.45	**34.3**	60	**.008**
The availability of local future, forward and option markets	The absence of forward, future, and option markets do not affect the firm's ability to hedge currency exposure	2.20	1.16	20	**71.4**	1.94	1.04	10.4	**77.1**	.299
	The financial contracts available in the markets for hedging have small amount of risk	2.71	1.30	34.3	51.4	2.27	1.22	22.9	**68.8**	.112

According to Table 9.32, most of the respondents in hedging firms (60%) agreed that their firms have risk management policy, and that 61.9 per cent of the respondents in hedging firms (the mean = 3.51) point out that their firms have a policy for derivatives use. While the Table shows that there are 39.6% of the respondents in non-hedging firms who confirmed that their firms have risk management strategy. While most of these firms suffered from currency exposure it seems that these firms could be

classified as adopting a risk ignorance strategy (see the exploratory chapter). Figure 9.3, shows that 52.5% (21 out of 40 firms) of the respondents who agreed or rather agreed that their firms had a risk management policy, were hedging their currency exposure, while a high percentage of 47.5% of the respondent who agreed or rather agreed that their firms had risk management policy but did not hedge their currency exposure. This result may weaken the argument that the availability of risk management policy should encourage the firm to hedge. While the results presented above from Table 9.32 and Figure 9.3 do not give a clear picture about the effect of the availability of risk management policy on the currency exposure management decision, the Mann-Whitney test result, as shown in Table 9.32, reveals that the hedging and non-hedging firms are significantly different regarding the availability of risk management policy, thus the hypothesis (H27) is acceptable.

Figure 9. 3: The risk management policy and hedging decision



Regarding the availability of a local market for risk management instrument contracts, Table 9.32 shows that both the hedging and non-hedging respondents agreed that the absence of forward, future, and option markets in Saudi Arabia affected their firms choice to hedge or not to hedge. In addition, an important reason that may drive some firms to choose not to hedge is that, the Table shows that 68.8 per cent of non-hedging

firms (mean = 2.27) saw the financial contracts which are available as very risky contracts. In order to find whether there are any significant differences between hedging and non-hedging firms regarding the availability of the risk management instrument contracts, the Mann-Whitney test was adopted. The test shows that there are no significant differences between the two groups. The null hypothesis (H28) that there are no significant differences between hedging and non-hedging firms regarding the availability of local markets for risk management instrument contracts is accepted.

The cost of implementing hedging strategy

While, it was found earlier that risk management activities can lead to the enhancement of value for shareholders (see section, 8.2), it also has costs to be offset against this benefit. Hedging costs are an important factor in a decision making of whether or not to hedge foreign exchange rate exposure. As predicted in section (7.3.2.4), the costs associated with hedging strategy plays a role in a firm's decision to hedge its foreign exchange risk. It expected that the firm is more likely to hedge, if the manager feels that the costs of hedging are at an acceptable level. The cost associated with particular hedging tools is important when a firm chooses to adopt its risk management strategy. In order to examine the effect of hedging cost in the hedging decision, this study uses direct measures by directly asking the respondents to identify their perceptions about the cost of implementing hedging activities. According to the results in Table 9.33, 57.1 per cent of the hedging respondents (the mean = 3.37) agreed with the statement that implementing the foreign exchange exposure management is not costly, while only 14.6 per cent of the non-hedging respondents (the mean = 2.06) held the same view. The Table also shows that a high percentage of the hedging firms (60%) agreed that the benefit of the hedging activity exceeded the cost of hedging. This finding can be more clearly seen in Figure 9.4, in that 71.1 per cent of the firms (32 firms out of 45 firms) in the sample which disagreed that the benefit of the hedging activity exceeded their cost, were not hedging their currency exposure and that 67.7% of the firms (21 firms out of 31 firms) in the sample who agreed that the benefit from the hedging activity exceeded their costs, were hedging their currency exposure.

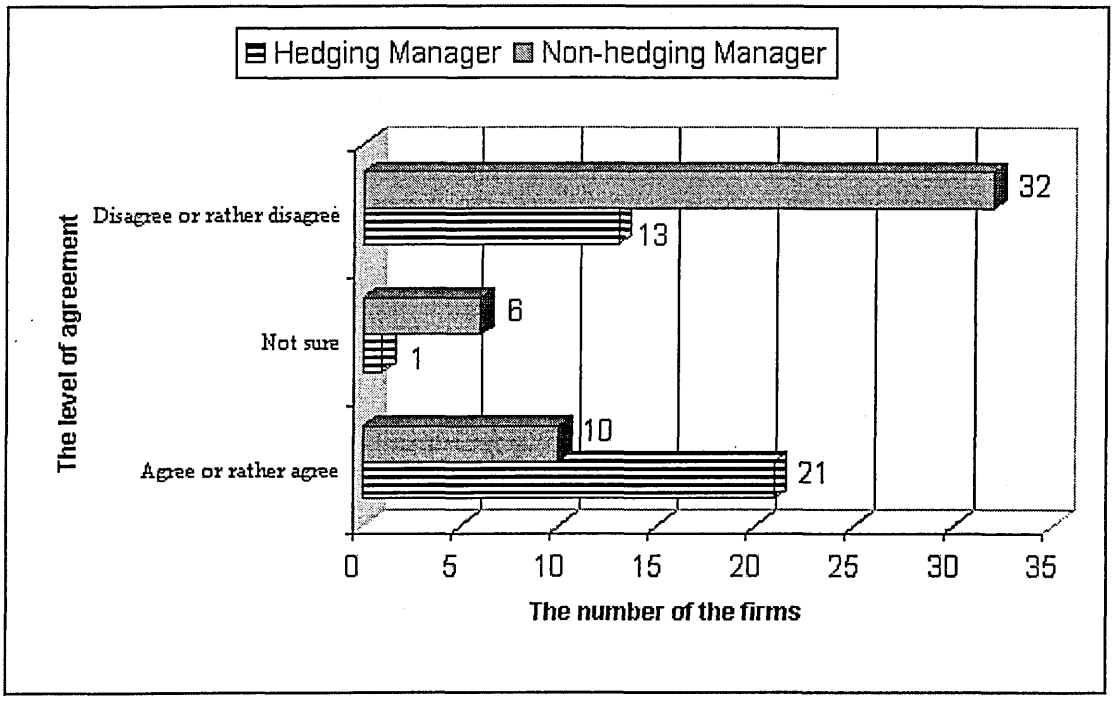
Table 9.33: The cost of implementing hedging strategy and hedging decision.

(From 1 = 'disagree' to 5 = 'agree')

Variables	Indicator	Hedging Firms				Non-hedging Firms				Mann-Whitney Test
		Mean	S.D	PR 4or5 %	PR 1or2 %	Mean	S.D	PR 4or5 %	PR 1or2 %	
The cost of implementing hedging strategy	Implementing the foreign exchange exposure management is not costly	3.37	1.40	**57.1**	34.3	2.06	1.02	**14.6**	**75**	**.000**
	We feel the benefit of hedging currency exposure is exceeding the cost	3.43	1.40	**60**	37.2	2.29	1.18	**20.8**	66.7	**.000**
	Using derivatives contracts in hedging are not costly	3.11	1.55	51.4	45.7	2.17	1.17	20.8	**70.8**	**.005**

While, most of the companies in Western countries were hedging using mainly derivative contracts (Mian, 1996; Tufano, 1996), the cost of hedging contracts may exceed the ability of the Saudi firms to finance the use of these contracts since most of the non-hedging firms (70.8%) thought that using derivative contracts is very costly, and this may affect their choice to engage in hedging activity. However, this reason seems to be less important for the hedging decision since 45.7 per cent of the hedging firms disagreed with the statement that the use of derivatives was not costly. In order to examine whether there are significant differences between hedging firms and non-hedging firms regarding their perception towards the cost of implementing a hedging strategy, the Mann-Whitney test was adopted. The test results show that there are statistically significant differences between hedging firms and non-hedging firms regarding their perception towards the cost of implementing a hedging strategy, and we can accept this hypothesis (H29).

Figure 9.4: The effect of the feeling that the benefit from hedging is exceeding the cost



The ability to forecast foreign exchange rate

One of the main skills which can help firms to measure currency exposure is their ability to forecast expected foreign exchange rate future movements. Firms can not decide whether to hedge or not unless to some extent they can have some view regarding the future movements of the exchange rate. In order to examine the effect of the forecasting ability on the hedging decision, the respondents were asked to point out if they forecast the foreign exchange rate and the period that their forecast covered. As can be seen from Table 9.34, all of the hedging firms forecast the foreign exchange rate they were exposed to, and 67.3 per cent of the firms which forecast their foreign exchange rates hedged their currency risk. The Table shows that there are statistically significant differences between hedging and non-hedging firms in their ability to forecast the foreign exchange rate movements and in the period that the forecast covered. The hypothesis (H30) can be accepted.

Table 9.34: The foreign exchange rates forecast and hedging decision

The variables	The measurement	Hedging Firms		Non-Hedging firms		Total		Chi-Square Test
		No.	%	No.	%	No.	%	
Forecasting the foreign exchange rates movements	Yes	35	67.3	17	32.7	52	100	.000
	No	0	00	31	100	31	100	
The forecast covering period	Up to One year	14	82.4	3	17.6	17	100	.029
	Up to three months	21	84	4	16	25	100	
	Up to one month	0	00	10	100	10	100	

The role of the operating departments in risk management

As found in the exploratory study, the high level of inter relationship between departments in the firm may help, to some extent, to asses the currency exposure and to take action against currency exposure. Providing the risk manager with enough information about the firm's exports and imports before and after the process and how changes in prices may affect demand, will help the risk manager to choose an appropriate decision to hedge or not to hedge. The respondents of the survey were asked to describe the role of their operating departments in the risk management process. A summary of the respondents' perceptions is presented in Table 9.35. As expected, Table 9.35 shows that, 73 per cent of the non-hedging respondents agreed that there is a low level of coordination between the different department in the company. This result can be confirmed in Figure 9.5, in that 76.1% (35 firms out of 46 firms) of the respondents who suffer from the limitation in participation in operating departments in the preparation of the risk management strategy decided not to hedge their currency exposure. The Figure also shows that 66.7% of the respondents who confirmed the participation of their operating departments in the preparation of the risk management strategy did hedge their currency exposure. As mentioned by one of the interviewees, he usually received limited information from other departments, such as the purchasing and marketing departments, which made it difficult to estimate the severity of the currency exposure which affected his decision to hedge.

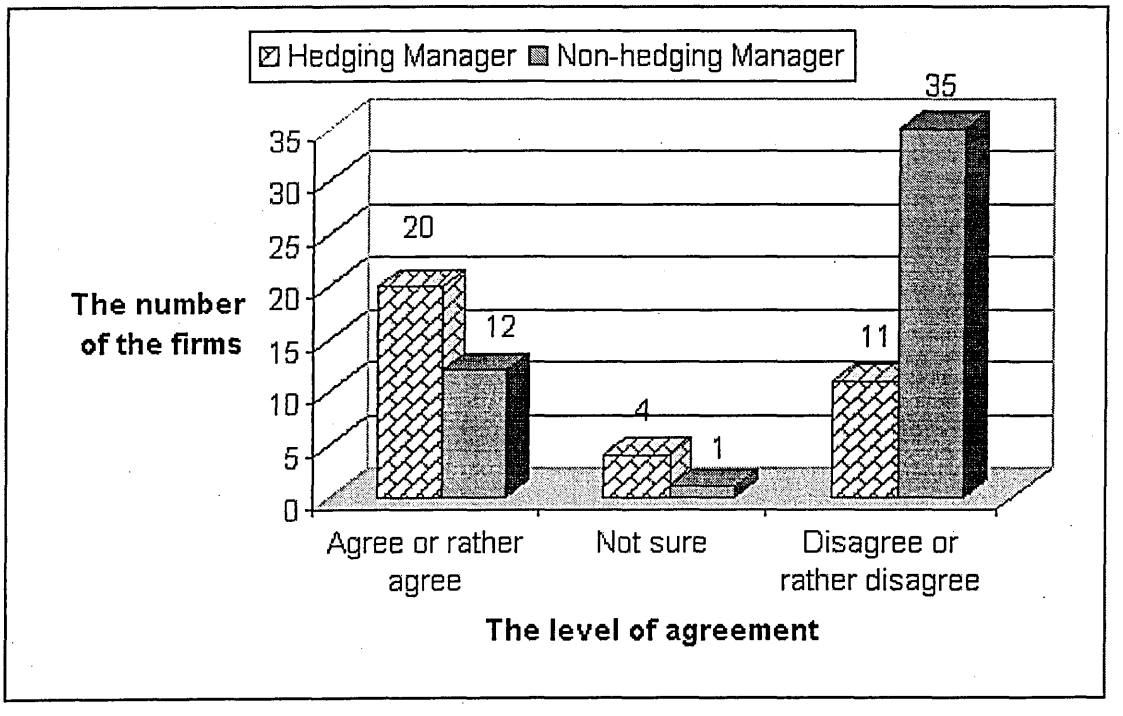
Table 9.35: The role of the operating departments in risk management process and hedging decision.

(From 1 = 'disagree' to 5 = 'agree')

Indicator	Hedging Firms				Non-hedging Firms				Mann-Whitney Test
	Mean	S.D	PR 4or5 %	PR 1or2 %	Mean	S.D	PR 4or5 %	PR 1or2 %	
There is a high level of coordination between the different departments in the company	3.43	1.22	**54.3**	31.5	2.21	1.32	**22.9**	**72.9**	**.000**
Other departments usually provide us with information regarding the company's currency exposure	3.23	1.21	51.4	37.1	2.17	1.19	20.8	**75**	**.000**

The same result can be summarized from Table 9.35, in that 75 per cent of the non-hedging firms' respondents were affected by the limitation of the information from the operating departments regarding the currency exposure problem.

Figure 9.5: The role of operating departments in the preparation of risk management strategy



The hypothesis (H31) is accepted, since the Mann-Whitney test result reveals that the differences, between hedging and non-hedging firms regarding the role of the operating departments in the risk management strategy, are statistically significant at the 0.01 level.

The risk manager's nationality

The exploratory study gave some indication that the risk manager's nationality may play a role in the hedging decision. The exploratory study showed that of the six risk managers who hedged four of them were from Asia and European countries. This subsection examines the effect of the risk manager's nationality on the hedging decision. The respondents were asked to identify their nationality. Table 9.36 presents a summary of the risk manager's nationality in the sample.

Table 9.36: The nationality of the risk manager and hedging decision

The variables	The measurement	Hedging Firms		Non-Hedging firms		Total		Chi-Square Test
		No.	%	No.	%	No.	%	
The risk manager nationality	Saudi	8	29.6	19	70.3	27	100	
	Other Arabic nationality	7	28	18	72	25	100	
	American	2	50	2	50	4	100	.011
	European	4	50	4	50	8	100	
	East Asian (Japan, India, and Pakistan)	14	77.8	4	22.2	18	100	
	Other nationality	0	00	1	100	1	100	

The Table shows that, when risk managers come from foreign countries the probability of hedging increased. The possible reason for this is the experience that these managers may have through their work in their countries, since most studies in Western Europe, America, and Japan found that most of the MNCs in these countries were hedging their currency exposure. Also most of these countries have an easy access to the forward, future, or option contracts markets. The Chi-Square test result in the Table reveals that the differences in a risk manager's nationality between hedging and non-hedging firms are statistically significant. This leads us to accept the hypothesis (H32, see section 7.3.2.4).

9.3.4 Multivariate Analysis

The aim of this section is to examine the influence of the firm's ability to hedge in the hedging decision using a multivariate logic analysis. The logic model which will be used in this section, is derived from the equation [8.11] and given by equation [9.2].

$$\text{In}\left(\frac{Pi}{1-Pi}\right) = \beta_0 + \beta_1\ \text{Qdegree} + \beta_2\ \text{Qsubject} + \beta_3\ \text{Jobexperience1} + \beta_4\ \text{Jobexperience2} + \beta_5\ \text{riskexperience} + \beta_6\ \text{Quality} + \beta_7\ \text{Training} + \beta_8\ \text{Bank1} + \beta_9\ \text{Bank2} + \beta_{10}\ \text{Bank3} + \beta_{11}\ \text{Perform} + \beta_{12}\ \text{Forecast} + \beta_{13}\ \text{Nationality} + \beta_{14}\ \text{Sales} + \beta_{15}\ \text{Assets} + \beta_{16}\ \text{Policy} + \beta_{17}\ \text{Tools} + \beta_{18}\ \text{Cost} + \beta_{19}\ \text{Department} + \varepsilon \quad [9.2]$$

Where

β_0	Constant term
Qdegree	The manager qualification degree
Qsubject	The manager qualification subject
Jobexperience1	The length period of working at the company
Jobexperience2	The length of experience in the current job
riskexperience	The length experience in risk management
Quality1	The availability of qualified staff in risk management
Training	The risk management training program
Bank1	The bank's contribution to the risk management strategy
Bank2	The number of banks that the firm deals with
Bank3	The relationship with the bank
Sales	The Total Sales
Assets	The Total Assets
Policy	The availability of risk management policy
Tools	The availability of financial hedging contracts
Cost	The cost of implementing hedging strategy
Nationality	The manager's nationality
Perform	The management performance
Forecast	The forecast of foreign exchange rates
Department	The operating department participation in risk management strategy
β_1 to β_{19}	Coefficients for each firm-specific variables
ε	Residual term

Before running the logistic regression analysis, we checked to see if any collinearity problems exist between the independent variables. Table 9.37, shows that a collinearity problem exists between some of the independent variable proxies. The Table shows that the collinearity problem exists between the proxies of the availability of qualified staff to deal with currency risk, the cost of implementing hedging strategy, the management performance, the availability of risk management tools, the manager's length of work in the company, and the capital, the availability of a risk management policy, the role of the operating department in risk management activity, and the bank's contribution in the currency risk management.

Table 9.37: Testing the collinearity in the hedging ability determinants model.

The independent variable	Tolerance	The independent variable	Tolerance
the respondent qualification	.649	The relationship with bank	.273
The respondent qualification area	.534	The total sales	.295
Length of working in a company	.202	The total assets	.356
The length of experience in your current job	.174	The capital	.174
The length or period of experience in risk management practice	.550	In the company we have risk management strategies	.062
in the company we have a qualified people to deal with risk management	.047	In the company we have a policy of the use of financial derivatives	.056
In the company we have qualified people on how to use the risk management tools	.054	The absence of the forward, future, and option markets do not affect our ability to hedge the foreign exchange exposure	.610
We do not have any difficult in understanding the relevance and importance of our currency exposure	.062	The risk management tools available in the markets to hedge the foreign exchange exposure are not that risky	.116
It is not that difficult to measure our currency exposure with the necessary accuracy	.067	Implementing the foreign exchange risk is not costly	.132
We always pay dividend to our shareholders	.133	We feel the benefit of hedging is exceeding the cost from it	.102
We have some criteria and standards to measure the managerial performance	.080	Using derivatives for hedging is not costly	.120
Our profit has increased during the last years□	.091	Forecasting the future foreign currency cash flow	.419
we run some training program in hedging FXR	.429	In the company, the operating departments such as sales department and purchase departments are participating in the preparation of the risk management strategy	.112
banks visit us and tell us how to hedge FXR	.185	There is a high level of coordination between the different departments in our company	.113
receive some leaflets and recommendations on how to manage FXR	.206	Other department usually provides me with relevant information about the foreign exchange exposure in the company	.239
Banks dealing	.280	The nationality of the one who is responsible for risk management	.608

In order to solve the collinearity problem, the proxies for each independent variable (exhibiting a collinearity problem) were combined with each other to generate a union tied measure for each variable. After that was done, the collinearity test was run again and the results in Table 9.38 show that the collinearity problem has been reduced using the new organisation for the independent variables.

Table 9.38: Re-testing the collinearity in the hedging ability determinants model.

The independent variable	Tolerance	The independent variable	Tolerance
the respondent qualification	.773	The relationship with bank	.369
The respondent qualification area	.714	The total sales	.334
Length of working in a company	.507	The total assets	.404
The length or period of experience in risk management practices	.718	The availability of risk management strategy	.609
The availability of qualified staff to deal with currency risk	.593	The availability of the currency risk management tools (Derivative contracts)	.715
The management Performance	.649	The cost of implementing the foreign exchange risk management	.539
we run some training program in hedging FXR	.525	Forecasting the future foreign currency cash flow	.526
The banks contribution on the currency risk management strategy	.506	The participation of the operating departments in currency risk management strategy	.496
Banks dealing	.325	The nationality of the one who is responsible for risk management	.755

Also Figure C4, in Appendix C, shows that all the residuals lie within 3 standard deviations from the mean. The coefficients for the firm's ability variables estimated by the logistic regression model are summarised in Table 9.39. Consistent with the univariate analysis, managers with a higher degree, such as a PhD or Masters, were significantly more likely to hedge. The Table shows that the manager's qualification subject does not significantly affect the hedging decision. While, it can be suggested from the positive coefficient that managers who have more experience in their current jobs, more than 10 years, were more likely to hedge, this is not statistically significant. As found in the univariate analysis, managers with more experience in risk management activities were more likely to hedge and this is statistically significant at the .10 (90% confidence) level. The positive coefficient for the effect of the availability of qualified staff in risk management activity supports its effect on the hedging decision, but this effect is not statistically significant. This clearly contradicts the hypothesis that hedging firms have more qualified staff in risk management practice. The Table shows that the firms with a managerial performance evaluation

and reward system were not significantly more likely to hedge. It can be seen from the Table that firms with a strong relationship with banks were more likely to hedge, and this is statistically significant in the 0.10 (90% confidence) level.

Table 9.39: The logistic regression for the hedging ability variables model (model 5a).

The variable	Unstandardized Coefficient (B)	S.E.	Wald	Sig.	Standardized Coefficient
the respondent qualification degree	5.011	2.009	6.223	**.013**	1.174
The respondent qualification area	1.735	1.686	1.059	.303	0.494
Length of working in a company	.180	1.261	.020	.886	0.037
The length or period of experience in risk management practice	3.617	2.214	2.668	.102	0.991
The availability of qualified staff to deal with currency risk	.436	.545	.640	.424	0.225
The management Performance	.289	.587	.242	.623	0.153
we run some training program in hedging FXR	.663	.468	2.006	.157	0.337
The banks contribution on the currency risk management strategy	.748	.707	1.119	.290	0.431
Banks dealing	-2.539	2.482	1.047	.306	-0.686
The relationship with bank	3.462	2.115	2.680	.102	0.874
The total sales	.442	1.677	.070	.792	0.129
The total assets	2.115	2.057	1.058	.304	0.625
The availability of risk management strategy	.137	.526	.068	.794	0.070
The availability of the local market for currency risk management tools	-.796	.604	1.733	.188	-0.249
The cost of implementing the foreign exchange risk management	2.877	1.437	4.006	**.045**	1.400
The participation of the operating departments in currency risk management strategy	.911	.645	1.994	.158	0.443
The nationality of the one who is responsible for risk management	1.501	.819	3.357	**.067**	0.866
Forecasting the future foreign currency cash flow	3.020	1.939	1.778	**.030**	0.533
The constant	5.011	2.009	6.223	**.013**	

There is a positive relationship between a firm's size and the hedging decision, and the standardized coefficient for a firm's total assets indicates that the total assets would work better as a predictor for the hedging decision than total sales. However, both total sales and total assets were not statistically significantly. Inconsistent with

univariate analysis, the logistic regression analysis shows that the effect of the availability of the risk management policy on the hedging decision was not statistically significant. An unexpected result in terms of the respondents' opinion is the negative coefficient for the effect of the availability of the local market for financial hedging tools on the hedging decision. However, this can be explained by the relationship between hedging and the strength of the banking relationship and the fact that local banks can still access international financial markets. As found in the univariate analysis, the logistic regression significantly supports the hypothesis that the cost of implementing the hedging strategy affects the hedging decision. Regarding the nationality of the risk managers, the Table reported that risk managers who hedge and those who did not, were significantly different in their nationalities. Table 9.40, reports the description of the determinants of the hedging ability full model (5a). Overall, compared to the previous models discussed in this chapter and previous chapters, the determinants of the hedging ability model looks to be the best model to fit the hedging decision. As demonstrated by Table 9.40, the model can correctly classify 92.8% of the firms in the sample as hedging and non-hedging firms. This result is confirmed by the goodness-of –fit measures, in that both G_M = 85.315, and R_L^2 = .755, were high, indicating that the determinants of the hedging ability variables contributed significantly in explaining the hedging decision.

As can be seen from Table 9.40, both λ_P = .826, and τ_P = .852, were very high, indicating that the determinants of the hedging ability allow us to classify the firms in the sample into hedging and non-hedging firms with very high degree of accuracy. In order to contribute to the final model of the study, the reduced model only contains variables that have $p \leq .10$. Table 9.41, presents the reduced model (model 5b) with all variables for which $P > .10$ was eliminated. The variables included in this model are, the manager's qualification level, the risk management experience, the risk management training program, the bank relationship, the cost of implementing the risk management strategy, the contribution of the operating department to the hedging decision, and the risk manager's nationality.

Table 9.40: The logistic regression analysis for the determinants of the hedging ability model (model 4a) output.

Panel A: The classification Table

The Step	Observed	Predicted		
		Hedging or non-hedging company		Percentage Correct
		Non-hedging company	Hedging company	
Step 0	Non-hedging company	48	0	100.0
The model includes only the constant	Hedging company	35	0	0.0
	Overall percentage			**57.8**
Step 1	Non-hedging company	45	3	93.8
The model includes all the independent variables	Hedging company	3	32	91.4
	Overall percentage			**92.8**

Panel B: Model Summary

Step	Initial -2 Log likelihood	Ending -2 Log likelihood " D_M "	Cox & Snell R Square	Nagelkerke R Square
1	113.018	27.702	.642	.86

Panel C: Association / Predictive Efficiency

G_M	R_L^2	λ_P	τ_P	R^2	The model improve our efficient choice to hedge or not to hedge by
85.315 (p = .000)	0.755	0.826	0.852	0.743	%75.5

Panel D: Hosmer and Lemeshow Test

Step	Chi-Square	df	Sig.
1	1.185	8	.99

Table 9.41 shows that the reduced model can be used more accurately to classify the firms into hedging and non-hedging firms. The model can classify 96.4% of the firms in the sample correctly, and this is a high percentage. The high percentage of R_L^2 = .81, indicates that the inclusion of the independent variables in the model reduces significantly the variation (as measure by the initial -2 log likelihood, 113,018). The Table shows that the relationship between the hedging decision and the reduced model independent variables is highly and statistically significant, $G_M = 91.526$ with 8 degrees of freedom, $p = .000$. The indices of the predictive efficiency, $\lambda_P = .914$, and $\tau_P = .926$, indicate a model that highly predicts the correct classification of the firms in the sample as hedging and non-hedging firms.

Table 9.41: Model 5b: Logistic regression analysis results for the determinants of the firms' ability to hedge reduced model, variables with maximum p = 0.10 included.

Dependent Variable	Association/ Predictive Efficiency	Variables*	Unstandardized Logistic Regression Coefficient (*b*)	Sig.	Odds ratio Exp(B)	95.0% C.I. for EXP(B) Lower	Higher
Hedging Decision	G_M = 91.526 (P = 0.000)	Postgraduate qualification (1)	7.816	.006	2480.36	9.347	658179
	R_L^2 = .81	Risk management training program	-2.269	.010	.103	.019	.576
The model improve our efficient choice to hedge or not to hedge by %81	R^2 = .846	Strong relationship with banks (the reference)		.034			
	λ_p = .914	Good relationship with banks	-8.313	.011	.000	.000	.154
	τ_p = .926	No special relationship with banks	-6.330	.018	.002	.000	.335
	The percentage of firms correctly classified by the model = 96.4%	The cost of implementing the risk management strategy	-2.783	.009	.062	.008	.499
		The participation of the operating department in currency exposure management	-2.351	.003	.095	.020	.457
		The length or period of experience in risk management practices	1.543	.043	.256	.023	.511
		Arabic Nationality (the reference)		.046			
		Western Country (1)	.748	.693	2.113	.052	86.622
		East Asian (2)	7.334	.013	1531.09	4.711	497569
		The constant	21.499	.003	21729□	-	-

* For the reason of the collapse when running the logistic regression analysis, the qualification variable was divided into two proxies, undergraduate and postgraduate qualification. Also the nationality variable was divided in to three categories, Arabic nationality, Western country, and West Asian.

9.4 Conclusion

This chapter has examined the effect of the contingent theory on the currency management decision. This chapter has stressed the importance of the firm's context in the hedging decision. It highlights the effect of the firm's internal and external environment under two headings; the firm's ability to hedge and the firm's need to hedge. In this chapter we have examined the evidence on the main differences between hedging and non-hedging firms regarding the industries that these firms work in, the market where these firms trade, the level of competition that these firms face,

the currency and market policies that these firms face, the degree of volatility in these firm's foreign exchange rates, and the effect of changes in the exchange rates in the firm's operation. The findings suggest that hedging firms in Saudi Arabia possess a strong hedging need in the risk management decision. The hedging decision in the Saudi firms has a strong relationship to those of their main competitors, strong enough to encourage these firms to engage in hedging activity. This scenario corresponds to the situation described earlier in this chapter, in which the low competition level in an industry may provide the non-hedging firms with little incentive for hedging their exposure, at the same time, enabling them to operate successfully in the markets.

The evidence in this chapter is weaker on the predicted link between foreign exchange exposure magnitude and the hedging decision, which tends to be strong when firms operate only or mainly using foreign currencies other than the U.S. dollar. The findings suggest that the foreign exchange exposure magnitude by itself does not significantly influence the hedging decision. Rather, this impact is exercised via the influence of foreign exchange exposure magnitude on the competitive advantage of the firm and on the power that a firm may have in the markets, and also on the volatility of the firm's foreign exchange rates. Williamson (2001) found that there are significant differences in exposure to exchange rate movements across firms from the same country. He argued that the currency exposure of a firm is a function of its foreign sales, the cost structure of the foreign competition as well as the degree of competition. The interpretation of these findings should be made in the light of the nature of the foreign exchange exposure magnitude in different industries, which is likely to affect the firm's position in industry depending on the strength of the competition in industry and the degree of foreign exchange rate movements and consequently the extent of the foreign exchange exposure magnitude on the riskness of the firm. This chapter has examined the evidence on the main differences between hedging and non-hedging firms regarding the manager's qualification, risk management experience, bank relationship, firm size, the hedging costs, the availability of risk management policy, the risk management training, the manager nationality, and the participation of the operating departments in risk management policy. This chapter has showed the significant effect of the management factors (qualification, experience and nationality) in the hedging decision. It has stressed the important effect of the hedging costs in the hedging decision. It found that the firm's

participation of the operating departments in the risk management decision making is of significant importance. This chapter has argued that the contingency theory approach has the potential to provide a useful theory framework for understanding currency risk management decision.

The next chapter will discus the study's findings in relation to previous corporate hedging literature. The chapter will present the final model of the study and compare the effect of the finance theory and contingency theory in currency exposure management decision.

Chapter Ten

Discussion

10.1 Introduction

Chapters 8 and 9 analysed to what extent the firm's hedging incentives, managerial risk aversion, ability to hedge, and need to hedge affected the currency exposure management policy in Saudi firms. This chapter will discuss the study's findings in relation to previous corporate hedging literature. The chapter will present the final model of the study and explain the effect of the financial factors and contingency factors in the currency exposure management decision.

This study points out that to allow for independence in risk management policy choice, one would require specification of the determinants model of the decision. The aim of this research is to explore and analyse the determinants of currency risk management policy within Saudi exporting and importing firms. In order to achieve the research aim, the triangulation approach is employed in the study uses a multiple stage, multiple theoretical perspectives, multiple method, and analysis approaches. This study has reported the results of the two stages that were conducted with different methodologies, methods and analytical processes. The literature suggests that triangulation, or the use of multiple stages, multiple theories, multiple methodologies, and multiple data sources, would produce more valid and reliable data (Cunningham *et al.,* 2000). Data has been collected using qualitative and quantitative methods through surveys, documents, and semi-structured interviews. Both finance theory and contingency theory have been used in this study to improve our understanding of the corporate hedging policy. While finance theory concentrates on the financial side (value maximization theories) and managerial risk aversion arguments, the contingency theory adds management perception and the firm's external environment as determinants which are typically absent or de-emphasised in the more usual maximizing shareholders' wealth approaches. The use of the combined theories provides the research with a comprehensive theoretical framework to analyse the corporate hedging determinants. This chapter is divided into five sections.

The next section evaluates the theories used to explain why firms hedge currency exposure. It is argued that the existing theories regarding the determinants of currency risk policy are incomplete. The third section presents the main findings regarding the determinants of corporate hedging decision. Section four gives overall view for the research findings. The final section outlines the main conclusion from the previous section.

10.2 The Determinants of Corporate Hedging

Most of the previous studies presented in Chapter Four were presented within the framework of finance theory based on firm value maximization and managerial risk aversion arguments. Finance theory assumes that the economic behaviour of individuals and firms aim at maximizing economic utility. The financial approach concentrates on two factors, the effect of the hedging decision in increasing shareholder value, and its effect in reducing the likelihood that managers will suffer adverse consequences, including loss of their jobs, from fluctuations in the price of major input or output (Haushalter, 2000). Finance theory offers explanations that relate a firm's hedging decision to factors such as reducing financial distress, reducing agency costs, reducing expected tax, reducing underinvestment problem, reducing the cost of external financing, and to managerial wealth incentive (Smith & Stulz, 1985; Tufano, 1996; Fok *et al.,* 1997; Gay and Nam 1998). The behaviour of the decision maker is facilitated by the predicted return as a rationale for the decision. Many of the previous studies only concentrate on evaluating the outcome from the hedging activity and its role in the hedging decision. Geczy et al., (1997) developed a general framework to analyse the determinants of corporate hedging decision (see section, 7.3.1). Other studies, including Smith and Stulz (1985), Froot *et al.,* (1993), Tufano (1996), Mian (1996), Francis and Stephen (1990), Joseph (1999), and Haushalter (2000) developed rationales for hedging similar to those considered by Geczy *et al.,* to offer an explanation for the question why firms hedge.

This research differs from past efforts in that prior research on corporate hedging determinants has typically concentrated mainly on how best to extend or utilize the hedging benefits arguments. This view has been extended to cover another aspect of the FT effect in the hedging decision, such as the effect of the managerial risk aversion (Geczy *et al.,* 1997; Gay and Nam 1998; Fok *et al.,* 1997), firm size (Nance *et al.,* 1993;

Howton and Perfect 1998), exposure size and hedging costs (Geczy *et al.,* 1997). Most of the previous studies examined the determinants of corporate hedging in general or the use of derivatives, only the studies by Tufano (1996), Geczy et al., (1997) and Joseph (1999) considered the determinants of the currency hedging decision. The important distinction between the existence and the use of derivatives for hedging purposes was not acknowledged in many research studies in the corporate hedging decision. Derivative contracts do not exist only for the purpose of hedging, and it could be argued that in addition to the use and importance of derivative contracts for hedging activity, they can also be used for speculative purposes. It is clear from earlier discussions in chapter three that corporate risk can be managed using internal methods and external methods (such as derivative contracts). However, none of the studies reviewed (in chapter four) acknowledged all the available methods for hedging corporate risk. Restricting hedging activity only to the use of external methods can potentially result in a circular research design. Thus, collecting data on the firm's hedging strategy only from its reports or published data, researchers may design the research according to the realised hedging strategy rather than intended hedging strategy, which can mainly be defined by a manager responding to a survey. The risk management decision model that were used in the existed literature only provide a single comprehensive measure of external hedging methods, and cannot measure the internal hedging methods. In other words, a major limitation of the corporate hedging determinants literature may be the selection of derivative contracts index to capture the extent of hedging decision. Using the publicly available data divorces the currency exposure problem from its context so that attention can be focused on a few variables.

While there are some studies about the potential rationale for hedging, it seems fair to say that there is not yet a single, accepted framework which can be used to guide hedging decisions. The predicted determinants of hedging decisions did not fully recognize the relative aspects around the hedging decision, which may have led to incomplete classification of the hedging decision determinants. The suggested contribution of financial theory in the hedging decision has not developed adequately the structure of this determinants model, hence the field opens for new contributions in this area. Analysing the corporate hedging determinants under the assumption that managers view their risk management decision using the risk versus return strategy, can be accepted but may give incomplete guidance for efficient hedging decision making.

The conceptualization of the hedging decision as a comparison strategy of risk and return may be useful from a researcher's viewpoint, but may only have partial relevance to managers who formulate and implement risk management strategy. It is difficult for the decision makers in the firm to decide to hedge or not without understanding the firm's needs and ability to do so and the possible limitations of this decision. This conflict may affect the validity and reliability of the data collected. In most of the previous studies methodologies, to predict hedging determinants, the methodologies did not recognize the relative nature of the hedging decision, which may lead to inaccurate classifications of hedging determinants.

Considering that the hedging decision is a problematic aspect in the management of business firms, it is important to understand the determinants that lead firms to engage in hedging currency risk. This thesis attempts to at least partially contribute to the Froot *et al.,* (1993) statement of the problem by developing an economic and contingency framework for the determinants of the hedging decision. Instead of using the standard finance theory alone as framework for corporate hedging policy, this study adopts a combined approach between finance theory and contingency theory as a framework for corporate hedging policy. The contingency approach was adopted to improve our understanding of the corporate hedging policy, and to open new dimensions for the study. These new dimensions were evaluated and improved using the exploratory study interviews and tested by the findings from the questionnaires in order to deal with both the problem and its context. Adopting an interview method for collecting data may help in investigating the problem within its real-life context. The trend towards the adoption of the foreign exchange exposure management strategy is usually attributed to a combination of external and internal factors.

While, most of the previous studies have ignored some indirect determinants such as, competitive position, markets, and bank relationship, however, the use of the survey method in this study gives an opportunity to include and measure these indirect determinants. The new approach adopted in this study allows the standard variables such as value maximization, managerial risk aversion, as well as the additional roles of management quality and qualification, competition, industry, the magnitude of the exposure, the cost of the exposure, management performance, the hedging limitation, and the bank relationship to be addressed. Finally, most of the previous studies concentrated on MNCs. MNCs have various exchange rate exposures that

might offset one another, causing the firm's exposure as a whole to vary with time (e.g. Chow, Lee, Solt, 1997; Choi and Prasad, 1995; Gao, 2000). In contrast to previous studies this study uses questionnaires and interview with exporting and importing firms to test for the determinants of corporate hedging decision using a model linking these determinants to a hedging decision.

10.3 Explanation of the Findings in the Determinants Groups

10.3.1 The determinants of hedging incentives

Table 10.1, presents a comparison of results for six empirical analyses of corporate hedging policies regarding the effect of the hedging incentives in the hedging decision. Previous empirical studies provide mixed support for the leverage hypothesis. Berkman and Bradbury (1996), and Fok *et al.,* (1997) found that derivatives use increases with leverage. Haushalter (2000) examined the hedging activities of oil and gas producers. He found that the percentage of production hedge increased in line with increases in the total debt ratio of the firm, evidence consistent with theories of transaction costs of financial distress (Smith and Stulz, 1985). Our study found a small difference on the leverage and debt service coverage between hedging firms and non-hedging firms. While these findings supports the hypothesis predicting that hedging is higher in firms with higher expected costs of financial distress, the differences are not statistically significant. The finding of this study is consistent with Tufano (1996), and Mian (1996) who found theories that explain risk management as a means of reducing the costs of financial distress are not supported strongly using accounting ratio analysis. In addition, Allayannis and Ofek (2001) found that leverage was negatively associated with the hedging decision, which is the opposite of what theories of optimal hedging would predict. Our results regarding the indicators of the financial distress costs suggest that firms in less risky businesses tend to ignore the foreign exchange risk, and this appears to be consistent with the risk averse explanation that suggests a positive association between the size of different risks and hedging activities. The results of this study support the idea that firms which face more different kind of risks are more likely to adopt hedging activity.

The findings of this study in both the univariate and multivariate analysis for both the accounting ratio and indicator measurement present some support for the effect of the

hedging decision on the reduction of the agency conflicts. The study found that the total sales to the total assets ratio in hedging firms on average were higher than that in non-hedging firms, and this result was statistically supported by both the univariate analysis and the logistic regression. Increasing the firm's total sales may reduce the agency conflicts in the firm. This result seems to support the suggestion that hedging could be used to reduce the volatility of the firm's total sales and profits, and hence to reduce the agency conflict.

Table 10.1: Comparison of results across six empirical analysis of the effect of hedging incentives in hedging decision.

'Yes' ('No') indicates the empirical result of the theory, while a dash (-) indicates that the hypothesis was not examined.

Received Theory Suggests That a Firm is More Likely to Hedge	Nance, Smith, and Smithson (1993)	Tufano (1996)	Berkman & Bradbury (1996)	Geczy, Minton, and Schrand (1997)	Haushalter (2000)	Al-Mohaimeed (2004)	
						Accounting ratio	Indicators
To reduce expected financial distress costs	Yes	No	Yes	Yes	Yes	No	No
To reduce agency costs	Yes	No	Yes	Yes	Yes	Yes	No
To increase investment opportunities	Yes	No	Yes	Yes	Yes	No	No
To reduce corporate finance costs	Yes	Yes	Yes	No	Yes	Yes	No

The positive correlation between the decision to hedge and total sales is consistent with the notion that companies benefit from significant economies of scale in hedging, particularly in setting up a hedging program. This result is consistent with the Fok, Carroll, and Chiou (1997) findings that hedging reduces the agency costs of debt, and reduces some agency costs of equity. Smith and Stulz (1985) Mayers and Smith (1987) argue that hedging can be used to reduce the agency costs associated with outside finance. The univariate and multivariate analysis found a statistically significant difference between hedging and non-hedging firms regarding dividend payments, and raises the argument that dividend policy can be used as alternative for hedging decision (Berkman and Bradbury 1996; Nance *et al.,* 1993; Wysocki, 1996). Non-hedging firms in the sample appear to pay most of their profit as dividend to the shareholders. It can be concluded that this present study found moderate evidence consistent with the theoretical prediction that hedging can increase a firm's value by reducing the agency conflicts.

The study found a negative relationship between the hedging decision and the firm's R&D. In contrast with this result, Geczy *et al.,* (1997) who examined derivatives

use for a sample of Fortune 500 firms, found that firms with high R&D expenditures are more likely to use currency derivatives. Also, Nance *et al.*, (1993) and Dolde (1995) found that firms with high levels of R&D expenditures are more likely to use some form of derivatives instrument. Firms with higher R&D expenditures benefit more from the use of derivatives. The weak empirical support found in this study that risk management can be used to minimize the underinvestment problem is inconsistent with the findings of most of the previous studies, Gay and Nam (1998); Geczy *et al.*, (1997): and Fok *et al.*, (1997). Fok *et al.*, (1997) found that firms with a large percentage of value derived from growth opportunities are more likely to hedge.

The univariate and logistic analysis of the hedging incentive indicators in chapter eight provides limited support to the role of corporate finance factors in the hedging decision. The results presented in the chapter 8 were contradictory, in that firms with more cash flow hedged less, but firms with more tangible assets hedged more. It appears that the firm's hedging decision is primarily influenced by short-term financial strategy consistent with the short-term focus of many managers. The relationships between firms and financial strategies are more closely linked, suggesting that product short-term financing strategies have direct influence on the firm's hedging decision. At first glance, the theory that firms may use risk management to protect themselves from shortage in operating cash flow seems to be supported when the study used an accounting ratio as a measurement for corporate finance costs. The result showed that firms with small cash flows are more likely to hedge. This result may suggest that cash flow can be used as substitute for hedging currency exposure. It has been argued that firms would have less need to undertake hedging activities if they have large cash flow as substitute available to the firm. Tufano (1996, p. 1111- 1112) stated that 'instead of managing risk with the financial contracts, firms could pursue alternative activities that substitute for financial risk management strategies. They can carry large cash balances to protect themselves against potential hardship'.

The findings in this study provide some support for the views expressed in previous empirical studies that firms were using liquidity as a hedging alternative (Nance *et al.*, 1993; Mian, 1996; Gay and Nam, 1998). Froot *et al.*, (1993) argued that hedging activities can be used to reduce the underinvestment problem that would result when cash flows are volatile and access to external financing is costly. Geczy *et al.*, (1997) argued that hedging can be used to minimize the corporate finance costs by

reducing not only the costs of obtaining external funds, but also a firm's dependence on external financing. They predicted a positive association between potential underinvestment costs and the benefits of hedging. It can be suggested that firms with positive relationship between cash flows and investment opportunities have less incentive to hedge, because they have fewer (greater) attractive investment opportunities in states with lower (higher) cash realizations. From previous analysis, a link hypothesis may predict that firms with enhanced investment opportunities concurrent with low levels of cash flows will make greater use of derivatives than similar firms with large cash flows. It seems that firms with a higher correlation between small (large) cash flows and small (large) sales or investment expenditures have less incentive to hedge. While both hedging and non-hedging firms have nearly the same investment opportunities, the low cash flow in hedging firms may lead them to hedge. Support for this suggestion appears in Gay and Nam (1998) study, who found that non-users of derivatives have higher levels of correlation between cash flow and investment expenses than do users of derivatives. This result is also consistent with the theoretical idea that hedging can be used to protect the future cash flow and earnings from the effect of exchange rate movements which might help the firms to invest in valuable investment opportunities (Lessard, 1990; and Froot *et al.,* 1993).

Our finding is also consistent with Berkman and Bradbury (1996) who report a negative association between a firm's decision to use derivatives and short-term liquidity. Joseph (2001) examined UK's MNCs motivations to corporate hedging, and found that the main hedging motive is to reduce the impact of foreign exchange rate fluctuations on the firm's future cash flows and net financial asset. Haushalter (2000, p. 110) argued that 'all being equal, the more difficulty a company has in obtaining outside financing, the more costly a shortfall in cash flow will be, and the greater the value hedging provides".

It can be concluded from the univariate accounting ratios and indicator analysis that there is mixed evidence to support the financial distress cost, investment opportunities, agency costs, and corporate finance cost arguments. The results of the accounting ratio analysis as a measure for hedging incentive are not in line established with theoretical models of corporate risk management. It was expected that using accounting ratio analysis to examine the determinants of hedging incentive at the micro level might generate contradictory results and fail to distinguish between hedging incentives

and the success of hedging strategies. In that, hedging incentives can be used by manager as determinants for hedging decision but may be inappropriate to be used as determinants to stop the hedging activity. For example, while existing theories of hedging behaviour suggests that firms with high financial distress costs are more likely to hedge (Smith and Stulz, 1985), using the accounting ratio analysis model, we found that the financial distress costs did not have a significant effect on the hedging decision. The possible explanation is that if hedging was successful, then the firm will not appear to have financial distress cost problems in the year in which they hedged. The accounting ratio analysis of the determinants of hedging incentive results for Saudi firms differs considerably from previous studies. The hedging decision in the Saudi firms sample appears to be unrelated to some of the proxies for the theoretical hedging incentive determinants. These results are most apparent in the differences between the means for the R&D ratio, the expenses to total sales ratio, and the tangible assets ratio which are inconsistent with prior expectations.

Francis and Stephen (1990) argued that the absence of empirical evidence supporting the hedging incentives arguments might imply either that the sample firms were successful hedgers, or that the sample firms did not hedge for the motivations examined. In order to distinguish between these two alternatives, the study used indicator measurements for the hedging incentives to test for hedging and non-hedging firms' motivations (See section, 8.3.2). In the analysis, the financial managers were asked to indicate the extent to which they agreed with each of the indicators that would be used as proxies for hedging incentive variables. For example, if the financial manager decided to hedge, three years ago, in order to reduce the financial distress costs and he continues hedging this could mean that the firm still faces financial distress costs and hedges to reduce these costs. On the hedging decision, the findings for the indicators of hedging incentive effects are more convincing than those from ratio analysis. This may raise the concern that using a different method to measure the determinants of hedging incentives may provide us with different results. This difference arises from the nature of the data in that the indicators describe the hedging incentive from respondents' perceptions about their firms' characteristics. To the extent that hedging incentive indicators are easily observable and explain a direct effect on the hedging decision, respondents' perceptions are more heavily weighted in favour of the indicator measurements. Another possible reason is that the accounting ratios proxies are

somewhat weakly represented in the hedging incentive determinants of this study. However, the overall indicator analysis provides little empirical support for the predictive power of theories that currency risk management can be simply explained in terms of factors related directly to the objective of maximizing shareholder value.

The findings gave limited support to what previous studies considered as determinants of corporate hedging incentives and as a means of maximizing the firm's value. There are some possible reasons for the difference in this study's findings and previous studies regarding the effect of the determinants which have been described as indicators for maximizing the shareholder value. The methods and methodology used in this study may explain the discrepancies. It can be argued that the previous empirical studies only address the decision to use derivatives using published data and a narrow hedging definition. This study attempts to explain corporate currency risk behaviour at a micro level and in a developing country (Saudi Arabia), and pushes the theory of foreign exchange risk management beyond the large open economic model that prevails in the academic literature. A developing country differs from a developed one in many aspects, such as the technology, management, and production frontier. Firms in developing countries face different environmental factors from those in developed counties. Also, most of the risk management theories discussed previously have been concerned with corporate risk management in general, or derivatives use in particular, while this study concentrates on foreign exchange risk management.

10.3.2 The determinant of managerial risk aversion

Table 10.2, presents a comparison of results across six empirical analyses of corporate hedging policies regarding the effect of managerial risk aversion factors on the hedging decision. The Table 10.2 shows, using both univariate and multivariate analysis and the findings in the exploratory study that in a developing country owner- controlled firms are more likely than manager- controlled firms to hedge their foreign exchange risk. It would seem that the hedging decision is in the interest of shareholders when they have the ability to affect the firm's strategy. This result may be inconsistent with the argument that risk management may be used to facilitate the protection of managers' activities that enhances their welfare, but reduces shareholder value. Most of shareholders in manager-controlled firms with only a small proportion of stocks are usually removed from the firm's actual decision making. The dispersion of ownership

reduces the ability of the shareholders to remove bad managers or to effectively monitor the firm's activities. Managers in a firm with a wide dispersion of ownership may have the power to act to protect their position and to participate heavily in designing the managerial compensation which is not basically reflecting the managerial performance. Smith (1976, p. 710) stated that "being removed from the decision- making process, not possessing a thorough knowledge of available alternatives and having only limited access to corporate records, the small stockholder is forced to act as a satisfier. He or she has little basis for determining whether management is pursuing a maximizing strategy. Since large owners have both the ability and the resources to be relatively well informed, their more complete access to information should retard both the diversion of resources to managers any type of artificial alteration (accounting change, exercise to expense performances, organization slack) of earnings".

Table 10.2: Comparison of results across six empirical analysis of the effect of the managerial risk aversion in hedging decision.

'Yes' ('No') indicates the empirical result of the theory, while a dash (-) indicates that the hypothesis was not examined.

Received Theory Suggests That Firm is More Likely to Hedge	Nance, Smith, and Smithson (1993)	Tufano (1996)	Berkman & Bradbury (1996)	Geczy, Minton, and Schrand (1997)	Haushalter (2000)	Al-Mohaimeed (2004)	
						Univariate Analysis	Multivariate Analysis
Due to the firm structure	-	-	-	-	-	Yes	No
If the firm is owner-controlled firm	-	-	-	-	-	Yes	Yes
If manager owned more than 10% of the firm's equity	Yes	Yes	Yes	Yes	No	Yes	No
If the firm has high management monetary compensation system	-	-	-	-	No	No	No
If the firm has manager equity compensation system	-	-	-	-	-	Yes	Yes
If the manager annual income is high	-	-	-	-	No	No	No
If the manager is young (less than 40 years old)	-	No	-	-	-	Yes	Yes
Due to the Islamic view	-	-	-	-	-	Yes	Yes

The findings from the interviews showed that the owners in shareholder firms appear to have little power to avoid fluctuations in a firm's cash flow and profit. Owners with a high stockholding percentage, in a private or family firm (where most of the family are in control), have more access to internal information and knowledge of the decision-making process. Then their management advice would appear to place a constraint upon the amount of artificial manipulation that owners would allow or the management might

attempt. The ownership in most of the shareholder firms is very diffuse, and managers in these firms have the opportunity to avoid making decisions that might benefit the owners most. Managerial theorists have long recognized the differences between business firms that are controlled by their owners and firms that are controlled by management. It has been suggested that in shareholder firms, management interest does not necessarily go with the owners' preference (Monsen and Downs, 1963). As most of the stock owners in manager-controlled firms become more widely and thinly held, one of the consequences is that these small shareholders are removed from the firm's decision making and have access only to the firm's published financial statements. This finding raises fundamental questions concerning the role of a board of directors as representative of a company's stockholders. At worst, our results suggest that boards might ignore their responsibility to shareholders and fail to reduce the firm's financial risk through hedging currency exposure.

It was suggested that the managers' behaviour in manager-controlled firms are systematically different from that of managers' behaviour in owner-controlled firms (Boundreaux, 1973; and Amihud and Lev, 1981). For example, Palmer (1973) has shown that owner- controlled firms differ from manager-controlled firms in terms of risk aversion. The results in chapter 8 show that 85 per cent of the Saudi manager-controlled firms did not hedge their currency exposure. Katz and Niehoff (1998) and Fama and Jeensen(1983) found that owners are more likely to encourage risk taking because they directly receive profits, while managers cannot easily diversify their risk because their wealth is linked to future employment opportunities of the company employing them. Tufano (1996) expected that outside stock holders, which include mutual funds, hedge funds, and private investors, would be better diversified than managers, and thus a large stock ownership would be less positively associated with risk management, (if at all), than would managerial stock ownership. However, evidence in this study shows that half of the owner- controlled firms tend to engage in hedging. It can be suggested that when agency conflicts become small both shareholders and managers would prefer that firms hedge.

In Saudi Arabia in the year 2001, Alpha firm, generated nearly 120 million Saudi Riyal from its own business while Beta firm generated a loss of nearly 26 million Saudi Riyal. These firms are in the same industry and are both exporting and importing in foreign markets, so, what might explain why these two firms produce such different

results from their own activities? Through the field work carried by the researcher, both firms were in the study's sample and four main reasons can be recognized to explain the difference. First, Alpha firm is owned by one family, whereas Beta firm is a firm owned by a wide diversity of shareholders. Second, the director of Alpha firm has a large proportion of stocks, whereas Beta firm is run by an appointed director. Third, while Beta firm has more than hundred shareholders only two of them attend the board of directors meeting, whereas in Alpha firm all its owners can attend the board directors meeting. Finally, the Alpha firm has chosen to manage foreign exchange risk while Beta firm has ignored its foreign exchange risk. It may be conclude that, the main difference between these two firms is the level of control exercised by the owners of each firm, that is, the ownership structure, affects the decision to hedge the foreign exchange risk. Management research has suggested that ownership structure is a useful framework for understanding why firms like Alpha and Beta differ in their strategies toward business, even if they are in the same industry. Jensen and Meckling (1976, p. 308), stated that "there is a good reason to believe that the manager will not always act in the best interest of the principal".

Han and Suk (1998) suggested that as management's equity ownership increases their interest coincided more closely with those of outside shareholders and consequently agency problems are resolved. The univariate analysis shows that the level of managers' stockholding in the firms have a significant influence on the hedging decision. This result is consistent with Fok *et al.*,'s (1997) argument that managers with high insider ownership have a strong incentive to hedge because it is in their own best interest to do so, as well as in the their shareholders' best interest. Similar results were found by Tufano (1996) who examined commodity hedging activities in the gold mining industry, and found that firms' use of commodity derivatives is likely to increase when the value of stocks their managers and directors hold increase. This result is in line with theoretical prediction that firms whose managers hold greater equity stakes as a fraction of their private wealth are more inclined to manage corporate risk. As insider ownership is often considered as a proxy for the agency costs of equity (Fok, *et al.*, 1997), this study found that firms with higher insider ownership should have lower agency costs of equity and have a tendency to hedge. Also, Berkman and Bradbury (1996) found that derivatives use increases with the proportion of shares held by directors. It seems that the main reason for this result is that managerial stocks have less diversified wealth than

the outside stocks.

Consistently with interviews and the univariate findings, the logistic regression analysis showed that the level of managers' stockholding in the firms did not significantly affect the hedging decision which is the opposite of that predicted by theory. This result is consistent with Haushalter's (2000) result that found no evidence that the extent of hedging increases with the degree of managerial stock ownership. He found that the fraction of oil and gas price hedged is not positively in relation to the fraction of shares held by insiders or the market value of the common shares held by insiders. The imperfect positive relationship between the hedging decision and managerial ownership level can be explained by a paper by Rosenstein and Wyatt (1997) who found that the average stock-price reaction to the currency exposure is significantly negative when inside directors own less than 5% of the firm's common stock, significantly positive when the inside ownership level is between 5% and 25%, and insignificantly different from zero when inside ownership exceeds 25%. However, a different way of classifying the fraction of shares owned by managers used in this study from those of previous studies may generate this conflict. For example, most of the previous studies classify managers as one of the firms' main owners who have the right to vote in a firm's decision making process if they have 5% or more of the firm's stock, while in this study the managers should have 10% or more of the firm's shares.

The results for both the univariate and multivariate analysis showed that firms with performance related monetary compensation systems are less likely to hedge. The results in Chapter 8 shows that 71.8 percent of the firms with high level of performance related manager compensation arrangements were not hedging their foreign exchange risk. 65.7 percent of the respondents argued that their firms' monetary compensation system was not an appropriate tool to measure the management performance.

Benston (1985) found no relationship between company performance and management's compensation in a longitudinal study of 29 conglomerates. He explained the lack of correlation on the basis that top managers' wealth is generally heavily dependent on their stock holdings. One of the main explanations for a high managerial related monetary compensation in non-hedging firms can be found in Table 8.18, and is consistent with Elston and Goldberg (2003) who found that German firms have agency problems caused by the separation of ownership from control, with ownership

dispersion leading to higher compensation. When ownership is dispersed management can obtain greater monetary compensation. Smith (1976) argued that if managers in manager- controlled firms sought to minimize the intervention of shareholders, they might seek to eliminate fluctuation in their performance measures. Another possible explanation for a negative relationship between the hedging decision and managerial monetary compensation policy inconsistent with previous studies (e.g., Haushalter, 2000) is that Saudi firms have considerably lower levels of compensation than the US or UK firms. In addition, while Haushalter's (2000) sample of firms contains only shareholder owned firms, this study's sample consists of different forms of ownership structure. The monetary compensation finding in non-hedging firms suggests that managers can reduce the risk associated with their firm's income (and consequently with their own income) by various means other than hedging activities. This suggestion explaine the positive relationship between monetary reward system and non-hedging activity as evidence that managers can indulge in non-value-maximizing activities without being disciplined by shareholders.

In addition, the results suggest that managers' high annual incomes (salaries) are not an important source of managerial incentive against risk since 69.3 percent of the high annual income managers were not hedging their firms' foreign exchange risk. Jensen and Murphy (1990) analysed the performance pay and top-management incentives for over 2,000 CEOs, and found that bonuse represent 50 percent of CEO salary was awarded in ways that were not highly sensitive to performance. A possible explanation for a manager's high salary in non-hedging firms can be pointed out as an increasing function of age, in that managers in non-hedging firms are likely to be older than managers in hedging firms (72 percent of the managers in the sample who are over 50 years old do not hedge their firms' exposure). It would appear that an unpredictable effect of a salary reward system on hedging decision, which has been found, can come from two other potential limitations. First, the range of managers in the study may be too small to reveal adjustments in compensation. However, the small number of firms in the population of the study and the lack of publicly available information about managers' salary, may remove the limitation of small range of managers in the study. A second limitation is that the nature of the relationship between performance and changes in salary may be discontinuous (Kerr and Bettis, 1987).

There is another possible explanation for the lack of performance related monetary

reward system in hedging firms. Most hedging managers have extensive stock holdings in their firms hence the need for consistency and congruency in the design of a reward system and the administration of reward is reduced. Managers' personal wealth in hedging firms is generally heavily dependent on their equity holdings and thus on the value of their firm's equity. In hedging firms, the weak relationship between hedging decision making and monetary compensation and high annual salaries can be explained by the fact that such a relationship is not important as the managers in these firms have stock holdings. Dyl (1988) and Santerre and Neun (1989) examined the relationship between shareholder control and executive compensation, and found a negative relationship between ownership concentration and CEO compensation. FitzRoy and Schwalbach (1990), using annual data for 95 firms from 1967-1985, found a negative effect of concentrated ownership on the average annual salary of the management board. Also Elston and Goldberg (2003) found that the greater the ownership concentration the less the ability of executives to extract higher levels of compensation. In addition, Benston (1985) found no relationship between company performance and the management monetary compensation system. He explained the lack of correlation on the basis that a top executive's wealth is generally and heavily dependent on equity holdings and thus on the value of the firm's equity. Also the findings in chapter 8 suggest that there is a positive relationship between hedging firms and leverage, and this may also explain the finding of less managerial monetary compensation contracts in a hedging firm. Gilson and Vetsupens (1993) found that when firms financial distress costs increase, the pay-to-manager performance declines dramatically and becomes insignificantly different from zero. Han and Suk (1998) examined the effect of ownership structure on corporate performance, using stock returns as a measure of performance, and found that the level of insider ownership is positively related to stock returns. Accordingly, it seems that the design of the performance related monetary reward system in non-hedging firms is to provide managers with income security rather than enhance their wealth through their stockholding. Kerr and Bettis (1987) argued that a strong relationship between monetary compensation and management performance is unnecessary because stock rewards to managers provide the necessary connection between compensation and stock performance. Elston and Goldberg (2003) found that German firms have agency problems caused by the separation of ownership from control, with ownership dispersion leading to higher compensation. The managerial compensation can be used to minimize the conflicts which arise from the agency

relationship between shareholders and managers. It seems that boards of directors in non-hedging firms did not attach priority to the performance of a firm's risk management when determining managers' salaries. This discussion presents a basic idea that monetary compensation systems do not reflect managerial performance.

The univariate, multivariate analysis, and the interviews results suggest that the managerial equity compensation system statistically and significantly affects the hedging decision. Managerial actions and hedging decisions are not, however, perfectly observable by shareholders in manager-controlled firms. As found in the interviews, the survey results demonstrate that managers who are not adequately monitored will have a negative impact on reducing the effect of foreign exchange risk through their choice not to hedge. In manager-controlled firms it seems that shareholders do not participate, or even know, what actions managers should take or which of these actions will increase shareholder wealth. In that situation, agency theory predicts that compensation policy should be designed to give the manager incentives to select and implement actions that increase shareholder wealth (Jensen and Murphy, 1990). Consistent with this, the findings in Chapter 8 indicated that firms paying high salaries unrelated to performance were more likely to ignore foreign exchange risk. Accordingly, this study shows that the best way to encourage managers to actively work on the shareholder interest is to design a compensation system that ties the manager's wealth to shareholder wealth. Most of the hedging firms, (63%), had an equity compensation system in order to make the payment for managers consistent with shareholder wealth and interests, since the compensation system made a link between the objective of managers and shareholders wealth.

It may be concluded that the fact that most of the owners who manage their firms, and most of the managers who owned some of the firm's shares, are hedging, illustrates the rather intuitive result that both managers and shareholders would prefer their firm to hedge since the agency conflicts in these firms are small. To increase managerial performance, hedging companies built a reward system which tied managers' interest to that of shareholders. Most of the hedging companies choose to use a managerial stockholding reward system as powerful influence on managers' behaviour. In this case, the management shareholding compensation contract may play an important role in changing management attitude for being risk neutral to risk averse. Any unfavourable movements in the foreign exchange rate will affect the firm's cash flows with a

managerial stockholding reward system and would also affect the personal wealth of managers holding shares of the companies they manage. The greater the effect of foreign exchange risk on the firm's cash flow, and the greater the managers' stockholdings, the more their personal wealth would be affected, thus the more likely they would be interest to adopt a corporate hedging activity. It seems that the reason in using this reward system is that the variation in a company's share price would dramatically affect the personal wealth of managers' stockholding in the companies they manage. Managers who have greater stockholdings in firms are more affected by the variation in its share price. Park and Song (1995) found that firms' average performance significantly increases after establishing or expanding employee stock ownership plans.

Consistent with findings in the interviews, both the univariate and logistic regression found that the Islamic view has a significant effect on the managers' attitude towards the hedging decision. None of the previous corporate hedging studies considered the effect of the manager's value and belief in the hedging decision. This study found that management culture affected the hedging decision. In Saudi Arabia religion plays a significant role in determining the managers' attitude towards the available risk management tool. In the interviews, the respondents in non-hedging firms argued that there were no suitable financial products to hedge their firms' exposure. The study pointed out that most of the managers in non-hedging firms argued that the financial instruments available in the markets for hedging purposes were unacceptable to be used in Islamic 'Shariah'. Table 10.3, presents the effect of the manager's nationality, the ownership structure of the firms, the manager's age in relation with the Islamic 'Shariah'.

Saudi Arabia adoption of Islamic Shariah rules requires companies to work in line with Shariah law, and this requirement affected more the shareholder firms. Because of the nature of the Saudi Arabia religious society, any announcement that a shareholder firm has broken the Islamic Shariah law, may affect the firm's equity price in the stock market. Table 10.3, shows that there are 74.3 per cent of the respondents in shareholder firms who agreed that using derivative contracts for hedging purposes is not accepted from Islamic Shariah point of view. Most of the respondents who did not accept this idea were with individual and family firms. While most of the young managers in the sample (75%) disagreed that derivative contracts were prohibited in Islamic

Shariah, there were 72 per cent of the old managers who agreed. The Table also shows an important finding, in that Arabic managers were more likely to agree that derivative contract were prohibited in Islamic Shariah as the Table shows that 66.7 per cent of the American, European, and East Asian managers disagreed.

Table 10.3: The Islamic view and the firm's ownership structure, the manager nationality and age.

The variable	The measurement	The level of agreement with the Islamic view					
		Disagree or rather disagree		Not sure		Agree or rather agree	
		No.	%	No.	%	No.	%
Ownership Structure	Shareholder firms	5	14.3	4	11.4	26	74.3
	Individual firms	15	50.0	6	20.0	9	30.0
	Family firms	11	61.1	4	22.2	3	16.7
Manager's Age	Less than 40	15	75.0	2	10.0	3	15.0
	Between 41 to 50	13	27.1	8	16.7	27	56.2
	More than 51 years	3	12.0	4	16.0	18	72.0
Manager's Nationality	Arabic	10	19.2	13	25.0	29	55.8
	American and European	8	66.7	1	8.3	3	25.0
	East Asian	12	66.7	0	00	6	33.3

10.3.3 The determinants of the firm's need to hedge

The results in the univariate, logistic regression, and the interviews indicate that the competitive level, industry, markets, the volatility of a firm's foreign exchange rates, and the sensitivity of a firm's costs to exchange rates movements appear to have the most effect on the hedging decision. The extent of the effect of the exchange rate exposure appears to vary with industry and its competitiveness. This study has found that firms in the food and drink, and car and equipments industries were more likely to hedge than firms in other industries. There is a tendency to believe that managers in different industries will have different interpretations and conceptualizations of risk (Pablo, 1999). Hitt and Tyler (1991) argued that the decision criteria used by managers and their influences on strategic decision making may vary by industry.

While there is generally a strong view among academics, practitioners and analysts that foreign exchange risk should be hedged, our findings indicate that having a foreign exchange exposure is not a sufficient condition for a financial manager to direct his hedging decision. Inconsistent with theoretical predictions, the study's interviews and the survey results do not confirm any positive relationship between the hedging decision

and the magnitude of foreign exchange exposure. It came as a surprise that all variables used to measure the level of foreign exchange exposure magnitude are generally not significant when comparing the difference between hedging and non-hedging firms. This result is inconsistent with theoretical and empirical findings of previous studies. For example, Joseph (2000) found that the degree of utilization of internal techniques is positively related with the measures of the amount of the currency exposure. Also, Geczy *et al.,* (1997) found that firms with exposure to exchange rates through foreign sales or foreign trade are more likely to use currency derivatives. They also found that derivatives use is positively associated with a firm's foreign-denominated debt, and the percentage of imports relative to total industry sales. The possible explanation for our unexpected result is that the findings reported in Chapter 9 (Table 9.7) do not tell us which kind of currencies (other than U. S. dollar) that these firms used in their exports or imports. Flood and Lessard (1986) argued that currency exposure of the firm that sells in foreign markets will be reduced if it sources its inputs in the same currencies that it receives for its sales. For example, firms with large exposure to exporting from the UK and a large exposure to importing from UK may result in an overall small exposure. It may be that failure to take account of this in the design of our questions affected our result.

This finding may reflect, at least partially, the limitations of the magnitude of foreign exchange exposure measures used in this study. It might be attributed to the fact that firms with well-developed international activities will be more likely to avoid hedging activity. For example, a firm which exports and imports using a basket of foreign currencies will be more likely not to hedge as this situation will provide the firm with an operational hedging strategy (Bennett, 1997). However, the survey in this study asked the respondents to indicate if they used any of the operational hedging strategies and all firms which did not use any of the operational hedging methods were classified as non-hedging firms. In addition, this study also used direct measurement of the firm's exposure and ignored indirect measures of the exposure. For example, Bradley (1998) when she measured the foreign exchange economic exposure, used both the direct and indirect measures, and one of her indirect measures was competition, which was supposed to increase the firm's exposure. However, using the competition level as one of the exposure level proxies may affect the overall result. Firms in a competitive market would be affected more by unexpected movements in foreign exchange rates

than firms in less competitive markets. It could be that the sensitivity of the firm's cash flow in its home currency to changes in the exchange rate is primarily a function of the level of competition in the market. In other words it is a function of the elasticity of demand for the firm's products, how the firm's products differ from those of its competitors and the market situation. Table 10.4 shows that there are no significant differences between firms in competitive markets and firms in oligopolistic markets regarding the magnitude of their currency exposure.

Table 10.4: The foreign exchange exposure magnitude and the market

The variables	The measurement	Firms in Competition Markets		Firms in Oligopolistic Markets		Total		Chi-Square Test
		No.	%	No.	%	No.	%	
The magnitude of the firm's foreign denominated exports	Large exposure	6	42.9	8	57.1	14	100	
	Medium exposure	7	77.8	2	22.2	9	100	0.150
	Small exposure	9	37.5	15	62.5	24	100	
	No exposure	16	48.5	17	51.5	33	100	
The magnitude of the firm's foreign denominated imports	Large exposure	21	47.7	23	52.3	44	100	
	Medium exposure	16	51.6	15	48.4	31	100	0.338
	Small exposure	0	00	3	100	3	100	
	No exposure	1	50	1	50	2	100	

As the competition level increases in industry, the sensitivity of the firm's cash flow to changes in foreign exchange rates will increase and the firm's attitude to this change will be affected. Marston (1996) argued that the type of competition displayed in an industry affects the economic exposure of firms within the industry. Consistent with Marston (1996), the results for both the interviews and the survey confirmed that foreign exchange exposure was more problematic for the firms in a competitive market. The argument here is that the firm facing high demand elasticity with products close to the competitors' products will face high levels of competition. From the findings in chapter 9 and Table 10.4, it can be concluded that the existence of exchange rate exposure alone is not a sufficient incentive to encourage firms to hedge. It would be that hedging firms will be in more competitive markets than non-hedging firms and that will be a measure of the firm's exposure level. Williamson (2001) examined the effect of exchange rate changes in multinational firms using a sample of firms from the United State and Japan. He found that for all firms the estimated exposure was strongest during periods of relatively high foreign competition. However, because of the different

contingent competition characteristics of the firms in different countries, the components of the firm's exchange exposure could vary across these countries, as well as the effect of the level of competition. This explains some of the differences in the findings in this study as compared to others. It would appear that hedging foreign exchange exposure depends on the extent to which firms are able to avoid a competitive disadvantage in their industry from hedging. To gain or maintain a competitive advantage in the markets appears to be one of the main factors affecting the decision to hedge. Most of the non-hedging companies in the sample benefited from having different products which gave them a competitive advantage, while most hedging firms traded in products similar to those of their competitors. Non-hedging firms enjoyed favourable access to the low competitive level available in their industry, while the hedging firms enjoyed no comparable benefit.

This study found that the relationship between the foreign exchange exposure magnitude and the hedging decision is contingent upon the competition level. The study demonstrated that the competition level affected the magnitude of the companies' currency exposure, by providing some empirical support for the view that competition increases the firm's sensitivity to exchange rate movements. Table 9.3, in chapter 9, shows that the correlation between the magnitude of currency exposure and its effect on the firms' operations, and the level of competition faced by these firms, are significant and positive. These relationships strongly support the suggestion that, a high level of competition, associated with a high level of sensitivity of the firm's operations to changes in foreign exchange rates, the greater the company foreign exchange exposure and the more likely it will hedge.

The logistic regression analysis showed that the firm's costs and cash flow were highly sensitive to changes in exchange rates. This result is inconsistent with some evidence from studies which examined the sensitivity of stock prices to changes in currency rates. Loderer and Pichler (2000) found that 24 out of 96 firms (25%) did not protect their long-term cash flows because they believed that positive and negative currency rate changes cancel each other out. We should understand that the exchange risk factor will not have the same effect in all firms, in that the exchange risk sensitivity of the firms will depend on their operating profiles, financial strategies, and other firm-specific variables (Choi and Prasad, 1995). The evidence in this study, regarding the relationship between the effect of the foreign exchange rate movements on the firm's

costs, profit margin, purchase volumes, sale volumes, and cash flows and the foreign exchange exposure hedging decision, has several implications. From a methodological standpoint, this study provides an approach which directly, and from the firm's manager's point of view, measures these relationships. This approach effectively filters out the influence of other factors than foreign exchange rate volatility on the firm's cost, profit, purchase volumes, sale volumes, and cash flow. It appears that non-hedging Saudi firms' cash flows are more sensitive to changes in exchange rates than corporate risk management theory would suggest. In that, Table 9.10, in chapter 9, shows that 75 per cent of the Saudi non-hedging firms agreed that their cash flows are sensitive or highly sensitive to changes in foreign exchange rates, and that only 10.4 per cent of the Saudi non-hedging firms agreed that their cash flows are insensitive or highly insensitive to changes in foreign exchange rates. Table 9.3, in chapter 9, shows that there are significant positive relationships between firms which have sensitivity of sales volumes and profit margins and those that are demand sensitive to changes in price, and firms which have products similar to their competitors. This would indicate that these firms are facing strong competition and suffer from changes in exchange rates. The findings imply that the greater a competitive firm's exposure to exchange rate changes, the more sensitive will its operations to changes in foreign exchange rates, and the more likely that the firm will hedge. It could be that these firms were not perfectly able to transfer all of the unfavourable effects of changes in foreign exchange rates on the firm's sale volumes, purchase volumes, profit margin, costs, and cash flows to the other parties.

Both the interviews and survey have found that the level of currency diversification has little impact on the hedging decision. This is consistent with Fok et al., (1997) findings. Consequently, trading in many foreign markets may not necessarily be reflected in corresponding changes in the hedging behaviour. Currency diversification did not appear to be associated with the hedging decision. Eun and Resnick (2001) argued that the benefits of currency diversification would be greater if exchange rate volatility were absent. The lack of currency diversification within hedging firms may indicate that if the exchange rate volatility had been hedged away, the benefits of currency diversification would have decreased. This result is inconsistent with the common belief that financial hedging and corporate diversification are substitute means of risk management, implying that a firm which internationally traded using diversified

currencies will be less likely to manage its foreign exchange exposure (Buckley, 1996). While most of the previous studies show diversification to be a substitute for hedging it has more benefit to shareholders, (Tufano, 1996). Evidence in Bartov *et al.*, (1996) suggests an increase in systematic risk with currency diversification due to greater exchange rate risk. Similarly, Mathur and Hanagan (1983) posit that extending currency diversification may have increased risk from a variety of risk factors (such as exchange rate risk, political risk, lack of information, agency issues, asymmetric information, government policies etc.) that offsets the currency diversification benefit from imperfectly correlated returns. Another reason for less diversification in hedging firms is consistent with some of the past studies findings that focus on the firm's performance and found that diversification has a negative effect on firm value (e.g. Berger and Ofek, 1995). Also Comment and Jarrell (1995) found a positive relationship between companies which were less diversified internationally and shareholder returns.

10.3.4 The determinants of the firm's ability to hedge

Consistent with the interviews findings, the analysis for both univariate and logistic regression regarding the effect of the firm's ability to hedge in the hedging decision shows that the management ability has a significant effect on the hedging decision. In that the qualification of the risk manager, the risk management experience, and the nationality are all found to significantly affect the hedging decision. The implementation of foreign exchange risk management needs sufficient management resources for training and employment of an expert person. Firms with qualified staffs are more likely to have enough human resources for hedging activity. The positive correlation between the decision to hedge and the manager's quality is consistent with the notion that companies see risk management activity as an advanced strategy, particularly in setting up a hedging policy. It is more likely that managers with high qualifications are more willing to adopt new risk management strategy because they feel more confident with their expertise (Breeden and Viswanathan, 1990). The managers with more risk management experience are more likely to be flexible and have the ability and skills to use new and difficult risk management strategies. However, less experienced financial managers are often less averse to risk, so they might not want to hedge a large proportion of the firm's risk. The findings in this study support Bonner's (1990) suggestion that knowledge and experience is a good predictor of managerial

performance.

Loderer and Pichler (2000) surveyed the currency risk management practices of Swiss industrial corporations. They found that 97% of their sample which quantified the currency risk profile of their operating cash flows were hedging their exposure. In our study we found that the majority of non-hedging firms did not know the currency risk exposure of their cash flows. This leads to the argument that risk managers in non-hedging firms failed to manage their currency exposure because they did not understand its importance. We suggest that firms should be able to know their foreign exchange exposure, or at least the effect of the changes in the exchange rates on their operating cash flows.

As expected in the exploratory study, the univariate analysis result shows that firms employing foreign managers are more likely to engage in greater risk management activities. It seems that the foreign financial managers are more attracted to the use of hedging instruments, possibly in order to build their reputation and to put themselves in the interest of the shareholders. Breeden & Viswanathan (1990) in their hedging model posit that some managers hedge to communicate their higher ability and reputation to the market. They argued that by hedging using financial instruments, the managers reduce noise in the earning process, and thereby provide investors with a more informative measure of profits that depicts their ability. The training program in corporate risk management gave the managers a positive experience since most of the managers in the study who had training programs were hedging their foreign exchange risk. Ballantyne, Bruce and Packer (1995) stated that the principle of action learning explicitly aims to improve the performance and learning of both individual and organization.

Also the results of logistic regression reveal that nationality plays a significant role in determining the firm's attitude towards currency exposure. The study argued that the firms whose risk managers come from western or East Asian countries are more likely to hedge. This result is an important finding in this research as risk management is a new activity in Saudi firms, and it seems that managers from Saudi Arabia or other Arabic countries have less experience to engage in foreign exchange exposure hedging activity. As most of the Saudi firms are still in the early stage of their development, so these firms may have less experience in risk management than the firms in developed

countries. It seems that the strategy adopted in some of the Saudi firms to employ some foreign experts in the firms is worthwhile. It is important for the Saudi firms in their early stage to benefit from other countries experience as the management and business acknowledged in these countries is greater than in Saudi Arabia. One of the possible reasons that causes Saudi managers to pay little attention to foreign exchange risk as a strategic issue is their lack of risk management education and understanding of the subject. This result is consistent with work by George and Schroth (1991) who described the situation of U.S.A companies in 1980s and showed that corporate directors paid little attention to foreign exchange as a strategic issue due to their lack of education and understanding of the subject. We found that a manager's qualification played a significant role in determining his attitude towards foreign exchange risk management. Leslie and Fleenor (1998) suggested that focusing on skill in employing managerial behaviour may lead to an improved understanding of effective management, While, Shipper and White (1999) speculated that it could improve the stability of results. Managerial knowledge in the firm is critical to competitive advantage and organizational success (Stewart, 1997). The management skill is an important strategic concept, and can provide a company with lasting competitive advantage in the market. Solomon, Shields and Whittington (1999) suggested that employee experience can improve the accuracy of employee's knowledge of business operations. The manager's experience in risk management looks to be an important determinant of corporate hedging decision. Table 10.5, shows that, most of the foreign managers in Saudi firms work in large to medium size firms, since these firms have enough resources to benefit from the foreign managers' experience. As can be seen from the Table, most of the foreign managers work in firms in electric and electronic, and car and equipment industries. The Table also shows that 90.3 percent (28 out of 31) of the foreign managers work in owner-controlled firms.

Table 10.5: The effect of the firm's size, industry, and control in the manager's nationality.

The variables	The measurement	Arabic Managers		Foreign Managers		Total	
		No.	%	No.	%	No.	%
Firm Size	Large	23	54.8	19	45.2	42	100
(Total Assets)	Medium	12	54.5	10	45.5	22	100
	Small	17	89.5	2	10.5	19	100
Industry	Chemical & Oil	11	64.7	6	35.3	17	100
	Food & Drink	9	100	-	00	9	100

The variables	The measurement	Arabic Managers		Foreign Managers		Total	
		No.	%	No.	%	No.	%
	Electric & Electronic	6	31.6	13	68.4	19	100
	Cement and building tools & Furniture	15	100	-	00	15	100
	Mining	4	66.7	2	33.3	6	100
	Medical treatments & Tools	4	57.1	3	42.9	7	100
	Cars & Equipment	3	30	7	70	10	100
Firm Control	Manager-controlled firms	17	85	3	15	20	100
	Owner-controlled firms	35	55.6	28	44.4	63	100

Regarding the effect of the firm's size in the hedging decision the findings in the univariate analysis are consistent with theoretical predictions. The findings show that there are significant differences between hedging and non-hedging firms regarding their total sales and total assets. However, the empirical data in both the exploratory study and the logistic regression did not support a positive firm size hedging relationship. The logistic regression shows that the company size variable is not sufficient to discriminate between firms that hedge and those that do not hedge. The findings from the logistic regression seems to be interesting, from a theoretical point of view, since it appears inconsistent with many findings in the foreign exchange risk management literature. Nance *et al.,* (1993), Berkman and Bradbury (1996), Wysocki, (1996); Mian, (1996); Fok *et al.,* (1997), Geczy *et al.,* (1997), and Allayannis *et al.,* (2001) found empirical evidence indicating a positive relationship between size and the hedging decision. This is a strongly held view in the literature and our apparently contradictory finding might be explained by the fact that the effect of a firm's size is minimized by another variable, such as manager's experience, nationality and qualification. These variables may be related positively with the size of firms.

There may be different problems associated with the findings in previous studies regarding the positive relationship between a firm's size and the hedging decision. First, one of these problems is with research methodology. The proposition that size significantly influences both the hedging decision and the degree of involvement assumes that the causal direction is from company resources (size) to the actual hedging behaviour. The reverse, however, might also be true: international trading involvement might lead to hedging decision which may lead to an increase in size that would not be possible by only selling and buying in the domestic market. This is not acknowledged in

the literature. In addition, each study examined the relationship between a firm's size and the hedging decision using a mean to compare the size in hedging and non-hedging firms. This study used a category with three levels to measure the size (small, medium, and large size). Using three levels of size rather than the mean average of the firm's size may affect the result in this study. We suggested that using three levels of size measurement would be more accurate than just using the average. The second possible reason is that those researchers who found associations between size and hedging activities have failed to provide any information which identifies the amount of variance explained by size. With the absence of consistent results it is difficult to discern whether size alone does in fact impact on hedging behaviour, and with the lack of information on the amount of variance explained, it is impossible to determine just how important size is.

The third possible reason which may explain the difference in this study and others lies with different sample frames. Many studies of size and hedging relationship focused only in MNCs sample frame (e.g., Geczy, Minton and Schrand, 1997, Allayannis and Ofek, 2001), whereas this study has had a greater focus on export and import companies. The difference may also arise from regional or country factors. For example, virtually all of the other studies have been adopted in developed countries. If location factors impact international strategies (Frrunza and Senbet, 1984), it is possible that hedging behaviour may also be affected by local conditions. Thus, hedging behaviour of U.S.A firms could differ from Saudi firms because of location factors. If size is related to hedging behaviour, it is probably that the broader the sample frame (in terms of firm size), the greater the likelihood of finding a significant relationship. However, as this study concentrated on the Saudi firms which are small in size in comparison to companies in countries like UK, U.S.A, France, Germany, or Japan, and a large company in Saudi Arabia could be classified as a medium or small company in these countries. If only small-and medium size firms in other studies were used a strong relationship may not have been identified. There are some constructs and variables that are incorporated into the models of the size-hedging strategy relationship. There is a wide range of literature according to which small exporting and importing companies face serious disadvantages in their foreign activities in comparison with large ones.

It seems that the inconclusiveness of research on the relationship between size and hedging strategy depends on the incompleteness of the existing theory. To

discuss the shortcomings of the existing literature, we began by noting that researchers usually hypothesize that large companies hedge their currency risk because of company and managerial factors. Firstly, large companies have wide resources (i.e. managerial, financial, R & D, and marketing), which can help them in building their hedging strategy. Secondly, the economies of scale argument state that large companies become more flexible in hedging their foreign exchange risk because of their economic ability in the management of buying and sales operations in foreign markets. Fok, *et al.,* (1997) found that large firms have a stronger tendency to hedge as a result of the economies of scale in the hedging argument. Booth, Smith, and Stulz (1984) argued that for informational scale economies, large firms are more likely to hedge, in that larger firms are more likely to provide managers with specialized information for the hedging decision. Nance *et al.,* (1993) argued that using derivative contracts for hedging exhibits significant economies of scale in the structure of transaction costs, implying that large firms are more likely to hedge with these instruments. However, they argued that smaller firms are more likely to have taxable income in the progressive region of the tax schedule, implying that small firms are more likely to hedge. We should understand that small companies have more volatile cash flows, more restricted access to capital, and thus presumably more reasons to buy protection against foreign exchange risk (Dolde, 1992). Small companies have a greater probability of default caused by not hedging foreign exchange risk and the greater concentration of equity ownership in small companies. A survey of Fortune 500 companies conducted by Walter Dolde in 1992, found that small companies reported hedging significantly greater percentages of their foreign exchange risk than the large companies. However, the search for causal explanations should always control the time dimension. Company size and hedging strategy may be the result of different processes with different time paths, so that statistical correlation at any point in time should not be assumed to be a proof of a causal linkage.

The results for the variables pertaining to the costs of hedging are consistent with the predictions of the hypotheses linking corporate hedging decision to the hedging costs. The effect of the corporate hedging costs in the hedging decision is consistent with that suggested in Geczy *et al.,* (1997). The costs of implementing a hedging strategy play a role in a firm's decision to hedge. In that, the study found that the firm is more likely to hedge, if the manager feels that the costs of hedging are at an acceptable level. While

most of the importers and exporters used the internal hedging methods such as leading and lagging, matching and netting in different countries (Soenen and Aggarwal, 1989), these methods are generally not cost-free. As can be seen in section (3.3) forward contracts rank as the most frequently used instrument, which means that the transaction cost of the financial instruments plays an important role in the firm's choice and in the decision to hedge or not. Forward contracts provide a relatively low-cost method for matching the payoffs of frequent and uncertain transactions (Geczy *et al.,* 1997). Our findings confirm that, in most of Saudi's firms in the sample, the extent of using financial instruments seems to be the result of their availability and cost.

10.3.5 The final model for the determinants of hedging decision

The objective of this research is to analyse and identify the corporate hedging decision determinants. Chapter 8 analysed the determinants of both the hedging incentives (group one) and the managerial risk aversion (group two). Chapter 9 examined the determinants of the firms' need (group three) and ability (group four) to hedge. The logistic regression was used for further assessment on the hedging decision choice and in order to have the conditional relationship. In order to achieve the best model of determinants and using the logistic regression, the main corporate hedging determinants from each group were identified (see Chapters 8 and 9). Each of the models presented in these Chapters identifies the most significant factors which can be used to more effectively determine the decision to hedge or not to hedge currency exposure. The following equation [10.1], presents the main determinants from the four groups. This equation will be used to run the logistic regression and to identify the final model of the study which contains most of the factors that affect the currency exposure management decision in Saudi firms.

The logic model which will be used in this section is given by equation [10.1].

$$\text{In}\left(\frac{Pi}{1-Pi}\right) = \beta_0 + \beta_1\ \text{Sa} + \beta_2\ \text{Tas} + \beta_3\ \text{Cas} + \beta_4\,\text{Agency5} + \beta_5\,\text{Agency3} + \beta_6\,\text{Distress4} + \beta_7\,\text{Opportunity3} + \beta_8\,\text{Opportunity4} + \beta_9\,\text{Control} + \beta_{10}\,\text{Comoney} + \beta_{11}\,\text{Comequity} + \beta_{12}\ \text{age} + \beta_{13}\,\text{Islamlaw} + \beta_{14}\ \text{Industry} + \beta_{15}\ \text{Costsens} + \beta_{16}\ \text{Cpmpetition2} + \beta_{17}\ \text{Market} + \beta_{18}\ \text{Qdegree} + \beta_{19}\ \text{Nationality} + \beta_{20}\ \text{Cost} + \beta_{21}$$

$$\text{Department} + \beta_{22}\ \text{Training} + \beta_{23}\ \text{Bank3} + \beta_{24}\ \text{riskexperience} + \varepsilon \qquad [10.1]$$

Where:

β_0	Constant term
Sa	= The ratio of Total sales / Total assets
Tas	= The ratio of Tangible assets / Total assets
Cas	= The ratio of cash flow / Total assets
Agency5	Our company has adopted a monitoring device system to control the relationship between managers and owners
Agency3	Most of our company's profits were paid as dividend to the firm's owners
Distress4	We are dealing in business where the probability of gain and loss is equal
Opportunity3	The ability of our company to get over the financial problems increase our financial opportunities
Opportunity4	The investment opportunities in our market are good
Control	Firm control
Comoney	The monetary compensation system
Comequity	The equity compensation system
Age	The manager's age
Islamlaw	The Islamic view
Costsens	The sensitivity of the costs to changes in foreign exchange rates
Industry	The firm industry
Competition2	The difference between the firm's products and those of their competitors.
Market	The description of the markets that firms trade in
Qdegree	The manager's qualification degree
Nationality	The manager's nationality
Cost	The cost of implementing hedging strategy
Department	The participation of the operating department in risk management strategy
Training	The risk management training program
Riskexperience	The length of experience in risk management
Bank3	The relationship with banks
β_1 to β_{24}	Coefficients for each firm-specific variables
ε	Residual term

Table C4 and Figure C5, in the Appendix C, show that no collinearity problem exists between the independent variable and the standardize residuals that lie between 3 standard deviations from the mean. To analyse the final model of the currency exposure management determinants, the Forward Stepwise Method of Regression will be used, on the condition that all variables in the predicted model have a p value of .10 or less ($P \leq .10$). When the forward method is employed the logistic regression begins with a model that includes only a constant and then adds single predictors into the model starting with the one with the most significant effect of the dependent variable through to the one with the less effect, excluding the ones with $P > .10$. Table 10.6, shows the

results of the logistic regression analysis. The Table shows that the independent variables were added to the model step by step, starting with the variable with most significant score statistic. The logistic regression proceeds until none of the remaining currency exposure management predictors have a significant score statistic (the cut-off point for significance being 0.10).

Table 10.6: The Final logistic regression for the currency exposure management determinants model

The Model Step	Association/ Predictive Efficiency	Variables	The Coefficient	S.E.	Sig.
Step 1	G_M = 25.344	The Islamic view	-1.365	.302	.000
		Constant	2.425	.643	.000
The model improve our understanding of the hedging decision (to hedge or not to hedge) by %22.4	D_M = 87.674				
	R^2_L = 0.224				
	λ_P = 0.429				
	τ_P = 0.506				
Step 2	G_M = 37.719	The Islamic view	-1.464	.345	.000
		The Nationality	1.208	.377	.001
The model improve our understanding of the hedging decision by %33.4	D_M = 75.299	Constant	.700	.786	.374
	R^2_L = 0.334				
	λ_P = 0.457				
	τ_P = 0.531				
Step 3	G_M = 51.593	The Islamic view	-1.566	.400	.000
		The Markets	-1.226	.372	.001
The model improve our understanding of the hedging decision by %45.7%	D_M = 61.425	The Nationality	1.550	.455	.001
	R^2_L = 0.457	Constant	2.720	1.109	.014
	λ_P = 0.60				
	τ_P = 0.654				
Step 4	G_M = 64.643	The Management Equity Compensation System	2.765	.921	.003
		The Islamic view	-2.073	.555	.000
The model improve our understanding of the hedging decision by %57.2	D_M = 48.375	The Markets	-1.578	.494	.001
	R^2_L = 0.572	The Nationality	1.972	.583	.001
		Constant	-.404	1.444	.779
	λ_P = 0.571				
	τ_P = 0.630				
Step 5	G_M = 80.815	The Management Equity Compensation System	3.515	1.182	.003

The Model Step	Association/ Predictive Efficiency	Variables	The Coefficient	S.E.	Sig.
		The Islamic view	-2.554	.768	.001
		The Markets	-1.668	.587	.004
		The Participation of the Operating Department on the Currency Exposure Management Strategy	1.434	.560	.010
		The Nationality	2.713	.844	.001
		Constant	-4.289	2.200	.051
Step 6	G_M = 97.308	The Management Equity Compensation System	3.769	1.350	.005
The model improve our understanding of the hedging decision by %86.1	D_M = 15.710	The Islamic view	-2.653	.854	.002
	R_L^2 = 0.861	The Markets	-1.941	.727	.008
	λ_P = 0.857	The Cost of Implementing the Currency Exposure Management Strategy	1.193	.536	.026
	τ_P = 0.876	The Participation of the Operating Department on the Currency Exposure Management Strategy	1.399	.601	.020
		The Nationality	3.084	.974	.002
		Constant	-6.904	3.004	.022
Step 7	G_M = 106.244	The Management Equity Compensation System	3.802	1.509	.012
The model improve our understanding of the hedging decision(to hedge or not to hedge) by %94	D_M = 6.774	The Islamic view	-3.078	1.081	.004
		The Markets	-2.311	.914	.011
	R_L^2 = 0.940	The Risk Management Experience	3.317	1.778	.062
	λ_P = 0.943	The Cost of Implementing the Currency Exposure Management Strategy	1.212	.589	.039
	τ_P = 0.951	The Participation of the Operating Department on the Currency Exposure Management Strategy	1.245	.695	.073
		The Nationality	3.543	1.214	.004
		Constant	-12.180	5.406	.024

The Table 10.6, shows that the last model in step 7 contains seven independent variables, which are; management equity compensation system, the Islamic view, markets (competition), risk management experience, the cost of implementing the currency exposure management strategy, participation of the operating department in the currency exposure management strategy, and nationality. We would argue that given a currency exposure management policy determinants, a firm's ultimate decision to hedge also depends *on the level of its exposure to the risk.* The Final model is as follows:

$$\ln\left(\frac{Pi}{1-Pi}\right) = \beta_0 + \beta_1 \text{ Comequity} + \beta_2 \text{ Islamlaw} + \beta_3 \text{ Market} + \beta_4 \text{ riskexperience} + \beta_5 \text{ Cost} + \beta_6 \text{ Department} + \beta_7 \text{ Nationality} + \varepsilon \quad [10.2]$$

Where:

β_0	Constant term
Comequity	The Management Equity Compensation System
Islamlaw	The Islamic view
Market	The Markets
Riskexperience	The Risk Management Experience
Cost	The Cost of Implementing the Currency Exposure Management Strategy
Department	The Participation of the Operating Department on the Currency Exposure Management Strategy
Nationality	The Nationality
From β_1 to β_7	Coefficients for each firm-specific variables
ε	Residual term

This seven step model is the best model resulting from the study. The relationship between the hedging decision and hedging determinants presented in the final model is statistically significant, $G_M = 106.244$, with 7 degree of freedom, $P = .000$. Table 10.7, shows that the model can correctly classify 97.6 % of the firms in the sample as hedging and non-hedging firms. Table 10.6, indicates that inclusion of the seven determinants in the model reduces the variation by 94% (R_L^2). This means that using the model we can perfectly predict the hedging decision. Both measures of the predictive efficiency, λ_P = 0.94, and $\tau_P = 0.95$, were very high indicating that the determinant variables allows us to classify the firms into hedging and non-hedging firms with a very high degree of accuracy, as reflected in the classification Table 10.7, step 7.

Table 10.7: The classification table of the firms in the sample after the final model is adopted.

The Step	Observed	Predicted		
		Hedging or non-hedging company		Percentage Correct
		Non-hedging company	Hedging company	
Step 1	Non-hedging company	40	8	83.3
	Hedging company	12	23	65.7
	Overall percentage			75.9

The Step	Observed	Predicted		
		Hedging or non-hedging company		Percentage Correct
		Non-hedging company	Hedging company	
Step 2	Non-hedging company	38	10	79.2
	Hedging company	9	26	74.3
	Overall percentage			77.1
Step 3	Non-hedging company	43	5	89.6
	Hedging company	9	26	74.3
	Overall percentage			83.1
Step 4	Non-hedging company	39	9	81.3
	Hedging company	6	29	82.9
	Overall percentage			81.9
Step 5	Non-hedging company	44	4	91.7
	Hedging company	4	31	88.6
	Overall percentage			90.4
Step 6	Non-hedging company	46	2	95.8
	Hedging company	3	32	91.4
	Overall percentage			94.0
Step 7	**Non-hedging company**	**47**	**1**	**97.9**
	Hedging company	**1**	**34**	**97.1**
	Overall percentage			**97.6**

10.4 Exploring the Major Findings

Findings in this chapter suggest that, hedging decisions were not always affected by the expected (favourable) impact on the firm's value as there are other factors which play a role in the hedging decision. It is clear that using the finance theory factors alone as suggested by most of the previous studies to guide the risk management decision makers is not enough. The finance theory framework suggested by most of the previous studies is described by Froot *et al.,* (1993) as an incomplete framework. FT has often been criticized for being too theoretical and narrow-minded (Peavy, 1984). Froot *et al.,* (1993) argued that while financial theory provides managers with good instructions on the implementation of hedging unfortunately it has had much less clear cut guidance to offer an answer to the question as to hedge or not to hedge. The gap in the FT

explanations in previous studies (in paradigm and methodology) are generally very broad as most of these studies analysed the corporate hedging decision from the same perspectives using only companies' published data. Hence, any change in paradigm and methodology will provide another view regarding the explanations for why corporations hedge. The explanations of the FT for corporate hedging strategy also have some practical problems which were in mind when this study methodology and method were determined (see section, 10.2).

Most of the previous studies found that hedging activity can be used to maximize shareholder value (Francis and Stephan, 1990; Froot *et al.,* 1993; Berkman and Bradbury, 1996; Fok *et al.,* 1997; Geczy *et al.,* 1997; Howton and Perfect, 1998; Gay and Nam, 1998; Hardwick and Adams, 1999; Joseph, 1999; Haushalter, 2000). Most of these studies confirmed the FT indications that hedging increases firm value by reducing expected financial distress costs, expected agency costs, expected corporate finance costs, and increasing expected investment opportunities. However, Tufano (1996) found only a weak relationship between risk management and these factors. Also Mian (1996) found weak evidence that hedging activity increased the firm's value. Consistent with the Tufano (1996) finding this study provides limited empirical support for the predictive power of these factors alone as hedging incentives. *The findings in this study suggest that the explanation offered by most of the previous studies regarding the implications of finance theory in the determinants of risk management offer much less clear cut guidance on the logically prior question as to hedge or not to hedge.* The use of the predicted FT factors, by the previous studies, to explain the corporate hedging strategy may not provide a complete explanation and might prove to be of limited use to the active financial manager. It could be that there are other financial factors which are not established by previous studies and can be used to explain the effect of the FT implications in the hedging decision. It could be argued that what the previous studies presented as hedging incentive determinants might be classified as indicators for the success of hedging process FT argues that the decision makers aim at maximizing economic utility and this is what managers in hedging firms confirmed in this study. Our findings show that, the FT explanations suggested in previous studies achieve limited empirical support for the predictive power of finance theory that views risk management as a means to maximize shareholder value. There are many reasons for this finding such as microeconomic, and methodological differences between this study and

previous studies.

However, our findings do not lead us to reject the FT implications on the hedging decision but alternatively direct us to explore the expected effect of the FT implications on the hedging decision in a way different from previous studies. Some of the empirical findings confirm theoretical rationales that view risk management as a means to maximize shareholder value. First, managers in hedging firms confirmed that their firms hedge the currency exposure since it affects their costs, cash flows, and to improve the firms' competitive position. Second, the positive correlation between the decision to hedge and total sales, and the ability to hedge and to set up a hedging program is consistent with the notion that companies with a significant economic of scale were more likely to hedge. Third, the empirical evidence shows that hedging firms are more likely to be managed by one of their owners associated with less agency conflicts which provides support to the argument that by hedging these managers aim to maximize the shareholder wealth. Finally the positive correlation between the manager's qualification and risk experience and hedging decision supports the theory that corporate risk management is used to accurately signal the manager quality and that these managers are attempting to maximize shareholder value. All these findings were confirmed using both univariate and multivariate analysis and *give strong empirical support for the predictive power of theories that view risk management as a means to maximize shareholder value.*

This study has found that FT alone does not contribute in a complete way to understand the determinants of the currency risk management decision in Saudi firms. FT provides only a managerial risk aversion and maximizing value framework to explain corporate hedging behaviour. We have argued that to explain corporate hedging behaviour, we need a much broader framework that can embody multiple descriptive goals and non-maximizing behaviour of various forms. For these reasons, this study has attempted to fill the gap between risk management policy and FT by applying contingency theory. Contingency theory and FT offer more empirical scope to explain and understand the corporate hedging policy. It is fair to say that most of the risk management planners are guided by the factors identified by contingency theory. While most of the FT concepts are generally accepted by financial economists, the contingency theory concepts are helpful to explain the risk management strategy and are recognised as such by the

practitioners.

Our findings also support the finance theory explanation that corporate hedging is affected by the managerial risk aversion hypothesis. According to the result in this research, we can argue that the risk management decision is more related to management risk aversion than agency conflicts. We have found that risk aversion plays an important and significant role as a determinant of the hedging decision. Managerial ownership can be seen as an important tool to affect the management risk aversion level. *The findings show that the managerial characteristics appear to be more associated with corporate risk management than other organizational and environmental factors.* Stulz (1984) argued that corporate hedging arises as a result of managerial risk aversion. Consistent with theories of managerial risk aversion (e.g., Stulz, 1984), this study found that a firm is likely to engage in hedging activity when the manager is also one of the firm's owners.

This study suggests that the hedging decision is affected by the organizational, managerial and environmental context of the firm. This study found that contingency theory offers two explanations for why companies hedge. Using the contingency approach to understand the corporate hedging decision shows that the difference in corporate hedging strategy can be attributed to the firm's ability to hedge. *The contingency theory indicates that firms with qualified staff and financial managers, with more risk experience, with risk management training programmes, with strong relationships with banks, with more ability to bear the hedging costs, and with active involvement from the operating departments in risk management planning, are more likely to hedge.* The contingency theory attributes the currency risk management decision to the firms' need to hedge. In this regard, *the contingency theory shows that firms in specific industry, in competitive markets, with more sensitive operations to the changes in exchange rates and with more volatile exchange rates will be more likely to hedge.*

10.5 Conclusion

While it is argued that currency exposure management is a good idea, the findings in this study imply that foreign exchange exposure management techniques are not widely used by Saudi firms. A high percentage of Saudi firms' managers (57.8%) did not see

foreign exchange management practice as important. While there are plenty of foreign exchange exposure management tools and techniques available, these managers were still reluctant to apply them in managing their firms' exposure. It seems that risk management techniques have not yet become a standard practice in Saudi firms. It is clear regarding the criteria applied in this study that all of the firms in the sample were subject to the foreign exchange exposure. However, given that some Saudi firms adopted foreign exchange exposure management techniques and some did not, the question arises as to what are the factors that determine the hedging decision? In Saudi Arabia, it seems that managers were not confident with risk management practice and that there is still a long way to go. For these managers, more awareness, programme training, understanding of risk management techniques usage, and the usefulness of risk management practice are needed.

The chapter has pointed out that corporate hedging policies should not only consider the effect of the hedging activity on shareholders' and managers' wealth but also the firm's ability and need to hedge. Using both the accounting ratios and indicators to measure the expected hedging incentives, the study found little evidence to support the hypothesis that hedging activity reduces the agency conflicts, increases the firm's investment opportunities, reduces the distress costs and reduces the firms' finance costs. *This result provides little support regarding the findings of previous studies of the determinants of hedging incentives that view risk management as a means to maximize shareholder value.* The chapter has presented the main factors which significantly affect the firm's decision regarding foreign exchange exposure. The full logistic model consists of 24 independent variables used to predict the firms strategy regarding foreign exchange exposure. The final model was modified to include the management equity compensation system, the Islamic view, markets (competition), risk management experience, the cost of implementing the currency exposure management strategy, participation of the operating department in the currency exposure management strategy, and nationality. It can be argued that given these currency exposure management policy determinants, a firm's ultimate decision to hedge also depends *on the level of its exposure to risk.*

Chapter Eleven

Conclusions, Limitations and Future Work

11.1 Introduction

No single study can resolve the debate over the determinants of the hedging decision. Despite recent rigorous research efforts, the issue remains complex and in some respects contradictory. This study attempts to advance the debate by addressing important conceptual and methodological issues. This study employs a multiple stage, multi theory, and multi method to explore and examine the determinants of the currency risk management decision in Saudi firms. The findings in this study confirm some of the available theories of the determinants of corporate hedging that have been widely elucidated in the literature. The methods and methodology used in this study have helped to explain the discrepancies between corporate risk management theory and the results of previous empirical studies that only address the decision to use derivative to hedge, using publicly available data and a narrow hedging definition. We are able to explain the conflicts and differences between the results of this study and the previous studies. Unlike other empirical studies, which mainly focus on historical data, this study extends the testable implication of existing theories of the hedging decision, by using a combination of contingency variables and financial variables, and interview and questionnaire methods.

The explanations of corporate hedging behaviour have some practical problems which were addressed when this study's methodology and method were identified. For more accurate consideration of the corporate hedging strategy, this study tries to link the theoretical work (academics' view) with practitioners (managers' view) to identify areas of agreement, and to address the currency risk management problem from the perspective of both the financial manager and finance theory. For this reason, this study has attempted to fill the gap between risk management policy and finance theory by applying the contingency theory. The contingency theory offers a richer set of possible empirical explanations to understand the corporate hedging policy. We could argue that it is fair to say that most of the risk management decision makers are guided by factors identified by contingency theory. While most of the finance theory concepts are

generally accepted by financial economists, however, the contingency theory concepts in full may more appropriate to explain the risk management strategy and are accepted by the practitioners. The study identified the limitation of using the finance theory alone as a framework for the determinants of corporate hedging. By using contingency theory, this study provides a further understanding of relationships among factors influencing the risk management decision at the micro level. An appropriate model of hedge or not to hedge decision will help to some extent in preventing problems caused by unsuitable hedging decisions. The contingency factors model helps managers to develop a more thorough understanding of complex situations facing hedging decisions and to take appropriate decision.

In order to carry out the survey with a questionnaire, two different sources of data were used. First, a review of the existing literature on risk management and corporate hedging determinants were undertaken and used to carry out the next step. The question arises as to whether similar hedging determinats can be constructed when working with the hedging decision in different countries? These factors are also key issues in the hedge or not to hedge model, examined in this study. However, are there any other determinants that may affect the firm decision to hedge? Our objective has been to identify different hedging determinants in which firms deal with corporate risk on a basis of the practices observed in Saudi firms. Second, all of the previous studies, presented in chapter 4, were mainly applied in developed countries and this study concentrates on one developing country, Saudi Arabia. The different environment and organizational structures in Saudi Arabia provide a new context for testing the generality of the findings of the previous studies. While these differences may affect the firm's strategy and attitude, the method adopted to discover these effects and differences was to carry out an exploratory study with interviews before preparing the questionnaires used in the main study. The model and the tested relationships are based on a questionnaire survey. This research has been guided by the exploratory study, contingency theory, as well as by finance theory described in the corporate hedging literature discussed in chapters 3 and 4.

In order to achieve these objectives, the choice was made to conduct the main body of the exploratory study fieldwork using the semi-structured interview approach with financial managers. Interviews were used to explore and practically explain the determinants of the currency exposure management policy by collecting the

relevant empirical data in order to test the competence and the structure of the theoretical framework to be used in the second stage (explanatory study; questionnaire). The interviews highlighted some of the contingency factors, and discussed in-depth some of the foreign exchange risk management behaviour in Saudi firms, and to gain further information about a firm's hedging behaviour. The interviews succeeded in providing a rich background of information about hedging decision behaviour in Saudi firms and the factors that might affect the hedging decision. These exploratory interviews were used mainly to restructure the questionnaire design used in the final study. The exploratory study showed that it would be unacceptable to restrict the determinants of the hedging decision to the managerial differences and the possible benefits that firm might achieve from doing so. The exploratory study concluded that it is difficult for the decision makers in a firm to decide to hedge or not without also understanding a firm's needs and its ability to do so.

11.2 The Contribution of the Study

This study has contributed to our understanding of corporate hedging behaviour by concentrating specially in Saudi export and import firms. At present there are no other empirical studies regarding the risk management practices and behaviour of Saudi firms. Most of the previous studies in the corporate hedging literature are based mainly on MNCs, whereas this study focuses on corporate hedging behaviour in smaller exporting and importing firms. While most of the previous empirical studies examine the predictive power of theories that view risk management as a means to maximize shareholder value, and the effects of managerial risk aversion, this study presents a contingency approach as an alternative framework for the determinants of a hedging decision. The general assumption is that the decision to hedge or not to hedge the foreign exchange exposure is contingent upon environmental, organizational, and managerial characteristics. Contingency theory adds a broader contingent dimension to understand the determinants of risk management, and the framework increases our understanding of corporate hedging behaviour. It is hoped that this framework will help to better understand the need for, and strategies available, to guide the firms' currency exposure management and to choose from the different hedging policies available in a more effective way.

The study has found that FT and contingency theory offer four basic explanations for

the corporate hedging decision. From the FT point of view, and consistent with results reported in the literature, corporate hedging can be attributed to managerial risk aversion. According to the managerial risk aversion arguments, firms which are controlled by their owners, firms which have monetary and equity compensation systems, and those who have young directors, are more likely to hedge. In contrast with most of the previous study, this study provided only weak support for the finance theory argument that views hedging activity solely as a means to maximize shareholder value. On the other hand, the contingency theory offers another two explanations for why companies hedge. The first explanation is that the hedging decision depends on the firm's need to hedge. According to this explanation, firms in specific industries, competitive markets, firms with operations highly sensitive to the changes in exchange rates, and with highly volatile exchange rates will be more likely to hedge. A second explanation is that the hedging decision depends on the firm's ability to hedge. Firms with qualified staff and financial managers, with more risk experience, with risk management training programme, with strong relationships with their banks, with more ability to bear the hedging costs, and with active involvement from the operating departments in risk management planning, will be more likely to hedge.

Contingency theory improves our understanding of the theory of currency exposure management. In that the findings show that the external environment to the firm is a significant determinant of the currency exposure management policy. Significant associations between industry, markets, currency and market policy, banks and other external factors and currency exposure management decisions were found. While past studies view the determinants of corporate hedging in terms of the firm's internal characteristics, this study broadened this understanding to include both the external and the internal environment. By employing both inductive and deductive approach in gathering the study data, this study makes improvements to the way that the research should follow in order to examine and analyse the research problem. This research attempted to fill some gaps in the determinants of corporate hedging literature by considering both the financial analysis and the context of the corporate hedging policy.

The research findings in this study support the work of Tufano (1996) and Mian (1996). This study found a weak relationship between risk management and a firm's characteristics that value-maximizing risk management theories would predict. The findings of this study are consistent with the argument put forward by Stulz (1984),

Breeden and Viswanathan (1990), and Tufano (1996) that the theories of managerial risk aversion are more powerful in affecting the hedging decision than those of shareholder value maximization, (four variables from seven in the final model related to the management characteristics, see section 10.3.5).

This research predicts that risk management policy may be affected by four groups of factors; the hedging incentive factors, the managerial risk aversion factors, the firm's hedging need factors, and the firm's ability to hedge. Overall, using the logistic regression analysis we examined the possibility of using these groups to explain the hedging decision. The logistic regression results show that the determinants of the hedging ability model looks to be the best model to fit the hedging decision, in that the model can correctly classify 96.4% of the firms in the sample as hedging and non-hedging firms (see section, 9.3.4). Also the study found a model which can correctly classify 97.6 % of the firms in the sample as hedging and non-hedging firms (see section, 10.3.5). This model consists of seven determinant factors: the management equity compensation system, the Islamic view, markets (competition), the risk management experience, the cost of implementing the currency exposure management strategy, the participation of the operating department on the currency exposure management strategy, and the nationality of the risk management decision makers. This study found that the Islamic view had a greater influence for the choice of the hedging decision. Most of the non-hedging firms described the financial instruments available in Saudi Arabia, (the derivative contracts) to be prohibited by Islamic 'Shariah' (see sections 6.3.3 and 7.3.2.2).

The research results have some implications for the banks. Most of the banks in Saudi Arabia have Islamic committees which help the banks to provide the customers with acceptable services from an Islamic point of view. These committees need to focus on the foreign exchange risk problem and should seek to establish acceptable financial instruments to help companies. While the Islamic banks existed in Saudi Arabia[1], none

[1] There are five Islamic Banks established in Saudi Arabia; The Islamic Development Bank (IDB), The Islamic Investment Company (IIC), Al-Baraka Investment and Development Company, Two private groups which were formerly operating as money changing offices in Saudi Arabia, (Al-Rajhi Company for Currency and Exchange (Riyadh) and Al-Rajhi Islamic Investment Banking Company (Jeddah))

of these banks, as confirmed by the interviewees, provide them with an acceptable Islamic solution for managing foreign exchange risk.

Because the currency exposure management policy is a function of factors such as foreign sales, agency costs, competition reactions, foreign costs, and managerial attitude, a firm's currency exposure hedging policy should differ from firm to firm, and should also change through time. As these determinants of a firm's exposure evolve over time, the hedging strategy should be reviewed and adjusted in line with the changing environment. The study showed that risk managers' hedging decisions are affected by the limitation of the participation of the other departments in the firm in formulating a hedging strategy. The survey findings revealed low involvement from the operations department in foreign exchange exposure management, suggesting that most of the firms in the sample did not consider the effect of the exchange rates movements on their marketing and operating strategies. We would suggest that operating departments (e.g. marketing, purchasing and production) in a company should co-operate more closely with the financial department (or treasury department) in establishing foreign exchange risk policy and the management practices. From the beginning when a company starts to plan its business it should consider foreign exchange risk management as a factor affecting the decision making process of the company. We would suggest that the corporate hedging policy should be discussed and implemented in connection with other departments in the firm. It seems that both identification of exposures and the decisions to hedge involve the operating units working together with the treasury department. Treasury provides the expertise in the foreign exchange markets and hedging tools, but the operating managers are the people with direct responsibility for foreign exchange since it hits their bottom line. Treasury departments should work with the operating units to identify currency exposures and, based on their input, the risk managers suggest hedging strategies. The contribution of the operating department in the risk management policy will effectively increase the possibility that the risk manager will choose the appropriate hedging decision. Saudi firms should develop a more formal approach to risk management, and should put together a team to develop and carry out their risk management policy and strategies.

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applied to SAMA in order to be allowed to operate as Islamic Banks (Journal of economic corporation among Islamic Countries, 1998).

The firm should establish a risk management team from people from several disciplines within the company, such as corporate risk manager, corporate accounting manager, corporate purchasing manager, and corporate operating managers. This risk management team meets regularly to discuss the markets, exposures, and hedging strategies.

The results presented in this study strongly suggest that, in general, boards of directors fail to consider the managers' attitude towards corporate risk when preparing the company's managerial performance compensation arrangements. To the extent that performance related monetary compensation payments to management fail to correlate with corporate hedging decisions, boards of director appear to be forsaking their obligations to shareholders and they may fail to use compensation as a mechanism of control. In summary, this study presented significant evidence that boards of directors do not generally consider the corporate risk management when deciding on remuneration payments. They possibly did so because they view minimizing the foreign exchange exposure as an inappropriate or insufficient criterion for judging management's performance.

The link between the hedging decision and the firm's competition suggests the idea that firm's foreign exchange risk management policy should be made jointly with its competitive strategy. This means that studies which focus on the firm's competitive strategy decision need to consider corporate hedging policies. For example, a firm in a highly competitive market that hedges its foreign exchange risk, may choose the same pricing strategy as a firm in a low competitive market that dose not hedge. Without controlling for foreign exchange risk, the relation between pricing strategy and the determinants of competitive advantages is ignored. It can be concluded that, it is important for the risk manager to understand the source of its company comparative advantages in order to plan the firm's risk management strategy.

Firms should measure exposure properly so that they do not underestimate the level of their exposure, including taking into account the nature of the foreign exchange risk they face. A company can adopt internal procedures that would permit it to measure foreign exchange exposure properly. For example, a company could develop a system that frequently updates its current and future global exposures as it executes new trades. This would provide the firm with much more accurate and timely information regarding

its foreign exchange risk. The availability of a more accurate risk management information system will enable different operating departments to participate in developing the firm's risk management strategy and help the risk manager to increase the efficiency and effectiveness of the hedging activity. The findings in this study indicate that there are some Saudi firms that do not have a risk management policy let alone a risk management information system. It seems that these exporting and importing firms have a lack of understanding of the potential dangers of currency exposure. For these firms, it is important to develop new risk management policies.

Foreign exchange risk management practices in Saudi firms are limited and should be improved. Firms did not see the foreign exchange exposure management as an important strategic issue and firms need to be further educated regarding the effect of currency exposure. Firms should organize risk management training programs and employ qualified risk management staff. As most of the Saudi firms are in their early stages of development, the need for foreign experience in management and risk management is important. The foreign experience from Western countries is important to improve the quality of the management and business environment. Also the findings show that most of the firms did not have managerial performance evaluation and reward programs which aligned the manager's interest to that of the shareholder's interest. Firms need to pose the question of which type of compensation arrangements should be used to encourage managers to work in the interest of their shareholders. The study findings show that if appropriate management reward structures are in place, management performance improves, especially when firms use an equity reward system. This study found that changes in the managerial ownership structure may have important effects on the hedging decision. In addition, ownership structure does not only affect the risk attitude of the firm, but also a firm's survival and market exit decisions. Firms should establish risk management objectives and their relationship with the firm's overall objectives. Firms also need to improve the ability of forecasting the future exchange rate in order to better assess the effect of the currency exposure.

Findings of this study help to provide managers with valuable insights to the development of the firm's risk management strategy and to improve risk management decisions. The main effect of this study is to provide managers with a better ability to use the study's theoretical framework for practical purposes, strengthen treasurer department developments, and increase the viability of the organization. This

study focuses on exporters and importers in Saudi Arabia, who trade extensively in international markets, and the implications for the study are of particular relevance to such firms.

The findings in this study suggest that the discussion of the effects of an exchange rate shock on the value of a firm is based on the effect of the exposure magnitude and the exchange rates volatilities on the firm's operations. Most of the previous studies, which examined the effect of exchange rate movements on the firm's value, mainly concentrated on the idea that net foreign revenue is the primary source of exchange rate shocks on a firm's value. However, as we found that the foreign exchange exposure is a function of some of the contingent environmental factors, such as foreign sales, agency costs, competitive reactions, and the management ability, a firm's exchange rate exposure on the firm's value should change through time. The study of the effect of the exchange exposure on the firm's value should not be separated from considering the effect of these exposure factors on the exchange exposure. Even for the researcher who examined the effects of an exchange rate shock on the value of a firm should take into consideration the effect of the contingent environmental, organizational, and managerial factors on the currency exposure magnitude.

11.3 Limitations of the Study

Several limitations have been faced while conducting this study. Some of these limitations relate to the methodological approach that underpins this research; others relate to problems encountered by the researcher in the research process itself. The total sample of the study was 171 firms and the idea during the period of the empirical work was to collect data from most of these firms. However, a response was only received from 94 firms. The reasons for this were: access was denied by a number of firms, the time available for doing this fieldwork was limited, and only the costs of three months data gathering in Saudi Arabia were covered by the sponsor. All these limitations affected the number of respondents. Finally, any conclusions that might be drawn on the data analysis in chapters 8, and 9 in this study should be taken into consideration with these limitations in mind. Also access to the firms' financial and accounting ratios data was very limited as many firms regarded the data required as very sensitive data.

The main aim of this study has been to explore and examine the determinants of foreign

exchange exposure management policy in one developing country. To achieve this aim the study focused on Saudi firms, this may affect the generality of some of the research findings as they may only be appropriate to explain the situation within the Saudi firms' environment.

One of the main technical limitations in analysis of the study is that there are some statistical tools (e.g. factor analysis) which only accept variables with same unit of measurement. For example, all the variables should be scale variables or ordinal or nominal variables. While most of the groups (risk management aversion variables, firm's ability to hedge variables and firm's need to hedge variables) in this study consist of different variables; scale interval, ordinal, and nominal, makes it difficult to apply these statistical tools. There are also some limitations regarding the use of contingency theory as a framework. In that the variables' 'conceptualization' and 'measurements' used in contingency theory need great theoretical and empirical consideration. The large number of variables generated by the use of the contingency approach, and the difficulty in finding appropriate measures for them, may have affected the research findings. While using a large number of independent variables with a small sized sample may affect the validity of the regression results.

11.4 Future Study

The aim of this section is to provide some suggestions for future research that might be considered in order to further improve our understanding of, and contribute to, the corporate hedging literature. One of the main original contributions of this study to the corporate hedging literature is the use of the contingency framework. While this framework is built on the situation in Saudi Arabia, this framework provides researchers with a tool that can be used for further investigation in other countries. There is a need to use the framework in studying the situation in other firms, in other countries. The variables examined in this study need to be examined in a larger sample to improve the regression results. Further, using the same variables as used in this study, but with unique measurements (scales only) for these variables, may allow researchers to use more complex statistical tests. This research adopted the contingency and finance theory and suggests for future study the use of other theories.

Islamic 'Shariah' imposes strong effects on foreign exchange risk management policy.

These restrictions and effects can be explored further in order to focus more deeply on the reasons that led the Islamic view to prevent the use of derivative contracts. This indicates a new dimension to the problem and this should be investigated in depth to see if there are any alternative solutions for the foreign exchange risk from the Islamic point of view. As there are various risk management tools available, further research is needed to find out which of these tools and techniques are acceptable from an Islamic point of view. Research also needs to be undertaken to investigate the extent to which the risk management tools which are prohibited in Islamic Shariah law can be restructured in order to be acceptable. Further research is also needed to find out which of the risk management approaches and tools work best, and under what circumstances and environments.

This study raised essential points about the hedging method problems in Saudi firms. Further research can focus on risk management practice in Saudi Arabia and the different financial instruments used by hedging firms, and to what extent this practice is affected by the internal and external firm context. Further research needs to be focused on an evaluation of the performance measurement methods in Saudi firms in order to improve firms' managerial performance. This study found that although foreign exchange exposure management strategy was used by some Saudi firms to maximize shareholder value, the empirical evidence in this study shows that the risk management decision is more related to managerial risk aversion. The study also argues that the strongest motive for risk management behaviour is the managerial risk aversion argument. Further research should focus on this motive within larger and more open economies. It will be worthwhile, to examine the effect of the comparative advantage managerial risk aversion framework in both Saudi and non-Saudi firms. The question arises whether the findings in this study are especially for Saudi firms or can be used within the firms in different countries? This question can be answered by other researchers in other countries. This study also raises some questions such as, what is the information that treasury departments need to establish currency risk management policy and strategies, and who is to be on the risk management team?

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Appendix A: Sample of the Cover Letters

A.I: Letter from the Dean of the College of the Arabic and Social Science.

A.II: Letter from the Researcher.

A.III: Letter about the Research Subject in English.

A.IIII: Letter about the Subject in Arabic.

وزارة التعليم العالي
جامعة الإمام محمد بن سعود الإسلامية
كلية العلوم العربية والاجتماعية
في القصيم

الرقم :
التاريخ :
المشفوعات :

الشؤون الإدارية

الموضوع : إفادة .

تفـيد كلية العلوم العربية والاجتماعية بالقصيم ، بأن المعيد بقسم العلوم الإدارية بالكلـية / فهـد بن عبدالعزيز المحيميد ، هو أحد المبتعثين إلى بريطانيا لتحضير الماجستير والدكتوراه ، ويقوم حالياً برحلة علمية إلى المملكة العربية السعودية ، لجمع المادة العلمية لموضـوعة في رسالة الدكتوراه (أثار تغيِّر أسعار صرف العملات على الشركات)وتأمل الكلية تسهيل مهمته العلمية ، والتعاون معه في هذا الخصوص ، والله الموفق ،،،

عميد كلية
العلوم العربية والاجتماعية في القصيم
د . عبدالرحمن بن علي السديس

ي/م/ع١٣٤٨

ص . ب : ١١٩٣ ـ ١١٩٦ بريدة . هاتف : ٢٢٢٠٣٣٧ ـ ٢٢٢٠٨٤٥ فاكس : ٢٢٢٠١١٢

Appendix A.II: Letter from the Researcher.

Dear Sir,

I would like to inform you that I am a teaching assistant at Al-Imam University, Department of Business and Accounting. Currently, I am doing my Ph.D. at the Sheffield Business and Finance School, Sheffield Hallam University. As part of my Ph.D. programme, I am conducting a research project on the determinants of currency risk management decision, comparing the results with normative literature. In this respect, I would be greatly appreciated if the highest level official responsible for currency hedging would answer the enclosed questionnaire.

The questionnaire has been deliberately kept short so as to require approximately fifteen minutes for its completion. Please answer the questions to the best of your knowledge. All information given will be used in aggregate only and will be treated with the strictest confidentiality. The company's name will never be placed on the research.

I would be extremely grateful if you would kindly spend few minutes of your time to complete the attached questionnaire. If you have any questions or comments please contact me at 056146765. Please return as promptly as possible in the enclosed business reply envelope.

Thank you for your time and consideration.

Sincerely yours,

Fahad Al-Mohaimeed
Teaching assistant at Al-Imam University

Appendix A: Letter about the Research Subject

Foreign Exchange Risk Management

Dear Sir/

Foreign exchange exposure is a profit or expected future cash flow stream (whether certain or not) is said to be exposed to exchange risk when a currency movement would change for better or for worse, its parent or home currency value. The effect of exchange rate volatility on a company's broad activities is one of the controversial issues in international economics. It is widely believed that the exchange rate volatility increases risk and uncertainty in exporting and importing firms. For example, if a Saudi firm imports goods from UK, and the payment is in pounds, and the value of the pound rises against Saudi Riyal (SR), an exchange loss will be incurred. Interest in defining and managing exposure to gains and losses caused by fluctuating exchange rates has increased dramatically in recent years.

For treasurers, in order to decide whether foreign exchange risks should be managed or not, they should know how significant the potential currency risk is considered to be, the company's attitudes to currency risk and the benefit of their hedging decision. Hedging refers to all actions taken to protect a firm against the risks resulting from exposure to foreign currency exchange rate fluctuations. Hedging foreign exchange exposure (risk) is a practice of covering exposure designed to reduce the volatility of the firm's profit and/or cash generation, and it presumably follows that this will reduce the volatility of the value of the firm. Companies can use a wide range of internal methods to hedge foreign exchange risk. These methods can be created internally as part of a company's regulatory, financial and operational management (e.g., matching, netting, leading and lagging). The use of external techniques is one means of managing and controlling foreign exchange risk. In this regard, many different financial instruments can be used for hedging purposes. A companies can use the external markets to hedge any residual exposure after cover from internal methods. Company can use financial instruments like forward, option, future and swap contracts to hedge currency risks.

Thank you for your time and consideration.

Sincerely yours,

Fahad Al-Mohaimeed
Teaching assistant at Al-Imam University

Appendix A. IIII. Letter about the Research Subject in Arabic

بسم الله الرحمن الرحيم

المكرم/ ... . حفظه الله

السلام عليكم ورحمة الله وبركاته وبعد:-

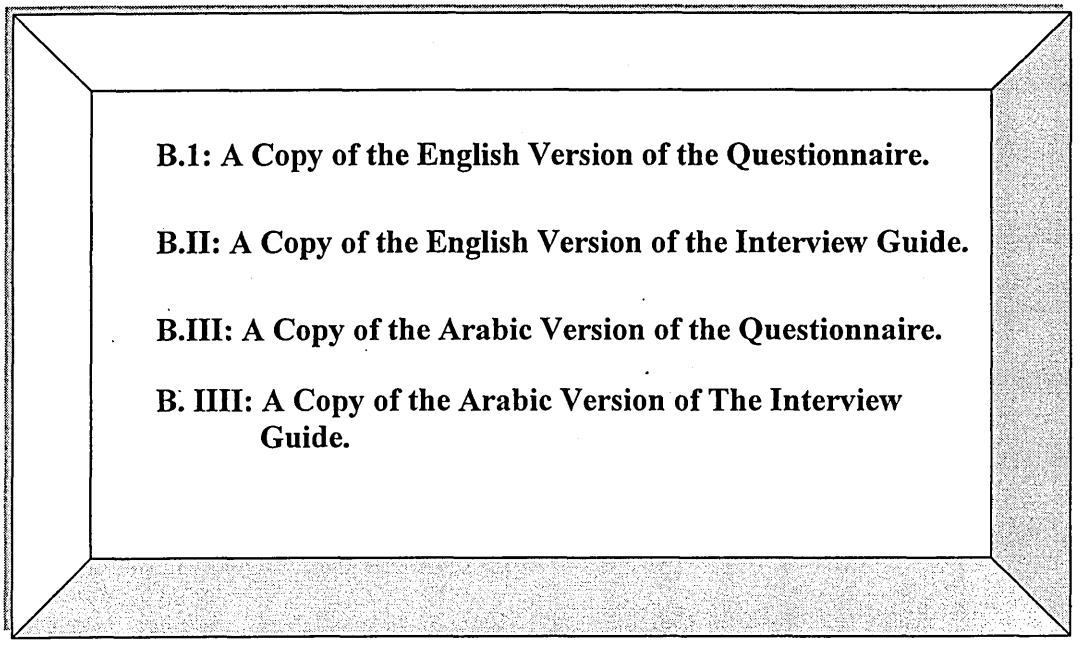
أنا طالب دراسات عليا في جامعة شفيلد في بريطانيا مبتعث من قبل جامعة الإمام محمد بن سعود الإسلامية للدراسة في مجال الخدمات المالية، وأقوم بعمل رسالة دكتوراه عن مخاطر تغير أسعار صرف العملات على الشركات والبنوك السعودية. وكجزء مهم لإتمام الدراسة فقد قمت بإعداد هذه الإستبانة لخدمة هذا الغرض، حيث تشتمل هذه الإستبانة على مجموعة من الاستفسارات الهدف منها التعرف على مدى تعرض الشركات السعودية لخطر تغير أسعار الصرف الأجنبي وكيفية تعامل هذه الشركات والبنوك مع هذا النوع من المخاطر.

فكما هو معلوم لدى سعادتكم أن هناك تفاوت واضح في بعض أسعار صرف العملات الأجنبية مقابل الريال السعودي مما يؤثر على إيرادات أو مصروفات الشركات السعودية التي تقوم بالاستيراد أو التصدير من و إلى الخارج. فمثلاً، عند قيام شركة سعودية باستيراد بضاعة من الخارج "خارج المملكة" وتستلم البضاعة بعد عقد الاتفاق مباشرةً على أن يتم الدفع بالعملة الأجنبية في فترة مستقبلية "ثلاث او ست شهور أو سنة" مما يجعل الشركة السعودية معرضة لمخاطر تغير أسعار الصرف خلال هذه المدة. والباحث من خلال هذه الدراسة يرغب في التعرف على ما إذا كان هناك خطر حقيقي يهدد الشركات من التغيرات الحاصلة في أسعار الصرف ونوعية السياسات التي تستخدمها الشركات لتغطية هذا الخطر.

لذا أرجو من سعادتكم التلطف بالإطلاع ومن ثم تلبية رغبتي بملء الاستبانه المرفقة والتي سوف يتم التعامل معها بسرية تامة جداً. مساعدتك في تعبئة هذه الاستبانة سوف تكون محل تقدير الباحث وسوف تساعد على تحقيق الأهداف المرجوة من هذه الدراسة والوصول إلى التوصيات المناسبة والتي من الممكن الاستفادة منها في خدمة المصلحة العامة. وأخيراً أشكر سعادتكم على استقطاع بعض من وقتكم في سبيل خدمة البحث العلمي الهادف كما وأنني على استعداد تام لتلقي أي استفسار عن طريق الاتصال بهاتف رقم 056146765 أو عن طريق البريد الإلكتروني على العنوان: falmohaimeed@hotmail.com

مقدم الطلب: فهد المحيميد
القصيم/ بريده / ص. ب 5272

Appendix B: The Questionnaire and Interview Guide



B.1: A Copy of the English Version of the Questionnaire.

B.II: A Copy of the English Version of the Interview Guide.

B.III: A Copy of the Arabic Version of the Questionnaire.

B. IIII: A Copy of the Arabic Version of The Interview Guide.

Appendix B.I: A Copy of the English Version of the Questionnaire

Confidential

Part One: About the Respondent

1. 1) Name of Organisation (optional): .....

1. 2) Name of person filling the questionnaire: .....

1. 3) Job Title: Director ☐ Financial manager ☐ Accountant manager ☐ Treasurer ☐ Other.....

1. 4) Classification of business Activity: Chemical & Oil ☐ Mining & Steel ☐ Food & Drink ☐

Electric & Electronic ☐ Cars & equipments ☐ Medical tools ☐ Cement & building tools ☐ Other .....

1. 5) How old are you? **Less than 40 years** ☐ **Between 41 & 50 years** ☐ **more than 51** ☐

1. 6) What is your qualification and area?

Diploma ☐ Bachelor ☐ Master ☐ PhD ☐ Other .....

Management ☐ Accounting ☐ Finance ☐ Economic ☐ Other.....

1. 7) What is your nationality?

Saudi Arabia ☐ Other Arabic Countries ☐ West Asian ☐ European ☐ American ☐

Other.....

1. 8) Length of employment in your company and in your current job.

years

	Work in a company	**Experience in your current job**
Less than 1 year	☐	☐
Between 1 and 3 years	☐	☐
Between 3 and 5 years	☐	☐
Between 5 and 10 years	☐	☐
Over 10 years	☐	☐

1. 9) Which of the following kinds of ownership can describe your company?

Shareholders company ☐ Individual company ☐ Family company ☐ Others, Please specify .....

1.10) Does at least one of the firm's owners or shareholders hold more than 10% of the firm's equity or capital?

Yes ☐ **No** ☐

1. 11) Does the manager own the company, or is he one of its main shareholders, or is he just employed by the owners of the company as a manager?

The manager is not one of the company | Managers owns less than 10% of the firm's | Managers owns more than 10% of the firm's

owners ☐ equity ☐ equity ☐

1. 12) In your company, how you can describe level of the performance related monetary compensation ?

No monetary compensation ☐ Low monetary compensation ☐ High monetary compensation ☐

1. 13) Does your company have an equity compensation system? Yes ☐ No ☐

1. 14) Could you please define the annual salary for the manager?

The manager annual income is less than 50000 pounds ☐ The manager annual income is between 50000 and 150000 pounds ☐ The manager annual income is more than 150000 pounds ☐

1. 15) Which kind of foreign trade does your company practice?

Export ☐ **Import** ☐ **Export and Import** ☐ **No foreign trade** ☐

1. 16) Are you the one who is responsible for the management of the foreign exchange risk? **Yes** ☐ **No** ☐

Part Two: The Characteristics of Your Company

2. 1) The following table concerns some facts and figures about your company, could you please complete this table

[For part a to I, please tick the box which most accurately describes your company]

	Items	No	1-20%	21-50%	51-80%	81-100%
a	The percentage of your company's **sales** made in **foreign** (non KSA) markets					
b	The percentage of your company's **inputs purchased** in foreign (non KSA) markets					
c	The percentage of your company's key **competitors** based in **foreign** (non KSA) countries					
d	The percentage of your company's **debt** denominated in **foreign** currencies					
e	The percentage of your company's main **competitors** face cost denominated in the same currencies as your company					
f	The percentage of your company's profit to the total sales					
g	The percentage of your company's debt to the total assets					
h	The percentage of the distributed dividend					
i	The percentage of the cash flows to the total assets					

2.2) From your company's annual report 2000/2001, could you please complete these items:

a) The total Sales.

☐ Less than 5 million Riyal

☐ From 5 million Riyal to less than 10 million Riyal

☐ From 10 million Riyal to less than 50 million Riyal

☐ From 50 million Riyal to less than 100 million Riyal

☐ From 100 million to less than 500 million Riyal

☐ From 500 million Riyal to less than billion Riyal

☐ From billion Riyal to less than 2 billion Riyal

☐ More than 2 billion

b) Total Assets.

- ☐ Less than 5 million Riyal
- ☐ From 5 million Riyal to less than 10 million Riyal
- ☐ From 10 million Riyal to less than 50 million Riyal
- ☐ From 50 million Riyal to less than 100 million Riyal
- ☐ From 100 million to less than 500 million Riyal
- ☐ From 500 million Riyal to less than billion Riyal
- ☐ From billion Riyal to less than 2 billion Riyal
- ☐ More than 2 billion

c) Capital Assets.

- ☐ Less than 5 million Riyal
- ☐ From 5 million Riyal to less than 10 million Riyal
- ☐ From 10 million Riyal to less than 50 million Riyal
- ☐ From 50 million Riyal to less than 100 million Riyal
- ☐ From 100 million to less than 500 million Riyal
- ☐ From 500 million Riyal to less than billion Riyal
- ☐ From billion Riyal to less than 2 billion Riyal
- ☐ More than 2 billion

d) The company's Research & Development expenditures.

- ☐ Less than 100 thousand Riyal
- ☐ From 100 thousand Riyal to less than 500 thousand Riyal
- ☐ From 500 thousand Riyal to less than million Riyal
- ☐ From million Riyal to less than 5 million Riyal
- ☐ From 5 million Riyal to less than 10 million Riyal
- ☐ From 10 million Riyal to less than 100 million
- ☐ More than 100 million Riyal
- ☐ No expenditures

e) The total Debt.

- ☐ Less than million Riyal
- ☐ From million Riyal to less than 5 million Riyal
- ☐ From 5 million Riyal to less than 10 million Riyal
- ☐ From 10 million Riyal to less than 50 million Riyal
- ☐ From 50 million Riyal to less than 100 million Riyal
- ☐ From 100 million Riyal to less than 500 million Riyal
- ☐ From 500 million Riyal to less than billion Riyal
- ☐ More than billion Riyal

Part Three: The Effect of Exchange Rate Movements on your Company

3. 1) Without the use of hedging activity, how sensitive to changes in foreign exchange rates do you consider your company's sales volumes, Purchase volume, profit margins, costs and cash flows to be? {Please choose the appropriate pox}

		Highly Insensitive	Insensitive	Neutral	Sensitive	Highly Sensitive
a)	**Sales Volumes**	☐	☐	☐	☐	☐
b)	**Profit Margins**	☐	☐	☐	☐	☐
c)	**Costs**	☐	☐	☐	☐	☐
d)	**Cash Flows**	☐	☐	☐	☐	☐
E)	**Purchase Volumes**	☐	☐	☐	☐	☐

3. 2) Please indicate the extent to which significant movements in each of the following currencies (against riyal) would **affect the risk level** in your investment portfolio.

Types of currency	Extremely affect	Very affect	Effect	Not so affect	Not affect
Japanese yen					
Egyptian Pound					
Indian rupee					
British Pound					
Korean won					
Indonesian Rupiah					
Malaysian ringgit					
Pakistan Rupee					
Philippine Peso					
Taiwan Dollar					
Turkish Lira					
Moroccan Dirham					
Brazilian Real					
EUR					
France Franc					
Chinese yuan					
Italy Lira					
Netherlands Guilder					
Spain Pesota					
Deutsche Mark					
American Dollar					
Greece Drachma					
Others, please specify:					

3. 3) Please chose any of the following statements that describe your company's international trade, and if that has a positive or negative effect on the riskeness of your company's foreign currency fluctuations.

	Items	Factor volume				Kind of effect		
		All	Most	Some	No One	Positive	Negative	No effect
1	Our exports are priced in US dollar which is fixed against Riyal							
2	The appreciation of Saudi Riyal against other currencies is helpful for us.							
3	Our export revenues are received in Saudi Riyal.							
4	Our import costs are paid in Saudi Riyal.							
5	All our imports are priced in US dollar.							
6	We are always dealing with only one or two countries which their currencies are significantly fixed in Saudi's Riyal.							
7	Our exports are priced in strong currencies rather than US dollar							
8	Our import costs are paid in strong currencies							

	rather than US dollar							
	Other please specified,.....							

3.4) Overall, how would you describe the volatility of the foreign exchange rates in your company.

a) **Very volatile.** ☐

b) **Moderately volatile.** ☐

c) **Slightly volatile.** ☐

d) **Totally not volatile** ☐

Other, please specify:.....

Part Four: The Internal Environment of your Company

4.1) How sensitive is the demand for your company's main products to changes in price?

Inelastic demand	Slightly inelastic demand	Not sure	Slightly elastic demand	Elastic demand
☐	☐	☐	☐	☐

4.2) To what extent are the product/s sold by your company differentiated from those of your competitors?

Highly differentiated	differentiated	Not sure	Closed	The same
☐	☐	☐	☐	☐

4.3) Which one of the following risks are relevant to your company?

	Not Relevant	Slightly Relevant	Neutral	Slightly Relevant	Very Relevant
1 Financial Risk.	☐	☐	☐	☐	☐
2 Interest Risk.	☐	☐	☐	☐	☐
3 Economic Risk.	☐	☐	☐	☐	☐
4 Political Risk.	☐	☐	☐	☐	☐
5 Debt & Equity Markets Risk	☐	☐	☐	☐	☐
6 Industry Risk	☐	☐	☐	☐	☐

4.4) Could you please define to what extent you agree with following statements relating to your company?

The Statement	Agree	Rather agree	Nature	Rather Disagree	disagree
1 The company's owners participate in the decision of the					

	strategy and plan to grow up the company	1	2	3	4	5
2	the company's total sales have been improved	1	2	3	4	5
3	Most of our company's profits were paid as dividend to the firm's owners	1	2	3	4	5
4	the owners of the company satisfied with improvement in a company	1	2	3	4	5
5	our company has adopted a monitoring device system to control the relationship between managers and owners	1	2	3	4	5
6	In our company the management compensation system has been linked to the corporate performance	1	2	3	4	5
7	our company's ability to service its debt is low	1	2	3	4	5
8	The percentage of our firm's debt is high	1	2	3	4	5
9	In our industry the probability of going bankrupt is very high	1	2	3	4	5
10	we are dealing in business where the probability of gain and loss is equal	1	2	3	4	5
11	The risk management tools available in the markets to hedge the foreign exchange risk are very risky	1	2	3	4	5
12	Our ability in managing the financial risk protect our expected cash flow	1	2	3	4	5
13	We always have a plan to improve our investment opportunities	1	2	3	4	5
14	the ability of our company to get over the financial problems increase our financial opportunities	1	2	3	4	5
15	the investment opportunities in our markets are good	1	2	3	4	5
16	we finance our investment by increasing the company's capital or asking the owners for help	1	2	3	4	5
17	we present our financial statements in a way which can increase our probability to receive more flexible external finance	1	2	3	4	5
18	We have more flexibility to get external funding under flexible conditions	1	2	3	4	5
19	in our company the cost of external finance is cheaper as our financial risk is low	1	2	3	4	5
20	Our cash flow has been improved	1	2	3	4	5
22	from our normal activities we can generate enough cash flow for future investments	1	2	3	4	5

4.5) Could you please define to what extent you agree with following statements relating to your company?

	The Statement	Agree	Rather agree	Nature	Rather Disagree	disagree
1	The firm tends to use an accounting approach which minimize the negative effect of the exchange rates movements on the data which was presented to shareholders and analysts	1	2	3	4	5
2	Implementing a risk management policy/ strategy is very costly	1	2	3	4	5
3	We feel the cost of hedging the financial risk is exceeding the benefits from it	1	2	3	4	5
4	Using derivatives for hedging the currency risk is very costly					

		1	2	3	4	5
5	In our company we have a qualified people to deal with financial risk management	1	2	3	4	5
6	In or company we have qualified people on how to use risk management tools (the derivative contracts)	1	2	3	4	5
7	In our company we have financial a risk management strategy	1	2	3	4	5
8	In our company we have a policy in the use of financial derivatives	1	2	3	4	5
9	We are hedging our foreign exchange risk but not interest with the results we got	1	2	3	4	5
10	Our company sometimes carries some training programs in hedging foreign exchange risk	1	2	3	4	5
11	In our company the operating departments such as sales department and purchasing department are participating in the preparation of the financial risk management strategy	1	2	3	4	5
12	There is a high level of coordination between the different departments in our company	1	2	3	4	5
13	Other departments usually provide me with relevant information about the foreign exchange exposure in the company	1	2	3	4	5
14	We do not have any foreign exchange risk in our company.	1	2	3	4	5
15	We have difficulty in understanding the relevance and importance of our currency exposure	1	2	3	4	5
16	We are unable to measure our currency exposure with the necessary accuracy	1	2	3	4	5
17	We always pay dividend to our shareholders	1	2	3	4	5
18	In the company there is a criteria and standard in evaluating the manager's performance	1	2	3	4	5
19	Our profit has been dramatically increased.	1	2	3	4	5

Part Five: Foreign Exchange Risk Management Practices Of Your Company

5. 1) Does your company forecast its future foreign currency cash flow?

No ☐ **Yes** ☐

For what time horizons are these forecasts made?

[Please Tick one]

- Up to one week ☐
- Up to two weeks ☐
- Up to one month ☐
- Up to one year ☐
- Greater than one year

☐

5. 2) Please indicate the extent to which of the following **internal hedging methods** can be used in your company to hedge the foreign exchange risk.

Methods	Used to hedge short-term currency risk			Used to hedge long-term currency risk		
	not used	Occasionally used	Frequently used	not used	Occasionally used	Frequently used
Netting						
Matching						
Leading and Lagging						
Currency invoicing						
Sales price adjustment						
Reinvoicing Centre						
Others please specify						

5. 3) Please indicate the extent to which of the following **external hedging methods** can be used in your company to hedge the foreign exchange risk

Methods	Used to hedge short-term currency risk			Used to hedge long-term currency risk		
	not used	Occasionally used	Frequently used	not used	Occasionally used	Frequently used
Forward exchange contract						
Currency Future contract						
Currency Option contract						
Local Currency Borrowing						
Foreign currency borrowing						
Currency Swaps						
Compensation of forward contract and option contract						
Immediate buying of foreign currencies to cover future payment						
Government exchange risk guarantees						
Others please specified						

5. 4) Please indicate the extent to which of the following **Operational hedging methods** can be used in your company to hedge the foreign exchange risk.

Methods	Used to hedge short-term currency risk			Used to hedge long-term currency risk		
	not used	Occasionally used	Frequently used	not used	Occasionally used	Frequently used
Adjusting prices						
Adjusting marketing strategies						
Adjusting sources of inputs						
Diversification						

Others please specify						

5.5) Which type of currency risk does your company incur?

Transaction Risk ☐
(The risk that the domestic currency value of a future payment or receipt denominated in a foreign currency may vary as a direct result of changes in exchange rates).

Pre-transaction Risk ☐
(This is exchange risk arising in the near future and before entering into a commercial contract (e.g. exposure from publication of a price list, submission of a tender, a decision to purchase a piece of capital equipment before an order is placed, etc).

Competitive Risk ☐
(The risk a corporation experiences when changes in the exchange rate affect the local or foreign denominated future cash flows, which depend on the competitive structure of the markets in which the corporation obtains its inputs and sell its outputs).

Supply & Demand Risk ☐
(The volatility on the exchange rate may affect the supply and demand position of the company's volume of sales and purchases or its prices or costs).

5.6) How completely does your company hedge the following risks?

	Hedge Completely	Hedge Partially	Do Not Hedge
a) **Transaction Risk**	☐	☐	☐
b) **Pre-transaction Risk**	☐	☐	☐
c) **Competitive Risk**	☐	☐	☐
d) **Supply & Demand Risk**	☐	☐	☐

5.7) Which one of the following best characterized your company's attitude (your attitude) to foreign exchange risks?

	Items	Yes	No
1	**We are hedging our foreign exchange risk**	☐	☐
2	**We have no small amount of foreign exchange exposure and as a result we do not have any hedging activity**	☐	☐
3	**We are hedging our foreign exchange exposure but our purpose is to generate some**	☐	☐

	gains	☐	☐
4	**The movements in foreign exchange rate are affecting our company and while we know that there are some methods for hedging the foreign exchange exposure but we do not hedge**	☐	☐
5	**The movements in foreign exchange rate are affecting our company but we do not hedge our exposure as we feel hedging process is difficult and we have more important problems than foreign exchange risk**	☐	☐
6	**The movements in foreign exchange rate are affecting our company however we do not have enough experience on how to manage foreign exchange exposure**	☐	☐
7	**The movement in foreign exchange rate negatively affect our company and I am interested in hedging the risk but my company policy rejects hedging activity**	☐	☐
8	**The movements in foreign exchange rates are affecting our company and we are interested to hedge but the hedging instrument contracts which are available for hedging are prohibited from an Islamic point of view.**	☐	☐

Part Six: The Company External Environment

6.1) Is it possible to say that your company's markets are dominated by a small number of companies?

☐ No ☐ One company ☐ Two or three companies ☐ Four companies

☐ More than four companies

Is your company one of these companies which control markets.

yes ☐ No ☐

6.2) How can you describe your company's markets?

Competition market ☐ Price regulated market ☐ Oligopolistic market ☐

6.3) How many banks your company is dealing with.

One bank ☐ Two banks ☐ Three banks ☐ Four banks ☐ More than four banks ☐

6.4) Does your company have a strong relationship with any bank who offer your company a special service.

yes ☐ Strong relationship with many banks ☐ No special relationship ☐

6.5) How many years have your company had in a special relationship with one of these banks?

From one year to three years ☐ From 4 years to 7 years ☐ From 8 years to 12 years ☐ From 13 years to 15 years ☐ More than 15 years ☐

6.7) Could you please define to what extent you agree with the following statements relating to your company?

	The Statement	**Agree**	**Rather agree**	**Nature**	**Rather Disagree**	**disagree**
1	The market regulation reduces the impact of the foreign exchange rates movements	**1**	**2**	**3**	**4**	**5**

2	The exchange rate regulation hinders foreign exchange risk management	1	2	3	4	5
3	The market regulation hinders foreign exchange risk management	1	2	3	4	5
4	The exchange rate regulation reduce the impact of the foreign exchange rate movements	1	2	3	4	5
5	The treasury department in our bank visit our company in order to provide us with information on how to manage the foreign exchange risk	1	2	3	4	5
6	We usually receive some leaflets and recommendations on how to manage exchange risk from our bank	1	2	3	4	5
7	The derivative contracts (forward, future, option, and swap contracts) are prohibited from Islamic "Shariah"	1	2	3	4	5
8	As there are no acceptable financial contracts (from Islamic 'Shariah') in the market to hedge currency exposure, does this affect your ability to hedge	1	2	3	4	5
9	The absence of the local markets for the forward, future, and option contracts affect our understanding of these contracts as methods for hedging purpose.	1	2	3	4	5

Thanks for filling this questionnaire and if you want to added any comment please use this space

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Yours Sincerely

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Appendix B.II: A Copy of the English Version of the Interview Guide

Section One:
General Information about the Company

The purpose of this section is to explore the firm's internal characteristics which may affect the hedging decision. The questions in this section seek to identify firms' characteristics for both the hedging and non-hedging firms.

Q1: What is the firm industry?

Q2: Can you describe the company ownership structure?

Q3: What kind of international trading does your company practice?

Q4: What is the percentage of your company's foreign purchases from the total purchases? *No* *1%-20%* *21%-50%* *51%-80%* *81%-100%*

Q5: What is the percentage of your company's foreign sales from the total sales?

No *1%-20%* *21%-50%* *51%-80%* *81%-100%*

Q6: What are the total sales, the total assets, and the capital of the company?

Q7: How possible it is to reduce the agency conflicts between managers and owners?

Q8: How possible it is for the company to increase the investment opportunities?

Q9: What are the things that may increase the probability of going bankrupt?

Q10: How possible it is for the company to reduce the corporate finance costs?

Section Two:

The Foreign Exchange Exposure Management Characteristics

The aim of this section is to explore the firm's foreign exchange exposure management strategy. This part is to identify if the firms in the interviews were hedging their currency exposure and to identify some factors that may interrupt a firm from hedging. A brief introduction for the different currency exposure management methods available is presented.

Q1: Does your company manage the currency exposure?

(Internal, Operational, Financial Hedging Techniques)

Q2: Does your company have a risk management policy?

Q3: What do you think about the costs of implementing the hedging strategy?

(High or Low)

Q4: Does your company usually forecast the future exchange rates?

Q5: How many foreign currencies does your company use in its exports and imports activities?

Q6: Do you think there is any Islamic solution to the currency exposure?

Section Three:
The Manager's Characteristics

The aim of this section is to explore the effect of the management and risk managers' characteristics in hedging decision. This section is to determine the attitude and ability of the financial manager against currency exposure in their firms and whether they see hedging as important to their firms.

Q1: What is your position in the company?

Q2: What is the length of time working in the company?

Q3: What is the length of time working in the current job?

Q4: What is the level and the area of your qualification?

Q5: Does your company have any managerial compensation system?

If yes can you describe it?

Q6: Is the manager of the company one of the company's owners? Yes No

Section Four:
The External Environments

The aim of this section is to identify the firm's external factors which may influence the decision to hedge or not to hedge the currency exposure.

Q1: Can you describe your company's markets? (the output and market sources)

Q2: Could you please describe the competitive position of your company in the markets? Why you describe your company's competition level like this?

Q3: Can you describe the relationship between your company and banks?

Q4: Does your company use a specific accounting method in order to minimize the effect of the exchange rate movements in the financial statement?

Q5: Does the market and exchange rate regulation affect the level of currency exposure?

Section Five:
The Determinants of Hedging Decision

The aim of this section is to address any missing or uncovered factors that may influence the currency exposure hedging decision. To ask the interviewees about the determinants of the currency exposure hedging decision, it was decided to ask the interviewees this question;

What are the determinants of the hedging or not to hedge decision in your company'? After that the interviewer was asked the question, 'are there any further factors that influence his decision to hedge or not to hedge'? After that the interviewer asked another question, "When did you decide to hedge or not to hedge and on what basis did you build your decision?

Appendix B. III: A Copy of the Arabic Version of the Questionnaire

الجزء الأول:
معلومات عامه عن الشركة

1) إسم الشركة .....
2) إسم الشخص المجيب علىالإستبانة .....
3) مسمى الوظيفة .....

4) تصنيف أعمال الشركه ☐ بترول و كيماويات ☐ مواد غذائية ☐ أدوية ومستلزمات طبية
☐ مواد كهربائية و الكترونية ☐ اسمنت ومواد بناء ☐ سيارات ومعدات
☐ تعدين أخرى.....

5) كم عمر الشخص المسؤول عن إدارة المخاطر المالية والادارية للشركة؟
☐ أقل من 40 سنة ☐ بين 41 و 50 سنة ☐ أكبر من 51 سنة

6)ماهو المؤهل والتخصص العلمي للشخص المسؤول عن إدارة المخاطر المالية والادارية للشركة؟
☐ دبلوم ☐ بكالوريوس ☐ ماجستير ☐ دكتوراة ☐ اخرى.....
☐ ادارة ☐ محاسبة ☐ مالية ☐ إقتصاد ☐ اخرى .....

7) ماهي جنسيتك؟
☐ سعودي ☐ دولة عربية أخرى ☐ شرق آسيا
☐ أوروبي ☐ أمريكي ☐ اخرى .....

8) ماهي مدة عملكم في الشركة وكذالك مدة تواجدكم في الوظيفة الحالية؟

المدة	مدة العمل في الشركة	مدة العمل في الوظيفة الحالية
أقل من سنة	☐	☐
من سنة إلى ثلاث سنوات	☐	☐
من ثلاث سنوات إلى خمس سنوات	☐	☐
من خمس سنوات إلى عشر سنوات	☐	☐
أكثر من عشر سنوات	☐	☐

9) ما هو نوع ملكية الشركة؟
☐ شركة مساهمه ☐ شركة خاصة ☐ شركة مملوكة لعائلة ☐ اخرى .....

10) هل مدير الشركة أو أحد ملاكها يمتلك أكثر من 10% من أسهم الشركة؟
☐ نعم ☐ لا

11) هل الذي يقوم بإدارة الشركة هو مالك الشركة أو لجزء من اسهمها أم هو معين من قبل ملاك الشركة؟

المدير لايمتلك شئ من أسهم الشركة ☐ المدير يمتلك أقل من 10% من أسهم الشركة ☐ المدير يمتلك أكثر من 10% من أسهم الشركة ☐

12) كيف يمكن أن تصف حوافز المالية لمديري الشركة؟

لايوجد حوافز مالية ☐ الحوافز المالية متواضعة ☐ الحوافز المالية عالية ☐

13) هل لديكم في الشركة برنامج تملك بعض أسهم الشركة كحوافز لإدارة الشركة؟ نعم ☐ لا ☐

14) هل يمكن تحديد الدخل السنوي لمدير الشركة؟

أقل من 300 ألف ريال ☐ بين 300 ألف و900 ألف ☐ أكثر من 900 ألف ريال ☐

15) أي أنواع الأنشطة التجارية التالية تمارسه شركتكم؟

استيراد ☐ تصدير ☐ استيراد و تصدير ☐ لا يوجد تعامل أجنبي ☐

16) هل تقوم بإدارة أخطار أسعار الصرف؟ نعم ☐ لا ☐

الجزء الثاني:
خصائص عامة عن الشركة

1) برجاء تعبئة الجدول التالي والذي يتضمن بعض المعلومات عن الشركة

البيان	لا يوجد	1 – 20 %	21 – 50 %	51 – 80 %	81 – 100 %
نسبة مشتريات الشركة والتي يتم شراءها من الخارج (خارج المملكة) من إجمالي مدخلات الشركة؟					
نسبة مبيعات الشركة والتي يتم بيعها في الخارج (خارج المملكة) من إجمالي مبيعات الشركة					
نسبة منافسي الشركة والمتواجدين في الخارج من المنافسة الكلية التي تواجهها الشركة					
نسبة مديونية الشركة لأطراف خارج المملكة من نسبة الدين الكلي المستحق على شركتكم					
نسبة المنافسين الذين تتحدد تكاليفهم بنفس العملات التي تتحدد بها تكاليف شركتكم					
نسبة أرباح الشركة من قيمة المبيعات					
نسبة ديون الشركة من قيمة أصول الشركة					
نسبة الأرباح التي تقوم الشركة بتوزيعها على المساهمين					
نسبة السيولة في الشركة إلى حجم أصول الشركة					

6) عن السنة المالية المنتهية 2001/2000 هل من الممكن أن تحدد:

أ) حجم مبيعات الشركة:

- ☐ أقل من 5 مليون ريال
- ☐ من 5 ملايين ريال إلى أقل من 10 ملايين ريال
- ☐ من 10 ملايين ريال إلى أقل من 50 مليون ريال
- ☐ من 50 مليون ريال إلى أقل من 100 مليون ريال
- ☐ من 100 مليون ريال إلى أقل من 500 مليون ريال
- ☐ من 500 مليون ريال إلى أقل من مليار ريال
- ☐ من مليار ريال إلى أقل من 2 مليار ريال
- ☐ أكثر من 2 مليار ريال

ب) أصول الشركة:

- ☐ أقل من 5 مليون ريال
- ☐ من 5 ملايين ريال إلى أقل من 10 ملايين ريال
- ☐ من 10 ملايين ريال إلى أقل من 50 مليون ريال
- ☐ من 50 مليون ريال إلى أقل من 100 مليون ريال
- ☐ من 100 مليون ريال إلى أقل من 500 مليون ريال
- ☐ من 500 مليون ريال إلى أقل من مليار ريال
- ☐ من مليار ريال إلى أقل من 2 مليار ريال
- ☐ أكثر من 2 مليار ريال

ج) رأسمال الشركة:

- ☐ أقل من 5 مليون ريال
- ☐ من 5 ملايين ريال إلى أقل من 10 ملايين ريال
- ☐ من 10 ملايين ريال إلى أقل من 50 مليون ريال
- ☐ من 50 مليون ريال إلى أقل من 100 مليون ريال
- ☐ من 100 مليون ريال إلى أقل من 500 مليون ريال
- ☐ من 500 مليون ريال إلى أقل من مليار ريال
- ☐ من مليار ريال إلى أقل من 2 مليار ريال
- ☐ أكثر من 2 مليار ريال

د) المبالغ التي تصرفها الشركة في البحوث و عمليات التطوير:

- ☐ أقل من 100 ألف ريال
- ☐ من 100 ألف ريال إلى أقل من 500 ألف ريال
- ☐ من 500 ألف ريال إلى أقل من مليون ريال
- ☐ من مليون ريال إلى أقل من 5 مليون ريال
- ☐ من 5 مليون ريال إلى أقل من 10 مليون ريال
- ☐ من 10 مليون ريال إلى أقل من 100 مليون ريال
- ☐ أكثر من 100 مليون ريال
- ☐ لا يوجد لدينا مصاريف من هذا النوع

ه) حجم ديون الشركة:

- ☐ أقل من مليون ريال
- ☐ من مليون ريال إلى أقل من 5 مليون ريال
- ☐ من 5 مليون ريال إلى أقل من 10 مليون ريال
- ☐ من 10 مليون ريال إلى أقل من 50 مليون ريال
- ☐ من 50 مليون ريال إلى أقل من 100 مليون ريال
- ☐ من 100 مليون ريال إلى أقل من 500 مليون ريال
- ☐ من 500 مليون ريال إلى أقل من مليار ريال
- ☐ أكثر من مليار ريال

الجزء الثالث:
تأثير تغير أسعار الصرف على الشركة

1)بدون إستخدام اساليب التغطية المتاحة، كيف لك أن تصنف مدى تأثر حجم مبيعات، الربح الحدي، تكاليف، حجم المشتريات والتدفقات النقدية في شركتكم لتغيرات التي قد تطرء على أسعار الصرف الأجنبية؟ (الرجاء اختيار المربع المناسب).

	غير مؤثر إطلاقاً	غير مؤثر	طبيعي	مؤثر	تأثير عالي
1) حجم المبيعات.	☐	☐	☐	☐	☐

2) الربح الحدي.	☐	☐	☐	☐	☐
3) التكاليف.	☐	☐	☐	☐	☐
4) التدفقات النقدية.	☐	☐	☐	☐	☐
5) حجم المشتريات.	☐	☐	☐	☐	☐

2) برجاء تحديد مدى تأثر التغير الكبير في أسعار صرف العملات التالية على مستوى الخطر الذي تواجهه أعمال الشركة؟

العملة	تأثير عالي جداً	تأثير عالي	مؤثر	غير مؤثر نوعاً ما	غير مؤثر إطلاقاً
الين الياباني					
المارك الألماني					
الربية الهندية					
الجنية الاسترليني					
الأون الكوري					
الروبية الأندونيسي					
الفرنك الفرنسي					
الربية الباكستانية					
اليره الإيطالية					
الدولار التايواني					
البيزوتا الإسبانية					
الدينار المغربي					
الريال البرازيلي					
اليورو					
الدولار الأمريكي					
اليوان الصيني					
الجنية المصري					
جلدر هولندي					
رينجن الماليزي					
دراخما اليوناني					
البيزو الفلبيني					
اليرة التركية					
أخرى تذكر من فضلك					

3) إختر من العبارات التالية مايتناسب مع نشاط شركتكم، وأي من هذة العوامل في رأيك يؤثر إيجاباً او سلباً في تقليل أو رفع معدل خطر تغير أسعار الصرف على شركتكم؟ (اختر المربع المناسب).

		حجم العامل				نوع التأثير		
		كل	معظم	بعض	لا يوجد	إيجابي	سلبي	لا يؤثر
1	صادرات الشركة مسعرة بالدولار الأمريكي (ثبات سعر صرف الريال أمام الدولار).							
2	صادرات الشركة يتم استلام مبالغها بالريال السعودي.							
3	مشتريات الشركة يتم دفعها بالريال السعودي.							
4	قوة الريال السعودي بالمقارنة مع العملات التي نتعالم معها يساعدنا كثيراً.							
5	مشترياتنا يتم دفع مستحقاتها بالدولار الأمريكي.							
6	نحن غالباً ما تنحصر تعاملاتنا مع دولة أو اثنتان و غالباً ما تكون أسعار صرفها تجاه الريال ثابتة نسبياً.							

7	صادرات الشركة مسعرة بالعملات الصعبة غير الدولار الأمريكي							
8	قيمة مشتريات الشركة يتم دفعها بالعملات الصعبة غير الدولار الأمريكي							
	أخرى, تذكر من فضلك.....							

4) بشكل عام، كيف لك أن تصف تغير أسعار الصرف التي تتعامل معها شركتكم؟

أ) متقلبة بشكل كبير. ☐

ب) متقلبة بشكل متوسط. ☐

جـ) متقلبة بشكل بسيط. ☐

د) غير متقلبة. ☐

هـ) أخرى، تذكر من فضلك: .....

.....

الجزء الرابع:
البيئة الداخلية للشركة

1) ما مدى مدونة الطلب على السلع الرئيسية لشركتكم مع التغير في الأسعار؟

☐ غير مرن ☐ غير مرن نسبياً ☐ طبيعي ☐ قليل المرونة ☐ مرن

2) إلى أي مدى تختلف منتجات شركتكم المباعة من تلك التي لدى الشركات المنافسة؟

☐ مختلفة كثيراً ☐ مختلفة ☐ يصعب التحديد ☐ مشابهة ☐ مشابهة تماما

3) أي من المخاطر التالية له تأثيره الأكبر على الشركة؟

	تأثير كبير	تأثير أقل	طبيعي	غير مؤثر	غير مؤثر إطلاقا
أ) خطر تغير أسعار الصرف.	☐	☐	☐	☐	☐
ب) خطر تغير معدلات الفائدة	☐	☐	☐	☐	☐
جـ) المخاطر الصناعية	☐	☐	☐	☐	☐
د) المخاطر الاقتصادية	☐	☐	☐	☐	☐
ه) المخاطر السياسية	☐	☐	☐	☐	☐
و) مخاطر المديونية	☐	☐	☐	☐	☐

4) برجاء بيان موافقتكم على العبارات التالية بما يتناسب والوضع في شركتكم

	العبارة	لاأوافق	لاأوافق نوعاً ما	غير متأكد	أوافق نوعاً ما	أوافق
1	ملاك الشركة يساهمون في إعداد استراتيجيات الشركة وخططها المستقبلية للتطوير	1	2	3	4	5
2	مبيعات الشركة في تطور مستمر	1	2	3	4	5
3	معضم ارباح السركة يتم توزيعها على ملاك الشركة والمساهمين	1	2	3	4	5

4	ملاك الشركة والمساهمون راضون عن مستوى التقدم الذي تحققة الشركة	1	2	3	4	5
5	لدينا في الشركة نضام مراقبة وتحكم دقيق	1	2	3	4	5
6	في الشركة يتم ربط الحوافز المقدمة لإدارة الشركة مع تقييم الأداء	1	2	3	4	5
7	قدرتنا على سداد اليون عالية	1	2	3	4	5
8	نسبة ديون الشركة عالية	1	2	3	4	5
9	إمكانية الإفلاس في القطاع الذي تعمل فية الشركة عالية	1	2	3	4	5
10	نحن نعمل في أنشطة تتعادل فيها إمكانية الربح والخسارة	1	2	3	4	5
11	طرق تغطية مخاطر أسعار الصرف المتاحة في السوق تحوي نسبة كبيرة من الخطورة	1	2	3	4	5
12	قدرتنا على تغطية أسعار الصرف تساعد على حماية السيولة المتوقعة	1	2	3	4	5
13	نحن دائماً لدينا خطط لتطوير فرص الإستثمار في الشركة	1	2	3	4	5
14	قدرة الشركة على تخطي المشاكل المالية التي تواجهها يساهم في رفع فرص التمويل المتاحة للشركة	1	2	3	4	5
15	فرص الإستثمار في السوق جيدة جداً	1	2	3	4	5
16	نحن نمول مشاريع الشركة عن طريق رفع رأسمال الشركة أو طلب المساهمة من الملاك	1	2	3	4	5
17	نحن نعرض القوائم المالية بشكل يساعد في رفع إمكانية الحصول على دعم خارجي عند الحاجة	1	2	3	4	5
18	نحن لدينا مرونة كبيرة في الحصول علي تمويل خارجي بشروط مرنة	1	2	3	4	5
19	في شركتنا تكلفة الحصول على تمويل خارجي منخفضة نوعاً ما بسبب إنخفاض المخاطر المالية التي تواجهها الشركة	1	2	3	4	5
20	نسبة السيولة لدينا في الشركة في تطور مستمر	1	2	3	4	5
21	من خلال انشطة الشركة المعتادة نحن قادرون على توفير السيولة المطلوبة لتمويل إستثمارات الشركة	1	2	3	4	5

5) برجاء بيان موافقتكم على العبارات التالية بما يتناسب والوضع في شركتكم

	العبارة	لاأوافق	لاأوافق نوعاً ما	غير متأكد	أوافق نوعاً ما	أوافق
1	الشركة تستخدم طرق محاسبية معينة في عرض البيانات المالية لشركة الهدف منها تقليل نسبة مخاطر أسعار الصرف على البيانات المقدمة للمساهمين	1	2	3	4	5
2	تنفيذ سياسات إدارة المخاطر المالية مكلفة	1	2	3	4	5
3	نعتقد أن تكاليف تغطية المخاطر المالية تفوق الإستفادة المرجوة	1	2	3	4	5
4	إستخدام عقود المشتقات لتغطية مخاطر أسعار الصرف مكلف	1	2	3	4	5
5	نحن لدينا كفاءة عالية لتعامل مع تغطية المخاطر المالية	1	2	3	4	5
6	نحن لدينا كفاءة عالية في إستخدام عقود المشتقات	1	2	3	4	5
7	نحن لدينا في الشركة سياسات وخطط لإدارة المخاطر المالية	1	2	3	4	5
8	لدينا في الشركة سياسات معينة في كيفية التعامل مع عقود المشتقات	1	2	3	4	5

9	نحن نقوم بعملية تغطية مخاطر أسعار الصرف ولكن غير راضون عن النتائج التي نصل إليها	1	2	3	4	5
10	تقوم الشركة عادةً بتنضيم برامج تدريبية لكيفية تغطية مخاطر أسعار الصرف	1	2	3	4	5
11	الأقسام الإنتاجية ، المبيعات والمشتريات تساهم في عملية إعداد خطط وسياسات تغطية المخاطر المالية	1	2	3	4	5
12	لدينا في الشركة مستوى عالي من التنسيق بين الأقسام المختلفة	1	2	3	4	5
13	غالباً ما تزودنا الأقسام بالمعلومات الكافية التي تساعدنا على تحديد حجم خطر تغير أسعار الصرف الذي قد تواجهة الشركة	1	2	3	4	5
14	شركتنا لا تواجة مخاطر تغير أسعار الصرف	1	2	3	4	5
15	نحن نواجة صعوبة في فهم أهمية وصلة مخاطر أسعار الصرف في الشركة	1	2	3	4	5
16	نحن غير قادرين على تحديد حجم مخاطر أسعار الصرف بشكل معقول	1	2	3	4	5
17	نحن دائماً نوزع أرباح على المساهمين	1	2	3	4	5
18	لدينا في الشركة معايير ومقاييس لتقييم أداء إدارة الشركة	1	2	3	4	5
19	أرباح الشركة في إرتفاع مستمر	1	2	3	4	5

الجزء الخامس:
تغطية مخاطر أسعار الصرف

1)هل تقوم الشركة بالتنبؤ بقيم التدفقات النقدية الأجنبية المستقبلية؟

لا ☐ نعم ☐

ما هي المدة التي تغطيها عمليات التنبؤ هذه؟

من فضلك أختر واحدة

- ☐ لمدة أسبوع.
- ☐ لمدة أسبوعان.
- ☐ لمدة شهر.
- ☐ لمدة سنة.
- ☐ أكثر من سنة.

هناك العديد من الطرق التي يمكن لشركة استخدامها لتغطية مخاطر أسعار الصرف الأجنبي، من هذه الطرق ما يمكن أن يطلق عليه داخلي (حيث ينشأ وينفذ داخل الشركة) ومنها ما هو خارجي (حيث يتم التعاقد للتغطية مع أطراف خارجية).

2) الجدول التالي يستعرض بعضاً من أهم طرق العلاج الداخلية والخارجية والمطلوب اختيار منها ما هو مطبق في شركتكم.

	مستخدمة لتغطية مخاطر أسعار الصرف قصيرة الأجل	مستخدمة لتغطية مخاطر أسعار الصرف طويلة الأجل

الطرق الداخلية	لا تستخدم	تستخدم أحياناً	تستخدم دائماً	لا تستخدم	تستخدم أحياناً	تستخدم دائماً
تأخير أو تقديم عملية الدفع والاستلام.						
عمل شبكة ((للدفع والاستلام)) مع شركات أخرى.						
التنسيق بين المدفوعات والإيرادات لتكون من عمله واحدة.						
التسعير بالريال السعودي أو الدولار الأمريكي.						
التنسيق بين سياسات الإنتاج والتمويل والتسويق والشراء للحصول على تغطية ذاتية.						
تغيير أسعار البيع عند تغير أسعار الصرف.						
تنوع عمليات البيع والشراء لتكون من عدة مصادر أجنبية						
أخرى، تذكر من فضلك:						

الطرق الخارجية	مستخدمة لتغطية مخاطر أسعار الصرف قصيرة الأجل			مستخدمة لتغطية مخاطر أسعار الصرف طويلة الأجل		
	لا تستخدم	تستخدم أحياناً	تستخدم دائماً	لا تستخدم	تستخدم أحياناً	تستخدم دائماً
استخدام عقود أجلة التنفيذ Forward Contracts						
استخدام عقود الخيارات المالية Option Contracts						
استعدام عقود مستقبلية التنفيذ Future Contracts						
استخدام عقود المقايضة Swap Contracts						
الاقتراض بالريال السعودي.						
الاقتراض بالعملة الأجنبية						
ضمانات حكومية لتفادي مخاطر العملة.						
المزج بين العقود الآجلة وعقود الخيارات في عملية واحدة						
شراء العملة الأجنبية بشكل فوري ولإحتفاظ بها لتغطية مدفوعات مستقبلية						
أخرى، تذكر من فضلك:						

3) هل هناك بدائل أو حلول ترى أنها مناسبة ويمكن استخدامها لعلاج مشكلة مخاطر تغير أسعار الصرف غير التي ذكرت سابقاً؟

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4) أي أنواع مخاطر أسعار الصرف تواجهها الشركة؟

(أ) مخاطر تحويل العملة. ☐

((ينتج عن خطر تغير القيمة بالريال السعودي للمدفوعات أو المقبوضات المستقبلية والمحددة بعملية أجنبية عند تحويلها إلى الريال السعودي كنتيجة مباشرة للتغير في أسعار الصرف)).

(ب) مخاطر ما قبل تحويل العملة. ☐

((عند قيام الشركة بإرسال قائمة بأسعار منتجاتها للخارج (خارج المملكة) أو عند استلامها لقائمة أسعار منتجات ترغب الشركة بشرائها من الخارج فإن تغير أسعار الصرف في المستقبل قد يؤثر على القيمة المتوقع دفعها أو استلامها في المستقبل)).

(جـ) مخاطر المنافسة. ☐

((هو خطر تأثر القوة التنافسية للشركة كنتيجة لتغير أسعار الصرف)).

(د) مخاطر العرض والطلب. ☐

((خطر تأثر قوى العرض والطلب في الشركة كنتيجة لتغير أسعار الصرف)).

5) ما هي درجة التغطية التي تقوم بها الشركة للمخاطر التالية:-

	تغطية كاملة	تغطية جزئية	لا نقوم بعملية تغطية
أ) مخاطر تحويل العملة	☐	☐	☐
ب) مخاطر ما قبل تحويل العملة.	☐	☐	☐
جـ) مخاطر المنافسة.	☐	☐	☐
د) مخاطر العرض والطلب.	☐	☐	☐

6) أي من العبارات التالية يصف بشكل أفضل موقف أو توجه شركتكم تجاه أخطار أسعار الصرف الأجنبي؟(أرجوا قراءة الخيارات الثمانية التالية ومن ثم إختيار أحد هذة الخيارات والذي يناسب شركتكم)

	موقف الشركة تجاه مخاطر أسعار الصرف	**الخيار المناسب**
1	مخاطر تغير أسعار الصرف التي تواجهها الشركة ضئيلة إن لم تكن معدومة وبالتالي نحن ليس لدينا الدوافع الكافية لتغطية هذة المخاطر.	☐
2	نحن نقوم بتغطية أخطار تغير أسعار الصرف الأجنبي	☐
3	نحن نقوم بعمليات تغطيه لتغيرات أسعار الصرف وفي الغالب يكون الهدف من هذه العمليات هو المضاربة في أسعار الصرف للحصول على ربح من هذه العمليات.	☐
4	تغير أسعار الصرف الأجنبي يؤثر سلباً على شركتنا و رغم علمنا بتوفر أساليب مختلفة لتغطية هذة المخاطر إلا أننا لا نقوم بعملية التغطية	☐
5	تقلبات أسعار الصرف غالباً ماتؤثر على الشركة ومع ذلك نحن لانقوم بأي عمليات تغطية لشعورنا بصعوبة عمليات التغطية ولوجود مشاكل مالية أكثر أهمية	☐
6	تغير أسعار الصرف الأجنبي يؤثر سلباً على شركتنا ولكن لسنا متأكدين من وجود وسائل لعلاج هذه المشكلة	☐
7	نحن نعاني من مشاكل تغير أسعار الصرف وشخصياً أرغب في تغطية هذة المخاطر ولكن سياسة الشركة لا تسمح بالقيام بذلك	☐
8	تغير أسعار الصرف الأجنبي يؤثر سلباً على شركتنا ونرغب بالقيام بتغطيتة ولكن العقود المعروضة علينا من قبل البنك غير مشروعة	☐

الجزء السادس:
البيئة الخارجية للشركة

1) هل من الممكن القول أن الأسواق التي تتواجد فيها شركتكم تتم فيها المنافسة بين عدد قليل من الشركات؟

لايوجد منافسة	المنافسة من شركة واحدة	من شركتين	من ثلاث شركات	من أربع شركات	من أكثر من أربع شركات
☐	☐	☐	☐	☐	☐

هل يمكن إعتبار شركتكم واحده من الشركات التي تسيطر على السوق؟ نعم ☐ لا ☐

2) ماهو الوصف المناسب للأسواق التي تتعامل فيها شركتكم؟

أسواق نسبة التنافس فيها عالية	أسواق أسعارها متحكم فيها من قبل الحكومة	أسواق إحتكار
☐	☐	☐

3) كم عدد البنوك التي تتعامل معها الشركة؟

بنك واحد	بنكين	ثلاث بنوك	أربعة بنوك	أكثر من أربع بنوك
☐	☐	☐	☐	☐

4) هل ترتبط شركتكم بعلاقة قوية مع أحد هذه البنوك بحيث يقدم لكم خدمات وتسهيلات مالية متميزة؟

نعم	العلاقة مع أكثر من بنك قوية	لا يوجد علاقات متميزة
☐	☐	☐

5) عادةً ما تكون هناك علاقة طويلة مع أحد البنوك والمطلوب تحديد مدة هذه العلاقة

من سنة الى ثلاث سنوات	من 4 سنوات الى 7 سنوات	من ثمان سنوات الى 12 سنة	من 13 سنة الى 15 سنة	أكثر من 15 سنة
☐	☐	☐	☐	☐

6) برجاء بيان موافقتكم على العبارات التالية بما يتناسب والوضع في شركتكم

	العبارة	لاأوافق	لاأوافق نوعاً ما	غير متأكد	أوافق نوعاً ما	أوافق
1	قوانين السوق تقلل من مخاطر أسعار الصرف	1	2	3	4	5
2	قوانين صرف العملات تعيق إمكانية تغطية مخاطرها	1	2	3	4	5
3	قوانين أسعار الصرف تقلل من مخاطرها	1	2	3	4	5
4	قوانين السوق تعيق عملية تغطية مخاطر أسعار الصرف	1	2	3	4	5
5	قسم الخزينة في البنك قام بزيارتنا وقدم لنا معلومات ونصائح عن كيفية تغطية مخاطر أسعار الصرف	1	2	3	4	5
6	البنك عادة ما يزودنا بنشرات و مطويات عن كيفية تغطية مخاطر أسعار الصرف	1	2	3	4	5
7	التعامل مع عقود المشتقات غير مباح من وجهة نضر الشريعة الإسلامية	1	2	3	4	5

8	هل عدم وجود عقود مالية مناسبة ومقبولة من وجهة النضر الإسلامية يؤثر على قدرة الشركة على التغطية	1	2	3	4	5
9	عدم وجود سوق محلية لعقود المشتقات أثر في مستوى فهمنا لهذة العقود كأداة لتغطية أسعار الصرف	1	2	3	4	5

أخيراً: المساحة في الأسفل تركت لك لتقديم أي تعليقات أو معلومات إضافية ترغب في إضافتها:

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أخيراً أشكر لك تعاونك..... وأتمنى لشركتكم التقدم والإستمرار.....وتقبلوا تحياتي

فهد عبد العزيز المحيميد
صندوق بريد 5272
بريدة - القصيم - المملكة العربيه السعوديه
جوال رقم: 056146765
هاتف المنزل: 063811933

Appendix B. A Copy of the Arabic Version of the Interview Guide

دليل المقابلات الشخصية

المقدمة

الهدف من هذه المقابلات هو التعرف على كيفية تعامل الشركات السعودية مع مخاطر أسعار الصرف, كذلك التعرف على محددات اتخاذ قرار التغطية والعوامل التي قد توثر في عملية إتخاذ قرار التغطية.

الجزء الأول:
معلومات عامة عن الشركة

الهدف من هذا الجزء التعرف على مواصفات الشركة الداخلية والتي قد تؤثر على قرار التغطية في الشركة.

س1: ماهي نوعية نشاط الشركة؟

س2: هل من الممكن أن تصف نوعية الملكية في الشركة؟

س3: ماهي نوعية الأنشطة التي تمارسها الشركة في الأسواق الأجنبية؟

س4: كم نسبة مشتريات الشركة من الأسواق الأجنبية من إجمالي مشتريات الشركة؟

س5: كم نسبة مبيعات الشركة في الأسواق الأجنبية من إجمالي مبيعات الشركة؟

س6: ماهو حجم مبيعات وأصول ورأسمال اشركة؟

س7: ماهي الأشياء التي من الممكن أن تساعد على رفع من مستوى الرضا لدى المساهمين او ملاك الشركة عن أداء مدير الشركة؟

س8: ماهي الأشياء التي من الممكن أن تساعد الشركة على زيادة فرص الإستثمار المتاحة؟

س9: ماهي الأشياء التي قد تدفع بالشركة الى مواجهة مشكلة الإفلاس؟

س10: ماهي الأشياء التي من الممكن أن تساعد الشركة في تقليل من تكاليف التمويل لديها؟

الجزء الثاني:
إدارة مخاطر أسعار الصرف

الهدف من هذا القسم هو التعرف على طرق التغطية المتوفرة لدى الشركات. كذلك التعرف على الجوانب التي تعيق او تسهل عملية التغطية.

س1: هل تقومون بتغطية مشاكل أسعار الصرف؟

س2: هل لديكم في الشركة خطط لإدارة المخاطر التي تواجهكم؟

س3: ماهو رأيك تجاه تكاليف تنفيذ خطط التغطية؟

س4: هل تقومون في الشركة بالتنبؤ بأسعار الصرف المستقبلية؟

س5: كم عدد العملات الأجنبية التي تتعامل معها شركتكم؟

س6: هل هناك طرق لتغطية أسعار الصرف مقبولة من وجهة نضر الشريعة الإسلامية؟

الجزء الثالث:
خصائص المدير

الهدف من هذى الجزء هو التعرف على الخصائص المختلفة لإدارة الشركة والتي من الممكن أن تلعب دور مهم في توجية قرار التغطية. من خلال هذا الجزء نستطيع التعرف على قدرات وتوجهات إدارة الشركة تجاه مخاطر أسعار الصرف.

س1: هل من الممكن توضيح موقعك داخل الشركة (نوع وضيفتك)؟

س2: ماهي مدة عملك في الشركة؟

س3: ماهي مدة عملك في وضيفتك الحالية؟

س4: ماهو تخصصك والدرجة العلمية التي تحملها؟

س5: هل لديكم في الشركة برنامج حوافز للمديرين؟

س6: هل مدير الشركة هو ايضاً أحد ملاكها؟

الجزء الرابع:
بيئة الشركة الخارجية

الهدف من هذا القسم هو التعرف على البيئة الخارجية للشركة ومدى تأثير الضروف الخارجية المحيطة بالشركة على قرار التغطية.

س1: هل من الممكن أن تصف أسواق الشركة ؟

س2: هل من الممكن أن تصف لنا حجم المنافسة التي تواجها الشركة والقدرة التنافسية للشركة؟ مهي أسباب وصفك لحجم المنافسة التي تواجها الشركة بهذه الصورة؟

س3: هل من الممكن أن تصف علاقة الشركة بالبنوك؟

س4: هل تستخدم الشركة طريقة محسبية معينة بهدف تقليل نسبة تأثير تقلبات أسعار الصرف على المعلومات المالية المقدمة للمساهمين؟

س5: هل تؤثر قوانين السوق و قوانين أسعار الصرف في الدولة على حجم الخطر الذي تواجهة الشركة؟

الجزء الخامس:
محددات قرار التغطية

الهدف من هذا الجزء هو السؤال المباشر للمدير عن معوقات قرار التغطية داخل الشركة، الباحث ومن خلال هذا القسم يرغب في تغطية اي نقاط قد تؤثر على قرار الشركة من وجهة نضر القائمين على قرار التغطية.

هنا يتم سؤال المسؤول عن تغطية مخاطر أسعار الصرف عن محددات قرار التغطية والعوامل التي قد تحد أو تقلل من إمكانية التغطية. كذلك يتم التركيز على الأسس التي من خلالها تم اتخاذ قرار التغطية أو عدم التغطية.

Appendix C: Testing the Collinearity and the Standardized Residuals.

Figure C.1: Testing the standardized residuals in the hedging incentives model (Indicators).

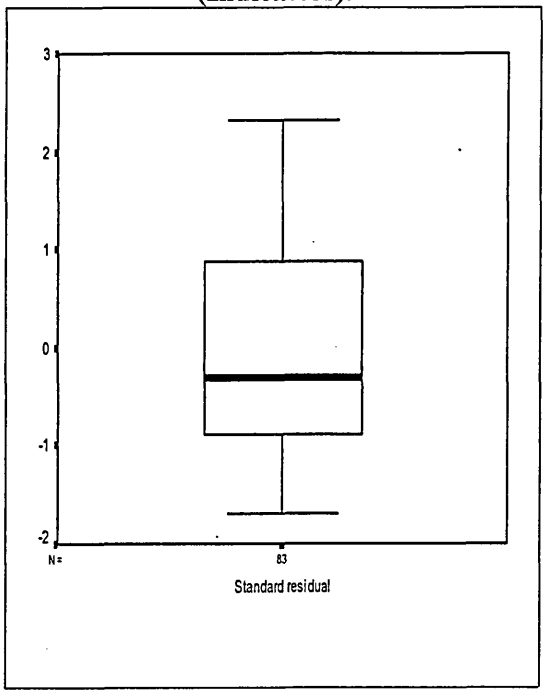

Table C.1: Testing for collinearity in the hedging incentive variables (Indicators).

The Model Independent Variable	Tolerance□
The company's owners participate on the decision of the strategy and plan to grow up the company	.310
the company's total sales have been improved	.264
Most of our company's profits were paid as dividend to the firm's owners	.638
the owners of the company satisfy with improvement in a company	.348
our company has adopted a monitoring device system to control the relationship between managers and owners	.563
our company's ability to service its debt is low	.633
The percentage of our firm's debt is high	.604
In our industry the probability of going bankruptcy is very high	.367
we are dealing in business where the probability of gain and loss is equal	.394
Our ability in managing the financial risk protect expected cash flow	.247
We always have a plan to improve our investment opportunities	.262
the ability of our company to get over the financial problems increase our financial opportunities	.498
the investment opportunities in our market are good	.412
we finance our investment by increasing the company's capital or asking the owners for help	.403
we present our financial statements in a way which can increase our probability to receive more flexible external finance	.466
We have more flexibility to get external fund under a flexible conditions	.490
in our company the cost of external finance is cheaper as our financial risk is low	.453
from our normal activities we can generate enough cash flow for future investments	.397

Figure C.2: Testing the standardized residuals in the manager risk aversion model.

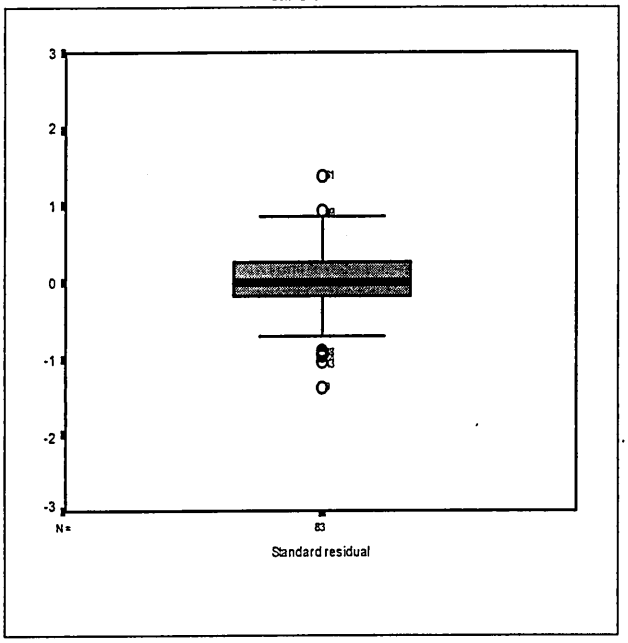

Table C.2: Testing for collinearity in the managerial risk aversion variables.

The Model Independent Variable	Tolerance□
Company's ownership	.601
Owner or Shareholders own 10% of Firm's Stock	.684
The managerial ownership on the firm	.474
The managers monetary compensation system	.877
The annual income for the manager	.764
The managers equity compensation system	.755
the age of the respondent	.950
The effect of the Islamic commercial law on the hedging decision□	.813□

Figure C.3: Testing the standardized residuals for the hedging needs variables.

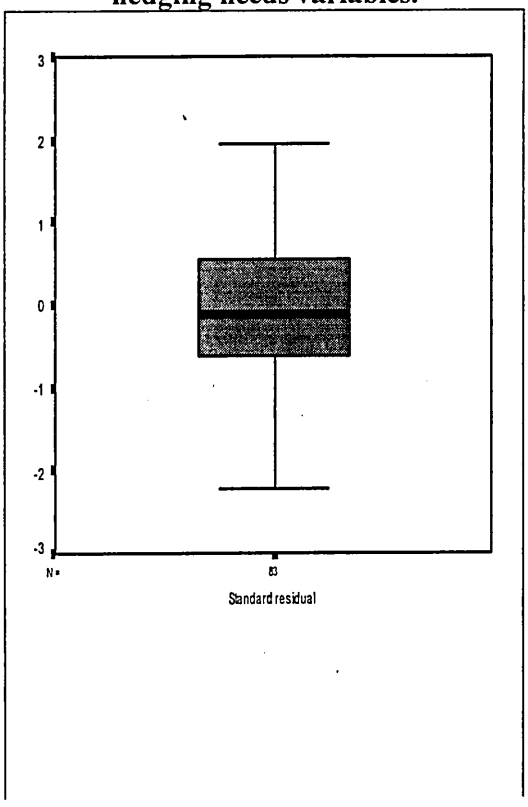

Table C.3: Testing for collinearity in the hedging needs variables.

The Model Independent Variable	Tolerance □	
	Model with collinearity problem	Model without collinearity problem
Classification of business activity	.530	.538
What is the description of your company's market (which markets)	.398	.400
The number of currencies internationally used for trade	.649	.651
The vulnerability of the firm's foreign exchange rates	.699	.702
The magnitude of the firm exports	.434	.435
The magnitude of the firm imports	.589	.642
company's sales in foreign markets	.301	.302
company's purchase from foreign markets	.575	.576
company's debt in foreign currencies	.631	.632

The relevant of the foreign exchange risk	.696	.697
The sensitivity of the main products' demand to changes in price	.625	.627
The different between the company's products sold and those of their competitors	.683	.701
The competition level	.315	.315
Number of competitors on the markets	.536	.542
The sensitivity of Sale Volumes to changes in foreign exchange rates	.365	.371□
The sensitivity of Profit Margins to changes in foreign exchange rates	.135	Excluded
The sensitivity of purchase to changes in foreign exchange rates	.357	.343
The sensitivity of costs to changes in foreign exchange rates	.334	.731
The sensitivity of Cash Flow to changes in foreign exchange rates	.827	.647
The accounting method and the effect on the accounting information	.625□	
9 Market Situation+Currency regulation hinders FXRM	.357	.343
The currency regulation reduce the impact of foreign exchange rates movements	.334	.731
8 Market Situation+Market regulations reduce the impact of exchange changes□	.827	.647

Figure C.4: Testing the standardized residuals for the hedging ability variables.

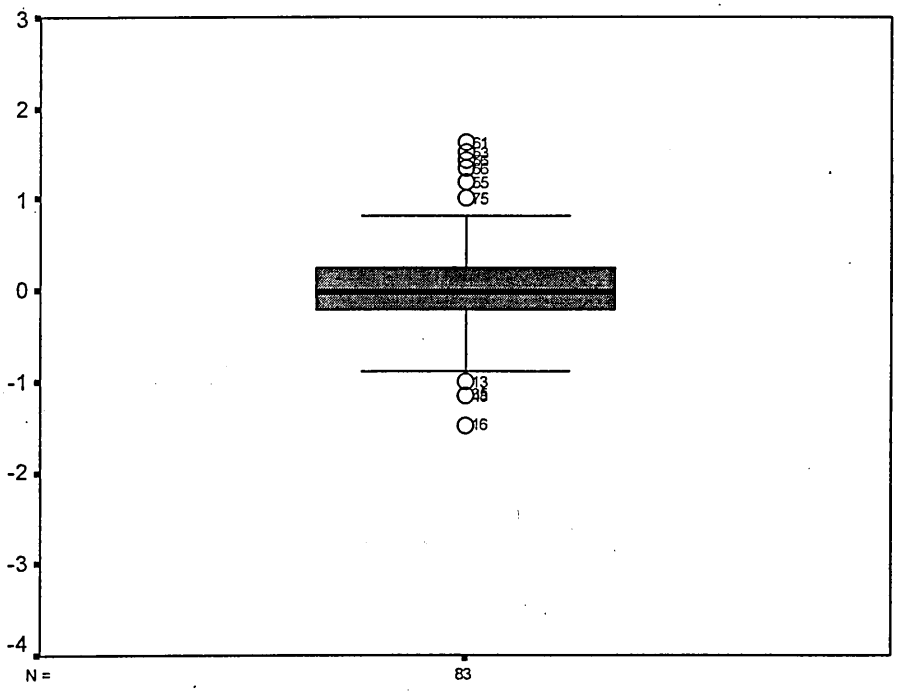

Figure C.5: Testing the standardized residuals for the final model.

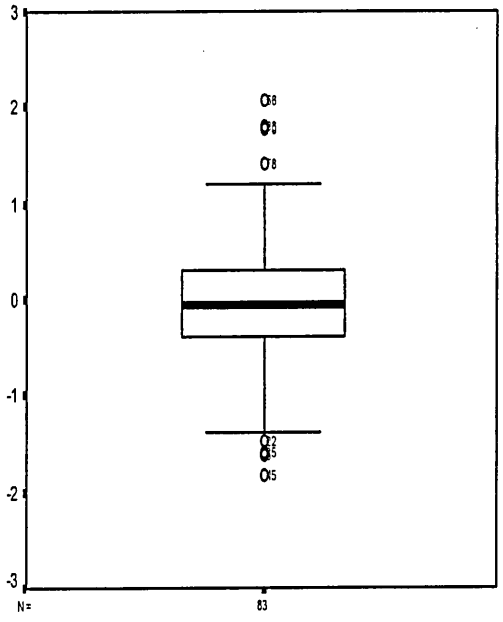

Table C.4: Testing for collinearity in the final model variables.

The Model Independent Variable	Tolerance
The total sale to asset ratio	.659
Tangible assets to total assets	.734
cash flow to total assets	.686
our company has adopted a monitoring device system to control the relationship between managers and owners	.715
Most of our company's profits were paid as dividend to the firm's owners	.608
we are dealing in business where the probability of gain and loss is equal	.713
the ability of our company to get over the financial problems increase our financial opportunities	.627
the investment opportunities in our market are good	.650
Owner or Shareholders own 10% of Firm's Stock	.637

The managers monetary compensation system	.731
The managers equity compensation system	.791
the age of the respondent	.572
The effect of they Islamic law on the hedging decision	.534
Classification of business activity	.759
What is the description of your company's market (which markets)	.681
The different between the company's products sold and those of their competitors	.614
The sensitivity of costs to changes in foreign exchange rates	.630
the respondent qualification	.668
The length or period of experience in risk management practices	.664
we run some training program in hedging FXR	.692
The relationship with bank	.623
The cost of implementing the foreign exchange risk management	.553
The participation of the operating departments in currency risk management strategy	.684
The nationality of the one who responsible for risk management□	.697□

Figure C.6: Testing the standardized residuals for the hedging incentives model (accounting ratio).

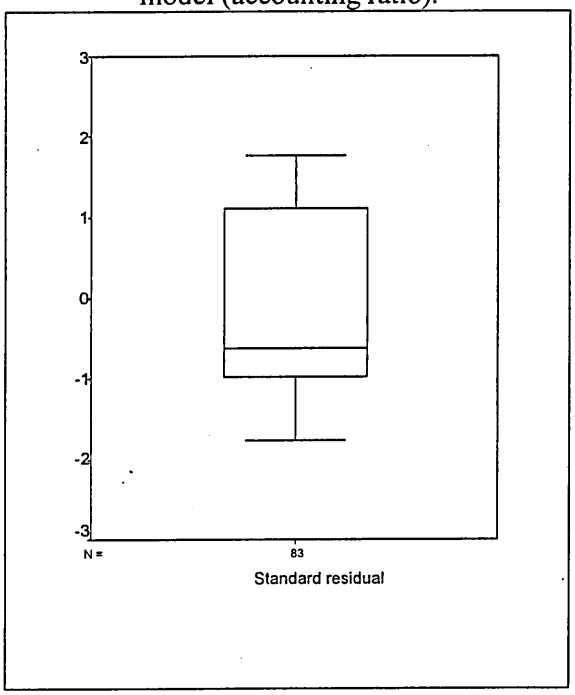

Table C.5: Testing for collinearity in the hedging incentive variables (accounting ratio).

The Model Independent Variable	Tolerance□
Leverage	0.822
Debt service coverage	0.813
R&D expenses ratio	0.910
The total sale to total asset ratio	0.807
The expenses to total sales ratio	0.891
Tangible ratio	0.930
The cash flow to total assets ratio	0.937
Operating profit margin ratio	0.868□

Appendix D. Tests of Normality

Table D.1: Tests of normality for hedging incentives variables (Accounting ratios)

Variables	Kolmogorov-Smirnov		
	Statistic	df	Sig.
Leverage	.075	83	.078
Debt Service Coverage	.083	83	.061
Operating Profit Margin	.062	83	.113
The Total Sale to Total Asset Ratio	.066	83	.091
The Expenses to Total Sales Ratio	.071	83	.084
R & D Ratio	.077	83	.071
The Cash Flow to Total Assets Ratio	.081	83	.064
Tangible Assets	.064	83	.102

Not: Field (2001) stated that "if the test is non-significant ($p > 0.05$) it tells us that the distribution of the sample is not significant different from a normal distribution (i.e. it is probably normal). If, however, the test is significant ($p < 0.05$) then the distribution in question is significantly different from a normal distribution (i.e. it is non-normal).

Table D.2: Tests of normality for the hedging incentive variable (Indicators)

Variables	Indicator number	Indicator	Kolmogorov-Smirnov		
			Statistic	df	Sig.
Agency Costs	1	The company's owners participate on the decision of the strategy and plan to grow the company	.243	83	.000
	2	The company's total sales have been improved	.260	83	.000
	3	Most of our company's profits are paid as dividend to the firm's owners	.290	83	.000
	4	The owners of the company satisfied with improvement in the company	.218	83	.000
	5	Our company has adopted a monitoring device system to control the relationship between managers and owners	.281	83	.000
Financial Distress Costs	7	Our company's ability to service its debt is low	.180	83	.000
	8	The percentage of our firm's debt is high	.264	83	.000
	9	In our industry the probability of going bankrupt is very high	.227	83	.000
	10	We are dealing in business where the probability of gain and loss is equal	.219	83	.000
Investment Opportunities	12	Our ability in managing the financial risk protects our expected cash flow	.268	83	.000
	13	We always have a plan to improve our investment opportunities	.244	83	.000

Variables	Indicator number	Indicator	Kolmogorov-Smirnov		
			Statistic	df	Sig.
	14	The ability of our company to get over the financial problems increase our financial opportunities	.225	83	.000
	15	The investment opportunities in our market are good	.249	83	.000
Corporate Finance Cost	16	We finance our investment by increasing the company's capital or asking the owners for help	.230	83	.000
	17	We present our financial statements in a way which can increase our probability to receive more flexible external finance	.215	83	.000
	18	We have more flexibility to get external fund under a flexible conditions	.225	83	.000
	19	In our company the cost of external finance is low as our financial risk is low	.222	83	.000
	21	From our normal activities we can generate enough cash flow for future investments	.271	83	.000□

Table D.3: Tests of normality for managerial risk aversion variables

Variables	Kolmogorov-Smirnov		
	Statistic	df	Sig.
Organisation Form	.269	83	.000
Firm Control	.471	83	.000
Managerial ownership	.374	83	.000
Managerial performance monetary compensation system	.311	83	.000
The equity compensation system	.212	83	.000
The manager's annual salary	.387	83	.000
Manager's age	.231	83	.000
Islamic commercial law	.175	83	.000□

Table D.4: Tests of normality for hedging need variables

Variables	Kolmogorov-Smirnov		
	Statistic	df	Sig.
Industries	.145	82	.000
Markets	.342	82	.000
Diversification	.272	82	.000
The volatility of the foreign exchange rates that a firm uses in international trading	.257	82	.000
The magnitude of the firm's foreign denominated exports	.250	82	.000
The magnitude of the firm's foreign denominated imports			

Variables	Kolmogorov-Smirnov		
	Statistic	df	Sig.
The company's debt in foreign currencies	.324	82	.000
The company's purchases in foreign currencies	.229	82	.000
The company's sales in foreign currencies	.214	82	.000
The relevance of the risks	.336	82	.000
The sensitivity of the main products' demand to the changes in price	.179	82	.000
The difference between the company's products and those of their competitors	.249	82	.000
Number of competitors on the markets	.228	82	.000
The sensitivity of purchase volumes to changes in foreign exchange rates	.212	82	.000
The sensitivity of sale volumes to changes in foreign exchange rates	.268	82	.000
The sensitivity of profit margins to changes in foreign exchange rates	.305	82	.000
The sensitivity of costs to changes in foreign exchange rates	.250	82	.000
The sensitivity of cash flows to changes in foreign exchange rates	.299	82	.000
Accounting approach	.230	82	.000
The currency regulation hinders foreign exchange risk management	.190	82	.000
The currency regulation reduces the impact of the foreign exchange rate movements	.231	82	.000
The market regulation reduces the impact of the foreign exchange rate movements	.184	82	.000□

Table D.5: Tests of normality for hedging ability variables

Variables	Kolmogorov-Smirnov		
	Statistic	df	Sig.
the respondent qualification	.353	83	.000
The respondent qualification area	.310	83	.000
Length of working in a company	.355	83	.000
The length of experience in your current job	.266	83	.000
The length or period of experience in risk management practice	.220	83	.000
in the company we have a qualified people to deal with risk management	.238	83	.000
In the company we have qualified people on how to use the risk management tools	.232	83	.000
We do not have any difficult in understanding the relevance and importance of our currency exposure	.241	83	.000
It is not that difficult to measure our currency exposure with the necessary accuracy	.229	83	.000
We always pay dividend to our shareholders	.262	83	.000
We have some criteria and standards to measure the managerial performance	.211	83	.000
Our profit has increased during the last years□	.199	83	.000
we run some training program in hedging FXR	.224	83	.000
banks visit us and tell us how to hedge FXR	.255	83	.000
receive some leaflets and recommendations on how to manage FXR	.245	83	.000
Banks dealing□	.282	83	.000
The relationship with bank	.351	83	.000
The total sales	.223	83	.000
The total assets	.318	83	.000
The capital	.237	83	.000
In the company we have risk management strategies	.233	83	.000
In the company we have a policy of the use of financial derivatives	.247	83	.000
The absence of the forward, future, and option markets do not affect our ability to hedge the foreign exchange	.265	83	.000

Variables	Kolmogorov-Smirnov		
	Statistic	df	Sig.
exposure			
The risk management tools available in the markets to hedge the foreign exchange exposure are not that risky	.256	83	.000
Implementing the foreign exchange risk is not costly□	.254	83	.000
We feel the benefit of hedging is exceeding the cost from it	.253	83	.000
Using derivatives for hedging is not costly	.258	83	.000
Forecasting the future foreign currency cash flow	.405	83	.000
In the company, the operating departments such as sales department and purchase departments are participating in the preparation of the risk management strategy	.261	83	.000
There is a high level of coordination between the different departments in our company	.250	83	.000
Other department usually provides me with relevant information about the foreign exchange exposure in the company	.271	83	.000
The nationality of the one who is responsible for risk management	.276	83	.000□