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THE EFFICIENCY OF MONETARY CONTROL AND BUILDING SOCIETY DEVELOPMENTS

by

MICHAEL ANDREW PAWLEY B.A. (Hons)

A thesis submitted to the Council for National Academic Awards in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

Sponsoring Establishment: Department of Accountancy and Financial Studies. Sheffield City Polytechnic

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Michael Andrew Pawley

The Efficiency of Monetary Control and Building Society Developments

ABSTRACT

An analysis is made of the major factors determining financial innovation and financial change by building societies and banks, and the particular innovations introduced are examined. The effects of these institutional developments upon the growth rates of the broad monetary aggregates relative to nominal income are analysed. Specific attention is paid to the personal sector's motives for holding money and particularly the willingness to hold interest-bearing money balances at building societies and banks. Special consideration is placed upon the abolition of the building societies' cartel, the removal of portfolio monetary controls on the retail banks and the entry of the banks into the mortgage market. The effects of the abolition of the cartel on the effectiveness of monetary control are divided into finite stock effects and more continuing effects. The stock effects of credit liberalization upon the growth of the broad monetary aggregates and the confusion caused as to the interpretation of monetary conditions are analysed, and an econometric evaluation of the stock effects of credit liberalization on the personal sector's level of debt is carried out. In terms of more continuing effects it is hypothesized that the abolition of the cartel will have reduced the interest elasticity of the demand for money, but increased the interest elasticity of consumers' expenditure. These hypotheses are evaluated using standard error-correction models and co-integrating models of the demand for money and consumers' expenditure.

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CHAPTER ONE

INTRODUCTION

This thesis presents an analysis of the efficiency of monetary control in relation to financial innovation by building societies and banks. The major underlying theme is the extreme importance of the nature and developments of the financial system for the efficient operation of monetary control. A central thematic argument implicit throughout is that the analysis and application of monetary control cannot be divorced from the financial system within which it operates.

The central tenets of monetarism and monetary control are set out in Chapter Two, and contrasted with the opposing Keynesian school. The necessary and sufficient conditions for a monetarist policy of control of the money supply are outlined, alongside the Keynesian viewpoint as to the appropriate manner in which monetary policy should be conducted.

Recognition is given to the Institutionalist school which first warned of the lacuna that existed in the monetary economics literature as the result of an inappropriate paradigm within which to carry out an analysis of the monetary aspects of the economy. The framework of a static institutional system, an unchanging market environment, and the assumed passivity of financial institutions negated, according to the institutionalists, many of the central conclusions of the traditional monetary debate. A parallel is drawn between the strictures of the institutionalist school as to the efficiency of monetary control in a changing financial system with recent conjectures as to the effects of financial innovation on monetary control.

The viewpoint that financial innovation has in some way affected monetary control appears widespread, and some authors would go further in emphasizing the revolutionary importance of innovation upon monetary economics,

> "As deposits come to bear competitive interest rates monetary theory - models of money supply and demand and of the transmission of control measures and shocks through financial markets to the real economy - will have to be rewritten".
>
> (Tobin 1983, p162)

There has been a great deal of comment by the monetary authorities as to the effects of financial innovation and change on their policy instruments. Much of that conjecture has centred upon the developments in the building society and retail bank sectors, under the broad umbrella terms of liberalisation, innovation and financial change. Chapter Three surveys the various attempts at characterising the major determinants of financial innovation and for purposes of exposition an analytical framework incorporating the process of financial innovation within the monetary system is adopted. It is noted that there does not exist as yet a comprehensive study of the form and nature of the financial innovations that have occurred, the reasons for their occurrence, their effect on the efficiency of monetary control, or of their effect on the conduct of policy.

Attention is paid to the twin constraints of regulation and monetary control upon the activities of the building societies and the banks and the manner in which the market environment shaped and delineated the operational policies of these institutions. Particular note is made of the dynamic interaction between changes in the authorities' regulatory and monetary policies and changes in financial innovation. The possibility of regulatory induced innovation is examined with reference to changes in monetary control and the Medium Term Financial Strategy.

Sustaining the debate as to the effects of the monetary authorities' own monetary and regulatory policies upon the degree of financial innovation and change, the evidence as to the degree to which the activities of building societies and banks have becomes less demarcated as a result of regulatory induced innovation is assimilated.

The manner in which specific institutional factors such as the mutuality of building societies and the building societies' recommended rate system shaped the nature of competition between the mix of price and non-price factors, and hence limited the degree of financial innovation is fully analysed, as is the effect of the cartel on the desired portfolio balance of the personal sector.

The operation of the building societies' cartel is examined, and attention is drawn to the effect it had in smoothing building society interest rates and creating an excess demand for mortgages that varied with movements in general interest rates. An analysis is made of the expected effects of the abolition of the cartel both in terms of finite stock adjustments and more continuing effects such as structural changes in building societies' interest rate setting policies. Chapters Five and Six deal largely with the Stock adjustment effects of the abolition of the cartel and financial liberalization on the effectiveness of monetary control, and Chapter Seven examines in more detail the more continuing effects in relation to interest rates.

One of the major economic conundrums of the 1980's has been the fall in the income velocity of circulation of the broad monetary aggregates. Having detailed the major innovations introduced by the building societies and banks in Chapter Four, Chapter Five examines the effect of these innovations in stock adjustment terms upon the growth rates of the monetary aggregates relative to nominal incomes. The fall in the income velocity of circulation is examined in terms of the effects of financial innovation on the personal sectors willingness to hold interest-bearing money balances.

The voluminous literature as to the meaning and definition of money is reviewed from the angle of the innovations introduced by building societies and banks, with detailed comment as to the changing motives for holding money. The problems and difficulties of interpreting monetary growth and controlling the money supply when the motives for holding money alter are synthesized with reference to the experience of monetary targeting in the MTFS.

An investigation into the regulatory convergence of building societies and banks and the consequences for the delineation of building society and bank activities leads to an assessment of the homogeneity and substitutability of their deposit liabilities, and an analysis of the necessity for changing the monetary target for purposes of monetary control.

The analysis in Chapter Five of the stock affects of financial innovation upon the growth rates of the monetary aggregates relative to nominal income leads to the hypothesis that the payment of interest on extremely liquid accounts at building societies and banks has been a major contributory factor in the breakdown of demand for broad money equations.

Attention is drawn to the dichotomy between monetary theory, which emphasizes money balances in the transmission process, and reality, where the money and credit markets interact to determine the transmission mechanism. Chapter Six examines the growth rates of the monetary aggregates relative to nominal incomes in terms of the demand for credit, with particular attention to the personal sector's demand for credit and stock adjustment effects that may have caused temporary instability.

Special consideration is placed upon the effect of the abolition of the building societies' cartel, the entry of the banks into the mortgage market, and the liberalization of credit to the personal sector. The importance of the freeing-up of the mortgage market is isolated, and particularly the impact of the temporary stock adjustment to the personal sector's demand for money balances. Polar views as to the exogeneity or endogeneity of money are judged with reference to the behaviour of the building societies and banks under contrasting market conditions, and conclusions drawn as to the monetarist assumption of exogeneity. The preliminary general hypothesis that financial innovation has in some way altered the money-income relationship is extended to nest the hypothesis that financial innovation and liberalization has also altered the credit-income relationship.

Parallels are drawn between the attempt of competition and credit control to promote control of the money supply in a freely competitive system with the attempt of the Medium Term Financial Strategy (MTFS). It is argued that the lessons from the CCC approach were not taken into account in the design and implementation of the MTFS, particularly in the form of the likely activities of the building societies and banks in a highly competitive market system. It is argued that the changing financial system during the period of the MTFS has enforced a move away from a dogmatic approach to monetary control towards a far more eclectic approach that recognizes the existence of institutional change.

The more continuing effects of financial innovation upon the effectiveness of monetary control are assessed in greater detail in Chapter Seven. Specifically, it is hypothesized that the demand for money has become less interest elastic, but that consumer's expenditure has become more elastic with respect to interest rates as a result of greater flexibility and importance of interest rates following the abolition of the cartel.

The ability of the monetary authorities to control the money supply given the innovations outlined is analysed with reference to the effectiveness of interest rates as a monetary instrument, and in terms of the applicability of monetary base control (MBC).

Chapter Eight critically examines the salient econometric literature on the demand for broad money function and the demand for credit in the U.K. Earlier econometric models of the demand for money are surveyed, with explicit consideration given to those studies that have attempted to model financial innovation as part of the function, and to both the econometric formulation and econometric methodology employed.

Chapter Nine sets out a theoretical model for evaluating the effects of financial innovation by building societies and banks. Standard error-correction and cointegrating models of the demand for money function for the non-bank private sector (NBPS) are estimated to analyse the earlier stated hypotheses that financial innovation has led to instability of the demand for money, and that the demand for money has become less elastic to interest differentials, and less elastic to general rates of interest. Also evaluated is the hypothesis that wealth has become an important variable in the demand for money function as the result of money becoming more popular for investment purposes.

Given the analysis of Chapter Five which emphasizes the homogeneity of building society and bank deposit liabilities, the M4 aggregate is used in the demand for money specification, rather than M3, which excludes building society deposits.

The stock effects of the 'liberalization' of credit controls are analysed in terms of the demand for credit in Chapter Ten. An error-correction demand for credit function which incorporates a proxy for the liberalization of credit conditions is specified and the effects of a more competitive system quantified. A cointegration model is also used to corroborate the results.

The hypothesis of Chapter Seven that expenditure has become more sensitive to interest rates as a result of more flexible and market-related interest rates is econometrically evaluated using both error-correction and cointegration models. The area of analysis as set out above covers the major issues isolated by Akhtar (1983) as being of prime importance in the examination of financial innovation,

> "The process of financial change may exert significant influences on the empirical definition of money, the money supply process, the demand for money and the role of interest rates in the transmission of monetary influences to the rest of the economy. More generally, changes in the financial system raise questions about the meaningfulness of monetary and financial aggregates and may lead to shifts or (further) instability in the relationship of those aggregates to economic activity". (p6)

Chapter Eleven summarises the empirical evidence and concludes the thesis.

CHAPTER TWO

MONETARY CONTROL - THEORY, PRACTICE AND FINANCIAL CHANGE

2.0 Introduction

Monetarist theory, long espoused by academic economists, has provided the major basis for macroeconomic policy in the United Kingdom since the mid 1970's. Section 2.1 outlines the underlying theoretical rationale of monetarism and the opposing theoretical basis of the Keynesian school of thought. The necessary and sufficient conditions needed for a monetarist policy of control over the money supply are detailed, as are the theoretical deficiencies in the monetarist standpoint. Section 2.2 explains the modus operandi of practical monetarist policy in the United Kingdom, how it differs from mainstream theoretical monetarism (as detailed in 2.1) and the reasoning behind adopting such a form of policy. The experience and results of monetary control in the UK are examined in section 2.3, including an appraisal of the contention that financial change and innovation may be responsible for the breakdown of previously stable relationships upon which theoretical monetarism rests, and also responsible for the problems encountered with practical monetarism and its subsequent abandonment. The similarity is noted between the warnings of the institutionalist school over two decades ago as to the effects of financial change on monetary policy, and subsequent official statements as to the reasons behind the failure of practical monetarism.

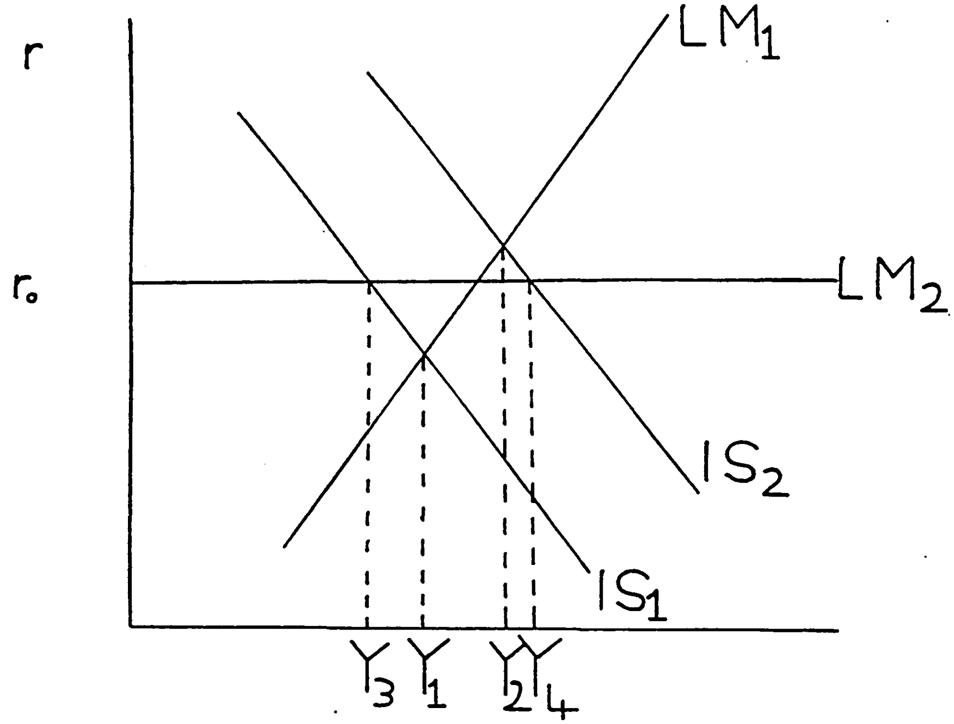
Section 2.4 analyses the views as to the effect of financial change on the <u>conduct</u> of monetary control and how financial change is expected to modify the early theoretical monetarist policy prescription.

2.1 The Basic Postulates of Monetarism

The modern quantity theory, or "monetarism"[1] as it has come to be known, is firmly based on the work of Friedman (1956). According to Friedman, the quantity theory is in essence a theory of the demand for money [2]. It is argued that the demand for money should be analysed in the same manner as the demand for real goods, as money yields a flow of services or utility to its holder. Friedman emphasised the active role of money in income determination with two statements. Firstly, he argued that the demand for money bears a stable relationship to money national income. The velocity of circulation is assumed to be a stable function of a small number of variables. Secondly, Friedman argued that the supply of money is exogenously determined either because it is fixed by policy or because it is independent of the variables which determine the demand for money (Friedman, 1970(a))[3]

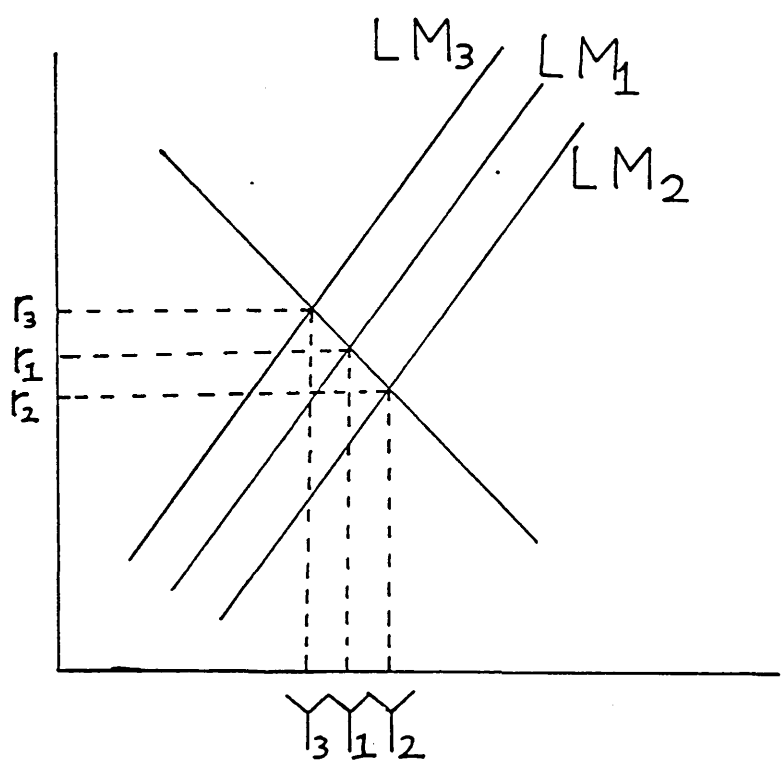
It is possible to use the Post-Keynesian IS-LM framework along the lines of Poole (1970) to show the relative importance of monetary policy, and the vital importance of a stable demand for money for control of the money supply. In the familiar IS-LM diagram below, consider the situation whereby the IS curve is subjected to random shocks and may lie anywhere between IS_1 and IS_2 . If, as monetarists claim, the money demand function is stable, and the stock of money is fixed, income may end up at any position along the horizontal axis between Y_1 and Y_2 . If, on the other hand, the rate of interest is held constant,

DIAGRAM 2·1



IS–LM ANALYSIS

DIAGRAM 2·2



IS–LM ANALYSIS

there will be fluctuations from Y_3 to Y_4 .

From this it can be seen that shifts in the IS curve whilst holding the quantity of money constant leads to smaller fluctuations in income than does holding the rate of interest constant. Thus, if there is a stable demand for money, control of the money supply it is argued, is a more effective policy than controlling interest rates.[4] Further-more the authorities can only observe and therefore influence a <u>nominal</u> rate of interest, whereas the <u>real</u> rate of interest is the relevant one for the IS curve. For the two rates of interest to be equal, expectations of inflation on the part of the private sector must be zero.

The stability of the demand for money is crucial to monetarist propositions as to the appropriate conduct of monetary policy . If there is a stable money demand function the implication is that money has a predictable influence on the economy and hence control of the money supply by the monetary authorities is a powerful instrument of economic policy (Judd and Scadding, 1982). If the relationship between the monetary aggregates and nominal incomes is reasonably stable and predictable, the conduct of policy should involve a declared emphasis on control of the growth of the money stock and monetary policy should be based on quantitative monetary targets (Desai, 1981). If there is a stable relationship between the monetary aggregate and the goal variable, it is possible to set a target growth path for the monetary aggregate which will be consistent with the desired growth rate of the goal variable. Thus, if monetary aggregates are to be used as targets, it is a necessity that there should be a stable relationship between the monetary aggregate and the goal variable (nominal income).

Keynes and Keynesian monetary theorists, on the other hand, dispute that the demand for money is a stable function [5]. Keynes (1936) recognised the importance of the transactions motive for holding money in order to bridge the gap between planned regular payments and receipts of money, and the precautionary motive for sudden unexpected expenditures. The main importance of Keynes' analysis of the demand for money is found, however, in the emphasis on the 'speculative' demand for money, and the notion of uncertainty. Keynes highlighted uncertainty in terms of the variability of the rate of interest and hence the vital importance of the speculative motive to the stability of the demand for money.[6].

Keynes argued that at certain times, money will be held in preference to an alternative interest yielding asset. Such 'speculative' holdings of money would be over and above that held for precautionary motives. Money is a capital certain asset, the nominal value of which does not vary. The alternative to holding money is to hold an asset (bond) the market price of which varies according to the rate of interest [7]. When choosing between the alternative of holding money or bonds, the expected rate of interest is taken into account. If the rate of interest is expected to fall, capital gains may be made; if rates are expected to rise, capital losses may be faced on bonds. The demand for money is relatively low when the rate of interest is expected to fall, and greater when the rate of interest is expected to rise. At any one time, wealth-holders have an opinion as to the 'normal' rate of interest relative to the current rate of interest. It is assumed that different individuals will have different expectations, such that in the aggregate a smooth speculative demand for money function is obtained which is a negative function of the current level of the rate of interest [8].

One assertion of Keynes' speculative motive is that the normal rate of interest as perceived by wealth holders will change over time, fluctuating around the changing 'normal' rate of interest. So, rather than being constant as argued by monetarists, Keynes argued that velocity is both unstable and volatile. An increase in the money supply, he argued, would lead to an increase in holdings of speculative balances, such that any increase is offset by a reduction in velocity.

The implications of an unstable demand for money function upon the operation of monetary policy can be seen in the IS-LM framework. The diagram above shows relative stability of the IS curve [9], whilst the demand for money is unstable and may vary from LM_2 to LM_3. This results in variations in income from Y_2 to Y_3.

According to this analysis, large fluctuations in income may occur, such that Keynesians favour control of the interest rate. For example, consider the case where a rise in the demand for money occurs, the LM curve shifting from

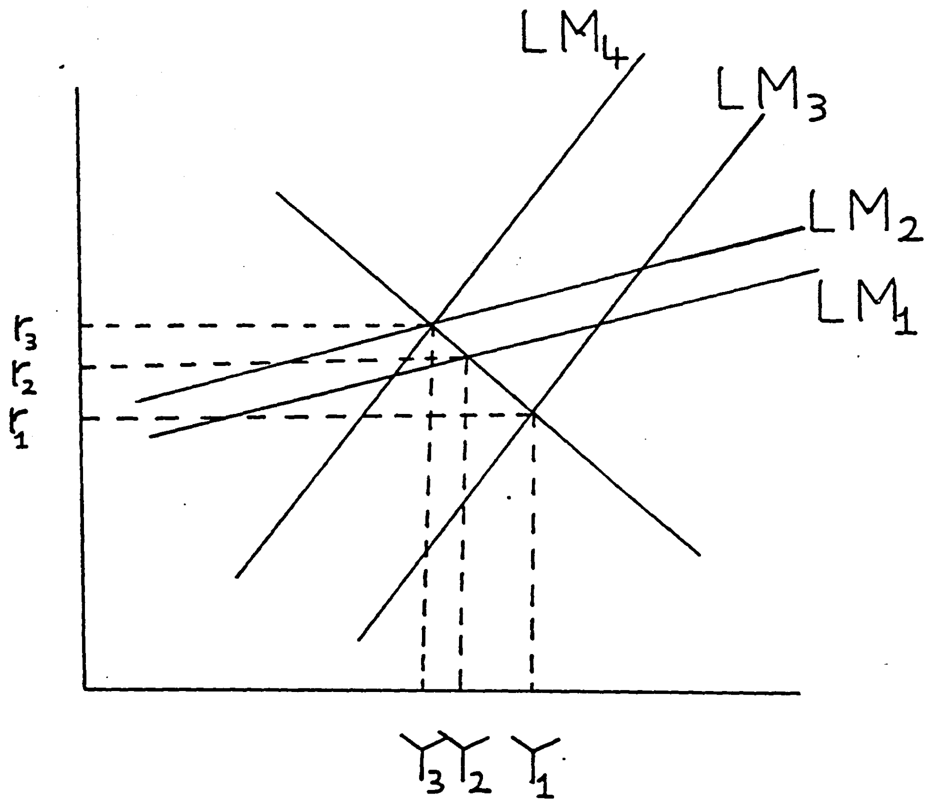
LM_1 to LM_3 . This will force up interest rates, r_1 to r_3, and reduce income, Y_1 to Y_3 . If an interest rate policy is being followed (i.e. a policy of trying to keep interest rates constant), the money supply will be increased to allow for the increase in the demand for money, such that income returns to Y_1. Thus, variations in the level of income will be minimised. The policy implications of the Keynesian model of money demand are thus distinctly different from the monetarist framework. Keynes, through the introduction of the speculative demand for money which explicitly outlines uncertainty, was able to argue that volatile expectations may cause instability in the demand for money function. This implies that monetary policy via control of the money supply will be ineffective.

Apart from the assertion that the demand for money is in reality (i.e. not constrained to a simplified theoretical construct but in real world terms), a stable function of a few measurable variables, a further assertion appears to distinguish clearly Friedman's approach. Money, he argues, is a unique asset, and is therefore not a close substitute for any other asset, real or financial. Changes in the quantity of money will thus have an impact which is spread widely among a number of assets, causing a pervasive change in all planned expenditures, both on goods and on financial assets; portfolio equilibrium is only restored after large changes in asset yields. All forms of expenditure will be affected, thus significantly affecting nominal income.

The monetarist view therefore is that the interest elasticity of the demand for money is low, and hence monetary policy will be effective. The underlying rationale for this position is that if the authorities are able to reduce the supply of money, there will only be a small volume of idle balances which may be induced into the pool of active funds (through an increase in the level of interest rates), in order to support the existing level of expenditure. Indeed, it would require relatively large increases in the level of interest rates in order to undermine significantly the impact of the initial reduction in the money supply (through raising the velocity of circulation of money), and this adjustment in itself would tend to depress the level of credit financed expenditures within the economy. In addition, a significantly higher level of interest rates would be expected to reduce the demand for bank loans and may depress the volume of bank created deposits.

In the IS-LM diagram below, if the money supply is reduced, national income will fall further (Y_1 to Y_3) and interest rates increase further (r_1 to r_3) when the demand for money is relatively interest inelastic. Therefore the lower is the interest elasticity of the demand for money, the higher is the change in the rate of interest needed to restore equilibrium, the stronger the monetary policy. Thus, an important element in the monetarist/keynesian debate lay in differing opinions as to the substitutability of money to real assets. Empirical studies on the degree of

DIAGRAM 2.3



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substitution as measured by the interest elasticity of the demand for money have not, however, provided results which show whether the monetarist or keynesian theories are most valid. The only effect empirical work has had on this point is to contradict the more radical assertions of both protagonists. The results show that there is a negative relationship between changes in interest rates and money balances, but that the interest elasticity of the demand for money seems to be quite low. The special cases of zero-interest elasticity assumed by the monetarists, and the infinite interest elasticity of the Keynesians as represented by the liquidity trap are both disproven. (See Chapter Eight for an analysis of researchers' econometric results on interest elasticity).

Monetarist theory asserts that although a rise in the money supply will increase nominal income, monetary policy will not have a permanent affect on the level of real output. A rise in the money supply will affect output after approximately six to nine months, and affect the price level after about twelve to eighteen months, after which output will return to its previous level. According to the expectations - augmented Phillips curve the rise in output is only sustained until the accompanying increase in inflation becomes fully anticipated. At this time output returns to its natural level, the rise in the money supply leading only to an increase in the rate of inflation.

Thus, real income, argued Friedman, is determined by supply - side considerations. If changes in the rate of growth of the money supply do not impinge on long-term real income, then the price level would change in order to restore equilibrium between the supply of money and the demand for money. So, changes in the money supply affect real income only in the short-run, and prices in the long run. This received further theoretical support from the rational expectations school [10] (Muth, 1961, Lucas, 1972, 1973). The adaptive expectations hypothesis implicit in Friedman's work maintains that individuals will continuously make systematic errors as to their estimates of future inflation. Rational expectations contradicts this however, and argues that expectations are based on <u>all</u> available information, including past errors in expectations of inflation, and the effects of policy actions which may themselves alter expectations. Sargent and Wallace (1975, 1976), show that under conditions of rational expectations, there will be instantaneous adjustment of the economy to an anticipated increase in the money supply. Monetary policy will have no effect on real output [11]. Instead, prices will rise with no long-term effect on real income. Sargent and Wallace thus come to the same conclusion as Friedman, that monetary policy should follow a money-supply growth rule, rather than be used for active stabilisation policy [12], (Friedman, 1960). [13]

2.2 Monetary Control in the UK - Policy Prescription

Friedman's assertion of a stable demand for money became the central issue in debates on monetary economics. Indeed Laidler (1971) has suggested that the stability of the demand for money over time is capable of reflecting the whole argument between Keynesians and monetarists as to the role of money in the economic system. In the U.S.A., Friedman and Schwartz (1963) claimed to be able to show that real money balances and real income were connected in a reasonably predictable way, arguing that changes in the rate of growth of the money stock are a necessary and sufficient condition for changes in the rate of change of money-income (Friedman and Schwartz, p676)[14]. The theoretical arguments of Friedman and his empirical work on the demand for money were corroborated by empirical research in the United Kingdom which suggested that the demand for money function was stably related to income and interest rates (Paish 1958, Dow 1958, Kavanagh and Walters 1966, Fisher 1968, Laidler and Parkin 1970, Laidler 1971, Goodhart and Crockett 1970). It did seem that in the late 1960's there was a general consensus as to the existence of a stable demand for money,

> "this evidence for Britain certainly points to the existence of a stable demand for money function in the economy. For the United States the evidence is overwhelming, and for Britain it is at the very least highly suggestive".
>
> Laidler, (1971, p43)

The implications of such a finding were thought to be substantial. Through a stable demand for money, controlling the monetary aggregates would have a major and determinate effect on the economy (Parkin 1978, pp252-253 Freedman 1983, pp103-104). At the time,a stable function suggested to some economists that monetary policy would be effective, that a particular policy could be chosen and monitored, and that desired levels of the monetary aggregates could be achieved by varying the level of interest rates (Goodhart, 1984, p46). A stable demand for money thus appeared to provide empirical support not only for the ability of the monetary authorities to control the money supply, but also for the desirability of so doing in terms of the information value of monetary aggregates (Courakis, 1981, p306).

The econometric investigations in the UK were carried out on M3,[15] and from the monetarist standpoint appeared to suggest a direct link between the rate of change in the money supply M3 and the rate of change in nominal incomes. The line of causation, it was claimed, ran from money to income, with a lag. Thus, to bring about a reduction in the rate of growth of the price level, it was deemed necessary to bring about a reduction in the rate of growth of the money supply M3. The econometric evidence also seemed to suggest that as there was a link between M3 and nominal interest rates, then control of that aggregate could be achieved by manipulation of interest rates. Moreover, it was believed at the time that control of the aggregate could be achieved without recourse to unacceptably high interest rates (BEQB, June 1983, p202).

The belief in the ability of the authorities to control money supply growth via interest rates was seen to be an important factor in placing greater emphasis on the manipulation of interest rates in Competition and Credit Control [16]. If interest rates could be used as an instrument to control monetary growth, then there would be no need for the use of direct controls over banks' financial intermediation activities, which had proven largely ineffective, and with hindsight were seen to inhibit competitive efficiency in the banking system (BEQB, June 1983) [17].

The reliance on the econometric evidence as to the stability of the demand for money relationship was soon seen to be unfounded, however, (Hacche, 1974). Econometric models based on 1960's data could not explain the monetary movements of the early 1970's, in particular the fast growth of M3 after the removal of direct controls in 1971, under the aegis of Competition and Credit Control, and the abandonment of the retail banks interest rate agreements. Yet, the argument that the previously held relationship had been distorted by structural change in the financial system also led to the notion that once the changes were over, the link between money and nominal income would return to a reliable, stable, relationship. Despite the fact that it did not return to such a state, the monetary authorities believed after the aftermath of CCC that,

> "the growth of M3 within reasonable limits could be directly influenced, occasionally to a high degree, by a combination of direct controls (now more acceptable again) and an active policy of debt management".
> (BEQB June 1983, p203)

Despite the conjecture as to the effects of structural change in the financial system upon the growth of the money supply, the institutional background in which policy actions take place seems to have been inadequately considered by the monetary authorities. Despite the breakdown of the money-income relationship as shown by econometric demand for money equations, targets were published for the growth of M3 in 1976, partly in response to the conditions on a loan from the International Monetary Fund to maintain domestic credit expansion within certain limits.

Although it was recognised that, in econometric terms, the money-income relationship had broken down, it was still maintained that monetary growth over and above the rate of growth of nominal incomes would result in inflationary conditions,

> "I would not want to suggest that there is always a direct, simple chain of causation running from the money supply to the price level. Indeed, it is generally recognised that inflation can, at least for a time, follow a life of its own quite independent of current or past monetary developments. But though the causation may not be simple there is an observable statistical relation between monetary growth and the pace of inflation".
> (BEQB, 1984(e),p54)

This belief that the money supply was still the dominant impulse affecting the price level despite the breakdown of demand for money functions gained theoretical support from the emerging "buffer-stock" or "disequilibrium money" school.

In the 'buffer' stock model it is argued that economic agents may be temporarily moved off their demand for money functions by credit-side shocks. This may lead to holdings of excess money balances, which will be slowly dissipated (Artis and Lewis, 1974, 1976). The applicability of the buffer stock model in a period of financial innovation is examined in Chapter Six.

The theoretical standpoint of the rational expectations school (see earlier) was to be emphasised in practical policy operation through published money supply targets:

> "One purpose of announcing monetary targets is to serve notice that excessive increases in domestic costs will come up against resistance. If people believe that the money supply will be expanded to accommodate any increase in costs and prices, however fast, inflationary fears are likely to be increased. If, on the other hand, people are convinced that the rate of growth of the money supply will be held within well-defined limits, this should help to reduce inflationary expectations".
>
> (BEQB, 1984(e)p46)

In particular, it was hoped that this would lead to wage claims being in some way linked to the future publicly announced rate of growth of the money supply. This, it was thought, would reduce the impact of possible high unemployment under a tight money policy. This is because it was maintained that if wage claims grew faster than the rate of growth of the money supply, it would lead to increased unemployment. By keeping expectations of the rate of growth of the money supply low, it was hoped to reduce wage claims and stop unemployment rising. This view was taken up in the Green Paper on Monetary Control (1980), "The government believes that its monetary policy can best be formulated if it sets targets for the growth of one of the aggregates against which policy can be assessed. This gives the clearest indication to those concerned in both financial markets and domestic industry on which to assess the direction of government policy and to formulate expectations".

(Para.8)

It was noted that problems had occurred in the past with the M3 aggregate, but it was not felt that these problems were insuperable,

"It was recognised that experience hither to in achieving fairly close control of this aggregate was not entirely reassuring. But it was felt that the answer to this might lie in changing the <u>methods</u> of control rather than the target aggregate itself".

(BEBQ June 1983, p204)

The MTFS also maintained that there was a close link between the money supply, the public sector borrowing requirement (PSBR) and interest rates. It was argued that an increase in the PSBR would lead to an increase in the rate of growth of the money supply or would push up interest rates. This occurs because a large PSBR which results in the government borrowing from the banking system necessarily increases the money supply. On the other hand, it may borrow from the non-bank private sector, which, it was believed, would occur at steadily rising rates of interest (TCSC 1980 p21). Thus, in order to reduce the money supply without resorting to high levels of interest rates, it was argued that the PSBR had to be reduced. The combined tools of monetary control were thus to be short-term interest rates and debt management. It is important to distinguish this modus operandi from a strict monetarist policy prescription of control of the monetary base. Indeed, Friedman himself was incredulous as to the proposed method of control in the UK in his (oft quoted) evidence to the House of Commons Treasury and Civil Service Committee,

> "....I could hardly believe my eyes, when I read, in the summary chapter (of the Green Paper on Monetary Control) 'the principal means of controlling the growth of the money supply must be fiscal policy - both public expenditure and tax policy and interest rates.' Interpreted literally this sentence is simply wrong. Only a Rip Van Winkle, who had not read any of the flood of literature during the last decade and more on the money supply process, could possibly have written that sentence..."

he continued,

> "Direct control of the monetary base is an alternative to fiscal policy and interest rates as a means of controlling monetary growth. Of course, direct control of the monetary base will affect interest rates...but that is a very different thing from controlling monetary growth through interest rates".

(TCSC 1980 Para 11, p57)

The force of Friedman's argument is evaluated in Chapter Seven with reference to the effects of financial innovation on the efficiency of both interest rates and monetary base control as methods of controlling the money supply.

2.3 Financial Innovation and Monetary Control in the UK

The experience of the monetary authorities in carrying out a policy of control of the money supply has not, however, been a happy one,

> "Despite the progress we have made towards our objectives, it cannot be said that our experience with our chosen framework for operating monetary policy has been satisfactory. In common with other countries, that framework has been one of targeting the rate of growth of a monetary aggregate. This intermediate objective was chosen in the belief that there was a reasonably predictable relationship between the rate of monetary growth and the rate of growth of nominal incomes. But in practice our ability to use an estimate of that relationship for target setting, and to meet those targets, has quite frankly, been less than impressive".
> (Leigh-Pemberton 1986.p500.)

The Bank of England does appear to have considered the problems of financial change at the introduction of the MTFS. It noted in 1980 that although targets were set, it was possible that structural change may affect the relative growth rates of aggregates, but that the problem was not insuperable,

> "No statistical measure of the money supply can be expected fully to encapsulate monetary conditions, and so provide a uniquely correct basis for controlling the complex relationships between monetary growth and nominal incomes. A degree of substitutability, between forms of money or liquidity just inside or outside their respective measures means that it is insufficient to rely on one measure alone".
> (Green Paper on Monetary Control, 1980)

In view of future events, however, it appears that the problem of financial change was underestimated. In contrast to the initial confidence of the authorities as to the insignificance of changes in the financial system for the operation of monetary control, the monetary authorities progressively emphasized the importance of financial institutions during the MTFS and subsequent analyses of the MTFS. Official publications have tended to cite the effects of change in the financial institutional framework as the major factor for the problems experienced with monetary control, yet the Bank of England's conclusion that monetary policy is affected by financial change is not a new viewpoint. Indeed, the notion that the behaviour of financial institutions needs to be taken into account when examining the efficacy of monetary controls has a long, although perhaps not popular, pedigree. The 'institutionalist' school (comprising, inter alia, Gurley and Shaw 1955, 1956, 1960, Minsky 1957, Tobin 1963(a), Brainard 1964, Radcliffe 1959) first warned of the possible dangers of 'traditional' monetary theory, which has promulgated the view that the financial system is essentially a static equilibrium system, a mere unchanging backdrop against which policy operates, reflected in

> "the common tendency of classical and Keynesian economics to treat the financial structure as being of secondary importance, netting out the assets and liabilities of the private sector".
>
> (Brainard 1964 pp95-96)

Opposed to this, the institutionalist school takes the actions of financial institutions as being of central importance in the conduct of policy. It is recognised that observed statistical relationships may change over time due to changes in financial markets. Even if a policy of controlling the money supply may be optimal at present, if previously held relationships break down under rapid financial change, then the rationale for controlling the money supply may disappear. The IS-LM apparatus used earlier, and, indeed, often used by monetarists in demonstrating the conditions under which control of the money supply is superior to control of interest rates, is dependent on an unchanging financial system if the authorities are to be able to control the money supply. With financial innovation, traditional instruments may become obsolete in influencing the money supply, as has been recognised by Poole (1970),

> "the relationship between the tools and the proximate targets depends heavily on institutional factors which are stable neither over time nor over space".
>
> (p178)

Under the circumstances of deregulation and financial change it is instructive to be reminded of Minsky's concern that,

> "If a period of rapid changes in the structure or in the mode of functioning of financial markets occurs, then the efficacy of central bank actions has to be re-examined.
>
> (1957 p171)

The Radcliffe Report (1959) emphasised in stronger terms the problems associated with financial change, and concluded that:

> "financial institutions are so highly developed and so prone to further development that control of 'the supply of money' - whatever that may be made to mean - is not by itself a reliable policy measure".
> (Para.504)

Moreover the Radcliffe report maintained that it is impossible to define money, because there is no clear criterion with which to determine those assets that are part of the money supply [18]. Obviously, if it is impossible to define the money supply, it is impossible to control. This view has since been reflected in official commentary during and after the MTFS. The impact of increased competition between building societies and banks has been blamed as a major determinant of the observed change in relationships among the various monetary aggregates, and between them and nominal incomes. The activities of building societies and banks have been given prime consideration when assessing the appropriate definition of money and the problem of implementation of monetary control,

> "There are other structural changes to come, some of which we can discern in advance, some of which we cannot foresee. Among those that we can expect are the changes that are arising, and may well accelerate, from the changing role and operations of the building societies. The extent and nature of competition among building societies, and between them and banks, is already changing, and this will give that yet further impetus. In these circumstances, all the aggregates, not only the various definitions of narrow and broad money, but also the wider liquidity measures, are liable to be subject to unforeseen distortion".
> (BEQB December,1984 p476)

One of the main reasons cited has been the importance of liberalization of credit markets and the introduction of new types of financial assets,

> "the gathering pace of innovation under the spur of competition is leading to new channels of finance and new financial instruments. A statistical series for any monetary aggregate, compiled on static definitions, is thus liable to shift in meaning".
>
> (BEQB March 1982(a)p6)

The authorities have given special emphasis to the new financial instruments offered by banks and building societies,

> "a number of developments currently taking place or in prospect could significantly affect the aggregates: these include the possible introduction by the clearing banks of interest-bearing current accounts, expansion of the payments facilities offered by building societies, and increasing provision of withdrawal facilities for building society term shares".
>
> (BEQB March 1982(a)p21)

Even a cursory examination of the developments in the building society industry indicates that there has been considerable evolution and innovation, a detailed examination of which is carried out in Chapter Four.

2.4 Financial Innovation and the Conduct of Monetary Policy

The integration of monetary economics and financial innovation by specific institutions is by no means an easy undertaking. Indeed, some would argue that traditional modes of analysis are incapable of providing the correct framework for research,

> "The central paradigms used to study and explain the largely separate macroanalytics and the microanalytics of money and banking, central banking and regulatory aspects of financial markets are no longer usefully applicable to todays problems. Market segmentation has broken down. Issues in aggregative economics - the supply and demand for money, interest rates, relations between money, interest rates and income and employment - are so intimately affected by regulatory structures and the competitive behaviour of financial institutions that the latter cannot be ignored in macroanalysis".
>
> (Phillips 1981, p267)

Whilst acknowledging that the combined analysis of financial innovation, financial change and monetary economics represents a blending of macro and micro aspects of economics, it is argued in this thesis that standard tools of economic analysis <u>are</u> useful in analysing the monetary effects of financial change. That this is so is stated succinctly by Llewellyn,

> "The focus is upon the dynamics of the financial system on the premise that the changes observed are not random but susceptible to systematic analysis".
>
> (1985(b), p19)

To the authors knowledge there has not been any systematic attempt to fully assess the alleged impact of financial structural changes upon the operation of monetary control.[19] Many of the opinions reported are based largely on informed, but speculative comment. It remains unclear as to exactly how financial change has actually affected monetary control. Without detailed knowledge as to what the effects upon monetary control are, and without a grasp of the magnitude of such effects, theories as to the appropriate conduct of monetary policy are also based on informed, but speculative comment.

Although little detailed research has been carried out on the effects of financial innovation and structural change upon the appropriate conduct of monetary control, it appears that there is a consensus opinion that the effects of financial change necessitate that monetary policy be conducted in a discretionary manner,

> "the unreliability of most of the demand for money functions and the disparate readings provided by the movements of the monetary aggregates have forced us, in some cases none too unwillingly, back to a more pragmatic approach to monetary analysis and policy".
> (Goodhart,1981, p129-130)

Not only may policy have to be carried out in a discretionary approach, but the authorities may be constrained to,

> "muddling through in a discretionary, but unrigorous manner".
> (Goodhart 1986,(a)p101)

It is argued by some that institutional change vitiates the strict form of monetarism. Laidler (1981, p23) points out that financial innovation which affects the demand for money means that it is impossible to impose an ex ante growth rule as championed by Friedman (1960). He even argues that it may be necessary for wholesale change in the financial institutional structure to ensure the ability of the monetary authorities to control the money supply (Laidler 1981, p23)

Some monetarist writers have accepted that it is no longer plausible to appease opponents with the argument that if the rate of growth of one monetary aggregate is held down then in the long term the other aggregates will behave consistently (Laidler 1981,p23). The movement of the monetary aggregates under conditions of financial innovation suggests that this can no longer be held as a tractable position.

But where does this leave policy? Should the monetary authorities attempt discretionary control? Have they the ability to control the money supply? Is there a link between money and nominal income, and money and prices? The difficulty experienced by the authorities in interpreting the movements of the published monetary aggregates has shown that even taking account of several measures during a period of structural change may not necessarily provide accurate information upon which to make policy decisions [20]. Explanation of movements in the monetary aggregates has become increasingly difficult,

> "The relationships among the various aggregates and between them and nominal incomes, have been subject to considerable variation and uncertainty from year to year. Such shifts in previously established statistical regularities have provided a challenge to economists to come up with new and better relationships".
>
> (BEQB December 1984, p476)

Indeed, the 'Legal Restrictions' or 'Libertarian' School (see Johnson 1968, Black 1970, Wallace 1983, Jao

1983), argue that the observed link between money balances and nominal incomes only exists because of certain legal restraints placed on the banking system. Moreover, it is argued that once these restrictions are abandoned, and/or financial innovation occurs, then such statistical regularities as the demand for money will break down,

> "the libertarians theoretical case against mainstream monetarism rests on the latter's uncritical acceptance of the various legal restrictions and regulations on money and finance. Without such restrictions and regulations, the distinctions between banks and other non-bank intermediaries would vanish, and the conceptual differences between various monetary aggregates would become meaningless. With these foundations gone, the major components of the monetarist upper structure, such as a stable demand function for money, and a constant money growth rule, also fall to the ground"
>
> (Jao 1983, p14)[21]

A conceptually similar argument is provided by those who suggest that the very operation of monetary control has led to instability of money demand. This is commonly referred to as Goodhart's Law (Goodhart 1984, p96). Without the ability to forecast future financial innovations, the Bank of England may have to take discretionary action in the interpretation and control of the monetary aggregates (BEQB December 1986 p506). It is important to note, however, that as recently as 1981 Friedman has reaffirmed his stance on this issue,

> "It matters far less whether that aggregate is M1A or M1B, M2 or Mn, than that a single aggregate be chosen",
>
> (p6)

and (1982, p117) that a long term target path be set,

> "for a single aggregate - for example M2 or the base. It is far less important which aggregate is chosen than that a single aggregate be designated as the target".

2.5 Conclusion

Although it appears that the way in which monetary control can be exercised may have changed, under certain conditions it may still be an effective tool of economic policy. It is possible that if, as some would suggest, growth in the money supply is still a necessary force for inflation, then there may still be an important role for monetary policy. This is dependent, however, on the ability of the authorities to control the money supply, and on knowledge of the effects of institutional change on the private sector's demand for money. Monetary policy may only be useful if the authorities have a detailed understanding of any relationship between financial innovation/structural change and observed breakdowns in previously stable economic relationships, and any effects of financial innovation on the techniques of monetary control.If, as many commentators would argue, change in financial institutions and the markets in which they operate <u>are</u> important factors in the operation of monetary management, then they need to be examined closely to determine any effects that institutional change may have on the operation of monetary policy, and the appropriate conduct of monetary control. In particular, it is desirable to fully investigate the possible effects of the intermediation activities of building societies and banks upon the postulates necessary for a policy of controlling the money supply.

NOTES - CHAPTER TWO

[1]. There is not, of course, only one 'brand' of monetarism. It is not intended in this thesis to fully outline the various schools of monetarism. This has been adequately done by Congdon (1978), Budd (1980),Arestis and Riley (1980), Meade (1981), and Burton (1982). In this thesis the terms monetarist/monetarism follow the broad classification suggested by Laidler (1981), in his analysis of the conflicting opinions as to the central points of monetarism (see also Brunner (1970) and Johnson (1972)).

[2]. Laidler (1985) and Cuthbertson (1985), provide a thorough survey of the early theoretical and empirical literature on the demand for money.

[3]. Despite Friedman's assertion to the contrary, critics have argued that his analysis need be modified only slightly to fit into any neo-Keynesian model. Indeed Johnson (1962) and Patinkin (1969) argue that Friedman's theory of the demand for money is essentially an extension of the Keynesian capital theoretic analysis of the role of money, rather than a reformulation of the quantity theory. Friedman, whilst admitting that Keynes' liquidity preference influenced his work (1970a), has set out his own formal framework (1970b, (1971). Laidler appears to concur with this view,

> "Keynesian though Friedman's model is, it is no more Keynes' model than Keynes' "Marshallian" theory of income determination is Marshall's theory; and it differed from other developments of Keynes' theory of liquidity preference that appeared at about the same time in a number of ways"
>
> (1981 p3)

[4]. The decision between the money supply and interest rates depends not only on the relative stability of the functions but also on the slopes of the IS-LM curves,

> "within the compass of the traditional Hicksian IS-LM structure, the superiority of an interest rate policy over a money stock policy, measured by comparing the expected squared deviation of the goal variable (typically income) from its 'desired' value, depends on the variance-covariance structure of the additive disturbances attaching to the expenditure and monetary sectors and on the values of the parameters describing the response of expenditures to changes in the interest rate and of the demand for money to changes in the interest rate and income".
>
> (Courakis,1981 p272)

Poole points out that it is suboptimal to use either the money supply or interest rates as the instrument of monetary policy. A combined policy whereby the money supply is a function of the interest rate is preferable. B. Friedman (1975, 1977) however, has argued that a situation whereby the money supply is the intermediate target to be manipulated by the instrument of interest rates is also suboptimal. This policy is wasteful of additional information that may be helpful in achieving the ultimate target, and also neglects Kareken, Muench and Wallaces (1973) stricture that any variable that cannot be precisely controlled should be used as an "information variable" rather than a "surrogate goal of policy" (Lane, 1985).

[5]. See, inter alia, Tobin (1970), Radcliffe (1959), Kaldor (1970), Robinson (1970). Keynesians were not the only economists to take this view,

> "Pre-Keynesian monetary theorists did not believe in an empirically stable demand for money function either. Though they often enough assumed a constant velocity of circulation that is by no means the same thing, and in any event, they typically did so in order to make their analytic points with the maximum of clarity, and not with the intention of stating a belief about the nature of the real world".
>
> (Laidler, 1981.p3)

[6] Uncertainty is of course present in the precautionary demand for money in terms of uncertainty over the future need to carry out expenditures. Keynes emphasised the uncertainty involved with the speculative demand for money, which is dominated by uncertainty over asset values.

[7]. The money/bonds distinction is of course an extreme simplification of reality derived from assumptions as to the theory being outlined. There are alternatives to holding bonds, and there is some debate as to the importance of the money/bonds distinction made by Keynes.

[8]. Keynes also argued that, at very low rates of interest, all investors are likely to think that rates will rise, such that no bonds will be held, the "liquidity trap".

[9]. Most Keynesians would in fact admit that the IS curve is unstable, but not so volatile as the LM curve.

[10] Often called the New Classical School.

[11] Most economists would probably now argue that the strong form of rational expectations is a special case. Few would deny the importance of rational expectations, however. Indeed, many Keynesian models now embody rational expectations (see Gale (1983) and Begg (1982)).

[12] Budd (1980), points to an apparent dichotomy between the Sargent/Wallace and Friedman analyses. Although reaching the same conclusion, they appear to argue from different premises. Friedman argues that no-one can forecast the future movements of the economy (therefore it should not be used for stabilisation policy), whereas Sargent/Wallace argue everyone can forecast the economy (again it should not be used for stabilisation policy). This apparent dichotomy can be rationalised by maintaining that the important factor is that the governments forecasts are no more accurate than anyone elses (Budd, p6) which would appear to satisfy both schools of thought.

[13] The monetarist viewpoint on a monetary growth rate rule is buttressed by the belief that active stabilisation policies cannot be effective, and may in fact be de-stabilising. Thus, discretionary policy actions may cause the economy to veer off its path (Friedman 1960,p23)

[14] The empirical work of F-S has been heavily criticised, however. For a critique of F-S' UK econometric work, see Hendry and Ericsson (1983).

[15]

Relationships among the monetary aggregates and their components [1]

Notes and coins in circulation with the public (13.7)
AGAA

plus Private sector non-interest-bearing sterling sight bank deposits (31.2)
AUYA

equals Non-interest bearing M_1 (44.9)
AUYH

plus Private sector interest bearing sterling sight bank deposits (47.0)
AGAD

equals M_1 (91.9)
AGAF

plus Private sector sterling time bank deposits (90.0)
AGAG

equals M_3 (181.9) (OLD £M3)
AGAJ

plus Private sector holdings of building society shares and deposits and sterling certificates of deposit (129.1)
AJWK

less Building society holdings of bank deposits and bank certificates of deposit, and notes and coin (13.5)
AUYL

equals M_4 (297.5)
AUYM

plus Holdings by the private sector (excluding building societies) of money market instruments (bank bills, Treasury bills, local authority deposits) certificates of tax deposit and national savings instruments (excluding certificates, SAYE and other long term deposits (15.0)
AUYR + AVEB

equals M_5 (312.5)
AVEE

Notes and coins in circulation with the public (AGAA):

plus Banks' till money (1.6)
AVAA-AGAA

plus Bankers' balances with the Bank of England (0.2)
AVAC

equals M_0 (15.5)
AVAD

Non-interest bearing M_1 (AUYH):

plus Private sector interest-bearing retail sterling deposits with banks and building societies and national savings bank ordinary accounts (137.7)
AUYB

equals M_2 (182.6)
AUYC

M_3 (AGAJ):

plus Private sector foreign currency bank deposits (31.0)
AGAK

equals AGAL M_{3c} (212.9)

1. *Figures in brackets are amounts outstanding in £ billion, at end of October 1987, as shown in the December 1987 issue of Financial Statistics. M0 is actually published as the average amount outstanding for all the Wednesdays in the month.*

Financial Statistics March 1988

[16] See Chapters Three and Seven for further analysis of Competition and Credit Control.

[17] See Chapter Seven for an examination of the efficacy of direct monetary controls.

[18] See also Sayers (1960) and Chapter five for a further analysis of the importance of financial change and the definition and meaning of money.

[19] Spencer (1986) provides a detailed account of financial innovation and monetary controls, but concentrates exclusively on the period up to 1980, and therefore does not consider building society or bank innovations after that time.

[20] See Chapter five for a further analysis of financial innovation and distortion of the relative movements of the monetary aggregates.

[21] Quoted in Goodhart (1984).

CHAPTER THREE

BUILDING SOCIETY AND BANK DEVELOPMENTS, 1970-1979

3.0 Introduction

It was noted in Chapter Two that there has been substantial speculation and assertion that the core of the MTFS - control of the money supply - has in some way been inhibited by financial innovation, particularly on the part of building societies and banks. Given this conjecture as to the possible detrimental effects of the activities of building societies and banks on the operation of monetary control, it is germane to examine the operations of these intermediaries and the developments and innovations that have occurred.

Little substantive work has been carried out into building society and bank innovation, and, importantly, why innovation occurs. To ascertain the effects of financial innovation on monetary control (if any) it is vital to isolate the main innovations, and the factors motivating them. If innovation has in some way altered the efficiency of monetary control, it is important for future policy considerations to have an understanding of why innovations occur, and what conditions are necessary or sufficient for innovation. It is also of importance to ascertain as to whether or not they are a one-off short-term phenomena or an inexorable process. These considerations are vital to an understanding of the development of financial innovations and financial change, and their possible impact upon monetary control.

It is possible to divide the period of study, 1970-1987, into two periods, pre 1980 and post 1980. It is recognised that bank and building society changes have not occurred overnight, hence a dividing line is in some senses an inappropriate categorization. Of course, change involving building societies and banks has occurred extremely fast, yet it has also been of an evolutionary rather than revolutionary manner. The use of 1980 as a delineator is therefore rather arbitrarily chosen, given that innovation and financial change occur over a period of time, yet a number of factors outlined below appear to provide the necessary justification for the delineation of building society and bank activities according to these broad time periods.

The literature on the definition and process of financial innovation is analysed in section 3.1 and used to set out a broad framework in which to examine building society and bank developments. The way in which institutional features have affected the objectives of building societies is examined in section 3.2. The combined factors of mutual status and the operation of the interest rate cartel are analysed in relation to their effects upon the manner in which building societies have conducted their business. An analysis is made of the operation of the cartel, with emphasis on the manner in which it created a variable excess demand for mortgages that tended to be variable over the interest rate cycle. Also the degree to which mutuality and the cartel impinged upon the type of competition in terms of the mix of price and non-price factors is evaluated. The operation of the cartel is compared with traditional economic models of cartels, with special reference to the interest rates on shares and deposits and on mortgage loans. The relationship between the degree of financial innovation and the twin constraints of mutuality and recommended interest rates is also examined in section 3.2. The effect of extensive non-price competition upon the variety of financial instruments offered by building societies and banks is detailed, and the link between cost efficiency and financial innovation in the building society sector examined.

The nature of competition between banks and building societies in terms of the effects of monetary control and the banks' ability to compete in the personal sector retail financial market is analysed in section 3.3. The asymmetry of monetary control is outlined, as are the relative non-neutral tax considerations applied to building society's and banks. The effects of these asymmetries upon the relative market share of banks and building societies is shown, as is the effect on the degree of financial innovation by these institutions.

3.1 The Definition of Financial Innovation and Financial Change

It is necessary to precisely define what is meant in this thesis by the terms "financial innovation" and "financial change". [1] Llewellyn (1985a), 1985b) categorises the former as the types of financial instruments introduced, the growth of new financial markets and the methods by which financial services are provided. The latter is related to the area of business activity financial institutions are prepared to move into and hence is a factor in laying down both the demarcation lines between different groups of financial institutions, and the degree of competition involved.

This appears to be a logical classification, and is the one adopted in this thesis.

Whilst "financial change" in terms of changing areas of activity can be identified, it is not easy, in practice, to identify "financial innovation", as Desai and Low point out,

> "In oligopolistic markets with product differentiation, it is a standard selling strategy to describe products as 'new, improved'. A handful of firms each providing a similar if not identical range of products may continuously announce new, improved, super versions of their products which may only be new in trivial aspects of product design. A bank providing its customers with cheque books in different colours may claim to be innovative, but it is when a rival bank/non bank offers higher interest rates for the same withdrawal facility that one would say that we have an important innovation. This implies, of course, *a priori* ordering of characteristics by their importance. Such ordering may be revealed by consumer preference but this is not guaranteed".
>
> 1987, p114

There have been numerous attempts to specify the underlying causal factors affecting the nature and degree of financial innovation. An analysis of the literature shows that technological, market, and regulatory factors are maintained to be the major determinants of financial change and financial innovation, although the emphasis placed on each tends to differ somewhat between authors (and there is no precise standardisation of terminology). For example, Kane (1983) categorizes technological, market and regulatory factors as <u>environmental constraints</u>, a change in any one of which may lead to a restructuring of a financial institution's product line, organizational structure, production process, and demand for financial services. Bain (1986) cites Hood (1959) when he classifies the factors influencing the changing variety of financial instruments available as structural, legislative, and market. The first includes the location of surplus and deficit units in the economy, portfolio preferences of the users of financial services, and the economic and political environment. Legislative influences include taxation considerations, monetary and supervisory controls, whilst market factors involve the stage of development of financial institutions and markets in the economy, particularly in the form of the competitive relationships between different financial institutions.

Smithin (1984) categorizes financial innovations by distinguishing those that are <u>caused</u> by technological, institutional, and regulatory factors, and from a slightly different perspective (commenting on the American situation), Tobin (1983) also cites technological, institutional, and regulatory factors as being prime determinants of financial innovation and change.

A slightly different approach is taken by Rybczynski, (1986). Changes in financial markets are differentiated by Rybczynski according to whether they are changes in 'internal' or 'external' frontiers. The former refers to the elimination of traditional demarcation lines as to the activities carried out by financial institutions. These he outlines as the payments mechanism, (preserve of the banks), the collection of savings, (provided by non-bank financial intermediaries), and the underwriting of securities and fund management (investment banking). The external frontiers he establishes as the number of clients for services, the geographical area over which services are available, and the provision of new financial services both by incumbent institutions and new entrants.

The main factors affecting these 'internal' and 'external' frontiers, according to Rybczynski, include economic factors (under which technological innovation is subsumed) and the regulatory framework, the latter cited as the main cause of shifting the frontiers.

Perhaps the most comprehensive classification of the factors affecting financial change and financial innovation is that of Llewellyn (1985a, 1985b). The analytical framework for considering the evolution of the financial system consists of six major elements (which are set down here verbatim):

i) the volume and structure of the flow of funds of <u>users</u> of the financial system which determine the demand for financial intermediation;

ii) their portfolio preferences which determine the type of services and instruments demanded;

iii) the 'efficiency' of different financial intermediation mechanisms which determines the terms that can be offered by institutions to both savers and borrowers;

iv) institutions' own portfolio strategies and preferences;

v) the dynamics of financial innovation;

vi) the portfolio and regulatory constraints on financial institutions.

Furthermore, all of these factors can be influenced by general economic and monetary influences. Llewellyn maintains that it is the mix of the above factors that determines financial change and financial innovation in the financial system.

Whilst not wishing to prejudge the preceding analysis of building society and bank financial innovation and change by outlining any one analytical framework, the above conjectures as to the determinants of financial change provide a useful initial structure within and around which to analyse the developments involving the above institutions.[2]

3.2 The Effect of the Cartel on Building Society Operations

The roots of the building society movement as self-help mutual institutions has greatly affected the manner in which the movement as a whole has conducted its affairs [3].

The relatively simple role of building societies in the pre 1980 period is adequately summarized by the Building Societies Act 1962 [4].

> "The purpose for which a society may be established under this Act is that of raising, by the subscription of members, a stock or fund for making advances to members out of the funds of the society upon security by way of mortgage of freehold or leasehold estate".
> (Ch.37, Pt.1. Section 1(1))

The status of building societies as mutual institutions means that defining their precise business objectives is somewhat more problematic.[5] Nevertheless, there is general agreement that during the post-war period, at least until the early 1980's, a major business objective of many societies was the pursuit of balance sheet growth. In other words, it appears that many societies aimed explicitly to maximise, in the long-term, the volume of their on-lending within the constraints of prudent fund management and their ability to attract deposits.

The existence of the recommended rate system [6] tended to encourage balance sheet growth as the major objective of building societies. The recommended rate system effectively formed an interest-rate setting cartel within the sector. Whilst most cartels operate in order to keep prices up by reducing the supply of their product-service, it appears that the building society recommended rate system operated a policy of keeping prices down. The cartel tended to keep lending rates below the market clearing level such that there was a deliberate rationing of mortgage loan supply (for empirical results of the rationing of mortgage demand see Anderson and Hendry (1984)). This pricing policy was adopted largely in connection with the perceived role of societies as providers of low-cost housing finance.

The status of building societies as mutual institutions has, however, also been a factor in the operation of the recommended rate system. The building society industry viewed itself as a self-help movement for the benefit of its members. Each building society appeared to be a constituent part of the movement, all involved in the same goal. The building society cartel aimed to limit interest rate competition amongst societies partly to protect the smaller, more inefficient societies. The cartel appeared to run counter to the traditional economic model of a price setting cartel. Most cartels function in order to distribute income from consumers to industry, and to drive out smaller firms. The concentration of a large proportion of total building society assets in the hands of a few building societies (Table 3.1) would seem to suggest ideal conditions for the larger societies to form a cartel to 'drive-out' the smaller societies. The recommended rate system, however, had the effect of transferring income from depositors to borrowers (Llewellyn 1985(a)) and to protecting smaller, inefficient building societies, Gough and Taylor (1979). Although it may have kept building society lending rates below a market clearing level, many home-buyers paid an effective rate

Table 3.1

YEAR	LARGEST 5 TOTAL ASSETS	LARGEST 5 SHARE of TOTAL	LARGEST 10 TOTAL ASSETS	LARGEST 10 SHARE of TOTAL	LARGEST 20 TOTAL ASSETS	LARGEST 20 SHARE of TOTAL
	(£m)	(%)	(£m)	(%)	(£m)	%
1970	5416	50.1	6955	64.3	8369	77.4
1975	12797	52.9	16498	68.2	19930	82.3
1976	15144	53.7	19401	68.8	23344	82.8
1977	18391	53.6	23715	69.2	28571	83.3
1978	21489	54.4	27901	70.6	33220	84.0
1979	25192	55.0	32390	70.7	38489	84.1

Degree of Concentration in the Building Society Industry 1970-1979

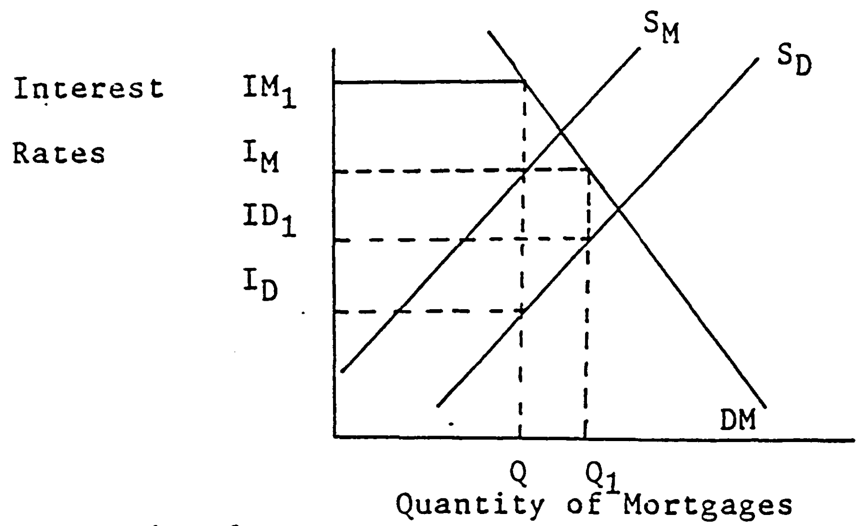
Source: B.S.A. Bulletin, October 1987.

above this level. As Boleat (1986, p177) points out, the availability of loans must also be considered as part of the cost of house purchase. If a borrower cannot obtain a full loan at the building society rate of interest because of mortgage rationing, the result may be to obtain a small loan at that rate of interest and 'top-up' with a larger loan from 'other' financial intermediaries at a higher rate of interest.

The cartel had a marked effect on the mix of price and non-price competition in the market for retail funds. Whilst the cartel was in operation, changes in the price competitiveness of building societies services could only be initiated through changes in the recommended rates, and hence a deliberate change in interest rate differentials by a large majority of building societies relative to other retail financial institutions. This resulted in a lower level of price competition than might be expected under a free market system.

The effect of the cartel can be seen in the diagram on the next page. The Building Societies Association advised the level of interest rates on shares and deposits (e.g. ID) and mortgages (e.g. IM). The Stow Report (BSA 1979) argued that the effect of operating with low-interest rates that are at an uncompetitive level meant that there were insufficient funds to meet mortgage demand. For example, if the mortgage interest rate is IM, there will be excess mortgage demand of

Diagram 3.1



S_M = supply of mortgages

S_D = supply of shares and deposits.

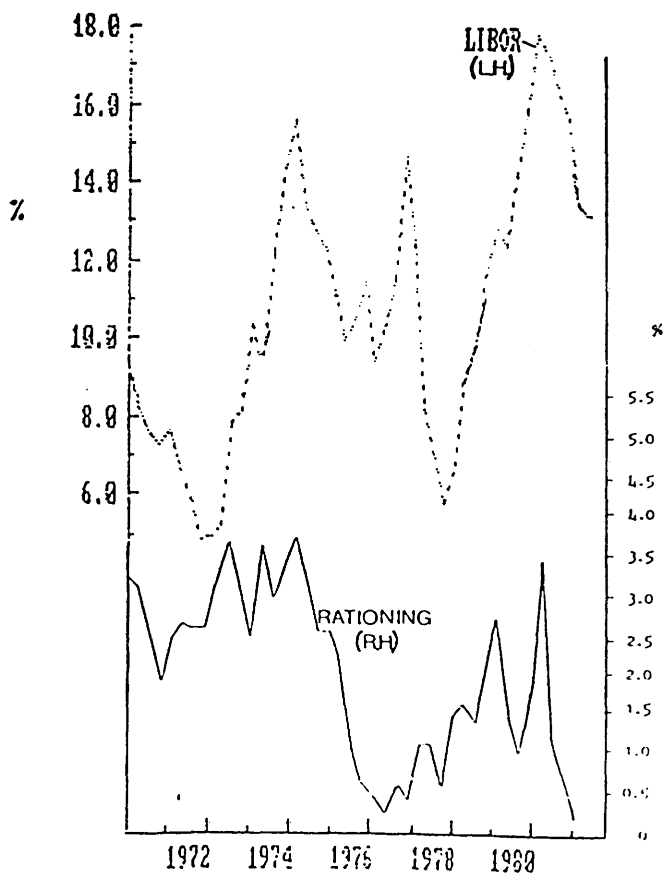
Effect of the Cartel on Mortgage Supply

Q_1-Q at ID rate of interest on shares and deposits, whereas the market clearing level for mortgages is IM_1.

The cartel operated such that the supply of mortgages was largely determined by the supply of deposits. This meant that there was variable excess demand for mortgages over the interest rate cycle. Building Societies' interest rates on deposits tended to lag behind any increase in the general level of market interest rates, resulting in a loss of competitiveness and a reduction in inflows to shareholders' accounts. With a fall in inflows of funds, the building societies, as they would not push up mortgage interest rates to market clearing levels, and as running down liquid assets could not occur indefinitely, employed non-price rationing devices to limit mortgage supply. At such a time excess demand for mortgages tended to be high.

Conversely, when the general level of market interest rates was falling, the building societies' enjoyed greater competitiveness. As a result of sticky interest rates deposit inflows were strong, and mortgage rationing declined. Thus when general interest rates were falling the excess demand for mortgages tended to be low. These effects can be seen in diagram 3.2. When general market interest rates as represented by LIBOR rose, excess demand for mortgages as measured by Meen (1985) tended also to rise, and when market rates fell, excess demand for mortgages fell. Overall, the cartel tended to operate in such a way as to stabilise and smooth out the fluctuations in building society interest rates as compared with general market rates, and the role of price effects in equilibriating the demand for and supply of mortgage funds was reduced. The Wilson Report (1980, p113) expressed the views that the cartel led to inefficiency and a hindrance to competition, and argued that the abolition of the recommended rate system would lead to higher interest rates on shares and deposits (e.g. ID_1) and the ability of societies to meet mortgage demand. It also noted that one likely impact of greater competition would be to encourage mergers, both smaller societies transferring their engagements to larger ones, and also mergers between larger societies. (see Chapter 4 for more detail on this point).

DIAGRAM 3.2



LIBOR AND MORTGAGE RATIONING

Furthermore, the cartel meant that in general, whilst price competition was stifled, competition for retail funds was largely effected through the rapid growth of advertising and the dramatic increase in the number of building society branches. (See Table 3.2).

There was also, however, scope for more efficient societies to circumvent the constraints of the recommended rate system. In particular, some small societies with low management expense ratios were able to offer premia above the recommended rate.

It would thus appear that the building societies' own portfolio strategies and objectives were a major determinant of the manner in which business was conducted. The building societies' objectives tended to outweigh the portfolio preferences of the members of the building societies and their demand for financial intermediation services. With deposit rates kept artificially low, inflows of funds were lower than would have been expected under a competitive market clearing system, and hence this affected the ability of the societies to meet mortgage demand.

Table 3.2

Year	Number of Societies	Number of Branches	% Growth
1970	481	2016	11.6
1971	467	2261	12.2
1972	456	2522	11.5
1973	447	2808	11.3
1974	416	3099	10.4
1975	382	3375	8.9
1976	364	3696	9.5
1977	339	4130	11.7
1978	316	4595	11.3
1979	287	5147	12.0

Building Society Branching

Source: B.S.A. December 1985.

3.3 Monetary Control, Competition and Innovation

The mode of operation of monetary control was perhaps the single most important factor affecting the relative competitive positions and degree of innovation by banks and building societies over the period 1970-1979.

Initially the broad approach of monetary control under CCC was towards free operation of the price mechanism and free competition in the financial system, with the level of credit to be determined by cost, and away from quantitative monetary control which tended to lead to disintermediation, distortion, and a lower level of competition than would be expected under a less restrictive system.

As explained below, however, it was soon deemed necessary by the monetary authorities to impose more restrictive monetary control arrangements on the banking system, controls which effectively then hampered the ability of the banks to compete in the personal sector financial markets for the rest of the 1970's.

The clearing banks, similarly to the building societies, had operated an interest rate cartel since 1955, whereby the seven day deposit rate was fixed at two per cent below Bank Rate, and lending rates informally linked to the Bank Rate. There was therefore an effective limitation to the degree of interest rate competition between the retail banks and between the retail banks and other financial institutions.

Both the National Board for Prices and Incomes (NBPI 1967) and the Monopolies Commission (MC 1968), criticised the operation of the cartel, arguing that it led to an over-emphasis on non-price rather than price competition, and particularly in the form of the rapid expansion of the branch network in the 1960's (see Table 3.3). The call by the NBPI and the MC for the abolishment of the cartel was given impetus by changes in the broad ethos and practical methods of monetary control introduced under the Competition and Credit Control regime (September 1971). The previous policy of direct controls, particularly in the form of quantitative ceilings on bank lending were seen to be inefficient, and a constraint on competition in the financial system. Moreover, the interest rate cartel acted as an encouragement to secondary banking institutions to develop at the expense of the clearing banks.

Moreover, quantitative controls led to large-scale disintermediation through the growth of the secondary money markets; flows of funds outside of the banking system which avoided the quantitative monetary control ceilings and confused interpretation of monetary conditions (further analysis of aspects of disintermediation is carried out in Chapter Seven).

Initially it was thought that under CCC two main instruments would be sufficient, reserve requirements and special deposits. Banks were required to keep reserve ratios of 12½% between eligible reserve assets and eligible liabilities [7]. Secondly, the banks were obliged to place special deposits with the Bank of England when called for (normally called as a percentage of eligible liabilities[8]).

Table 3.3

YEAR	NUMBER OF BRANCHES
1960	10886
1962	11250
1964	11804
1966	11972
1968	12315
1970	12137
1972	11838
1974	11807
1976	11659
1978	11107
1980	11964

Committee of London Clearing Banks[a]
Branch Network, 1960-1988

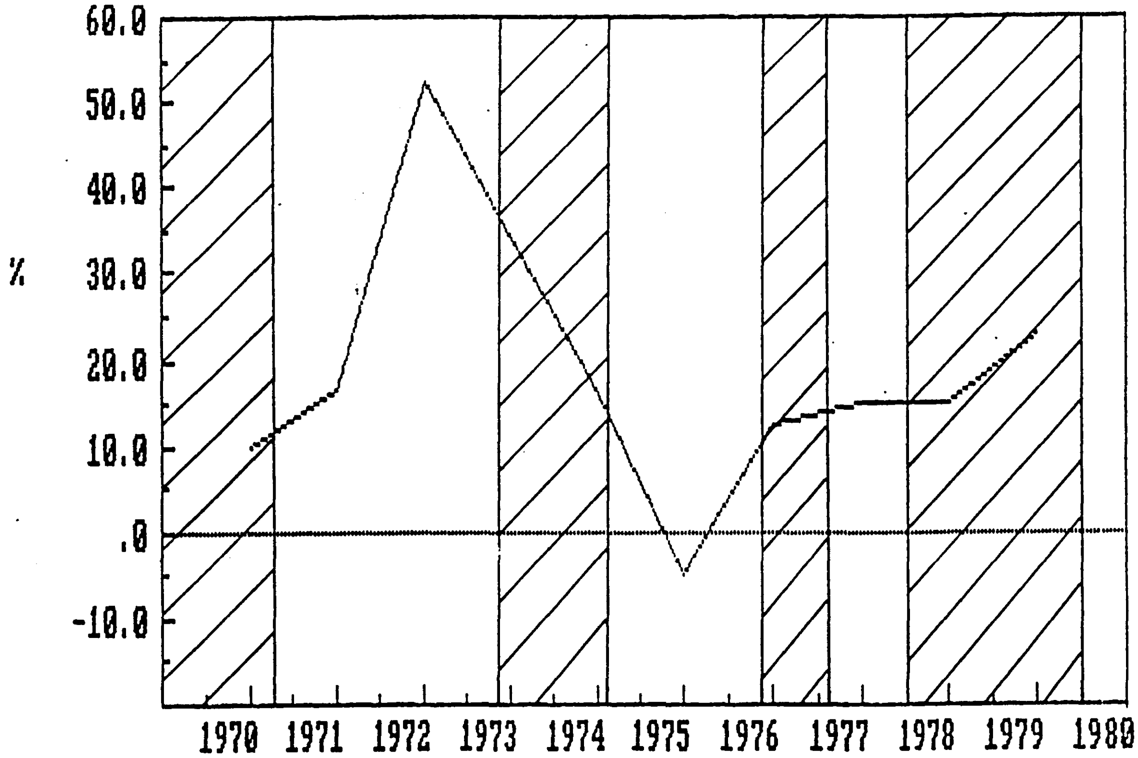
Source: C.L.C.B. (1977) and Abstract of Banking Statistics (May, 1988)

(a) Barclays, Lloyds, Williams and Glyn, Midland, National Westminster.

A call for special deposits was expected to have the effect of placing pressure on the banks reserve ratios, forcing them to sell eligible assets. Goodhart (1981) maintains that the decision to impose a reserve ratio arose out of the monetary authorities uncertainty as to the banks' reaction to operating in a less constrained, more competitive market environment. The reserve ratio could act as a pivot against which the monetary authorities could apply pressure through calling for special deposits.

The attitude of the banking industry in the competitive system was indeed dramatic. As would be expected, greater competition led to the administratively maintained margin between deposit and lending rates being reduced and an increase in absolute deposit and lending rates. In effect, with quantitative lending controls abolished, the banks actively competed for deposits on price terms, pushing up the average rate paid on deposits at banks. The shift from non-price to price competition by the retail banks is partly evidenced by the rationalization of the branch network in the 1970's as compared to the expansion of the 1960's (see Table 3.3). There was a tremendous "reintermediation" effect after the abolition of quantitative controls in September 1971, with funds previously maintained outside of the banking system being re-channelled through the banks. The growth of bank deposits and bank lending was particularly fast after the removal of the quantitative controls. As can be seen from diagram 3.3 bank lending to the non-bank private sector grew by over 50% between the end of 1971 and

DIAGRAM 3.3



BANK LENDING TO THE NBPS

(% CHANGE ON PREVIOUS YEAR)

the end of 1973, from £11.2 billion to £17.1 billion (see Table 3.4), and doubled over the two year period end of 1971 to end 1973 from £11.2 billion to £22.9 billion.

Table 3.4

YEAR	£ billion	%Growth
1970	9.6	10.0
1971	11.2	16.7
1972	17.1	52.2
1973[b]	22.9	33.9
1974	26.7	16.3
1975	25.3	-5.0
1976	28.4	12.3
1977	31.9	15.0
1978	36.7	15.0
1979	45.3	23.0

Bank lending to the Non-Bank Private Sector[a] (end period)

Source: Financial Statistics, various Issues.
Table 6.6

Notes:

(a) All banks in the United Kingdom plus National Giro, the discount market, the Bank of England Banking Department.

(b) End of first quarter 1973 inclusion of new contributors to series.

Deposits of the non-bank private sector held with the banking system also showed fast growth after the removal of quantitative controls - by 30% in each of the years 1972 and 1973 (see diagram 3.4 and Table 3.5).

Table 3.5

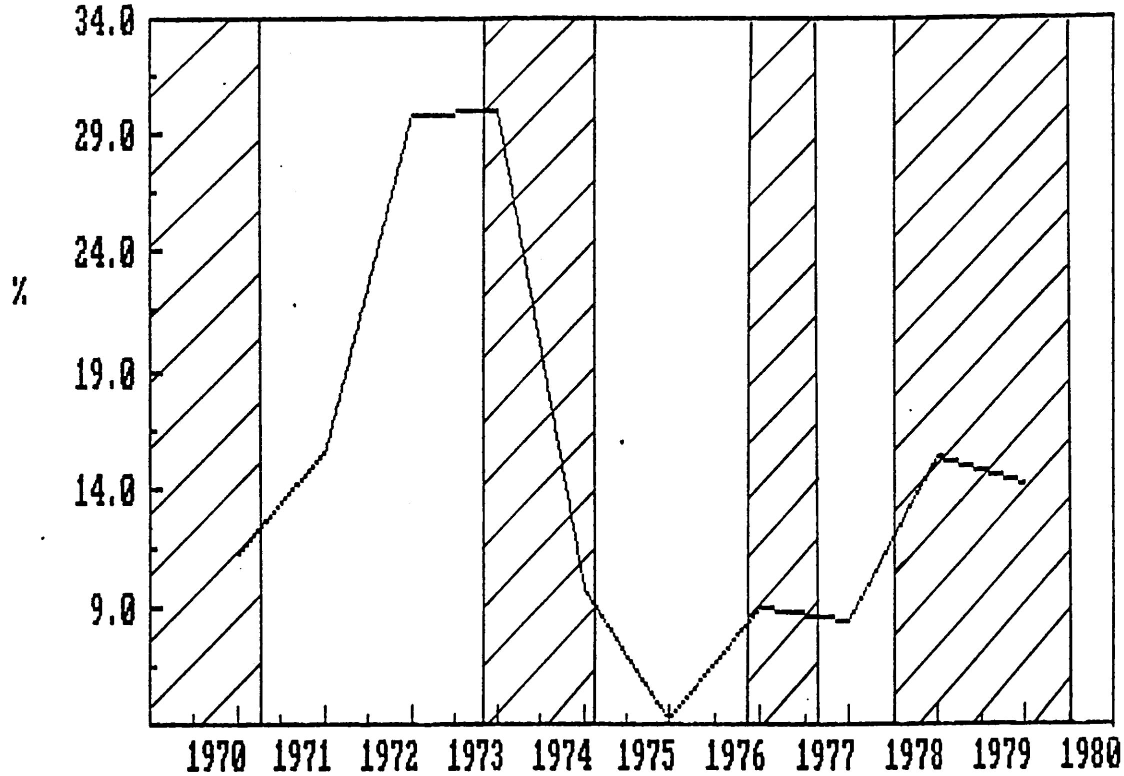
YEAR	£ billion	% Growth
1970	13.8	11.2
1971	16.0	15.4
1972	20.7	29.8
1973	26.9	29.9
1974	29.6	9.7
1975	30.8	4.1
1976	33.5	9.0
1977	36.3	8.3
1978	41.8	15.2
1979	47.7	14.1

Bank deposits held by the Non-Bank Private Sector

(end period)

Source: Financial Statistics, various Issues,
Table 6.6

DIAGRAM 3.4



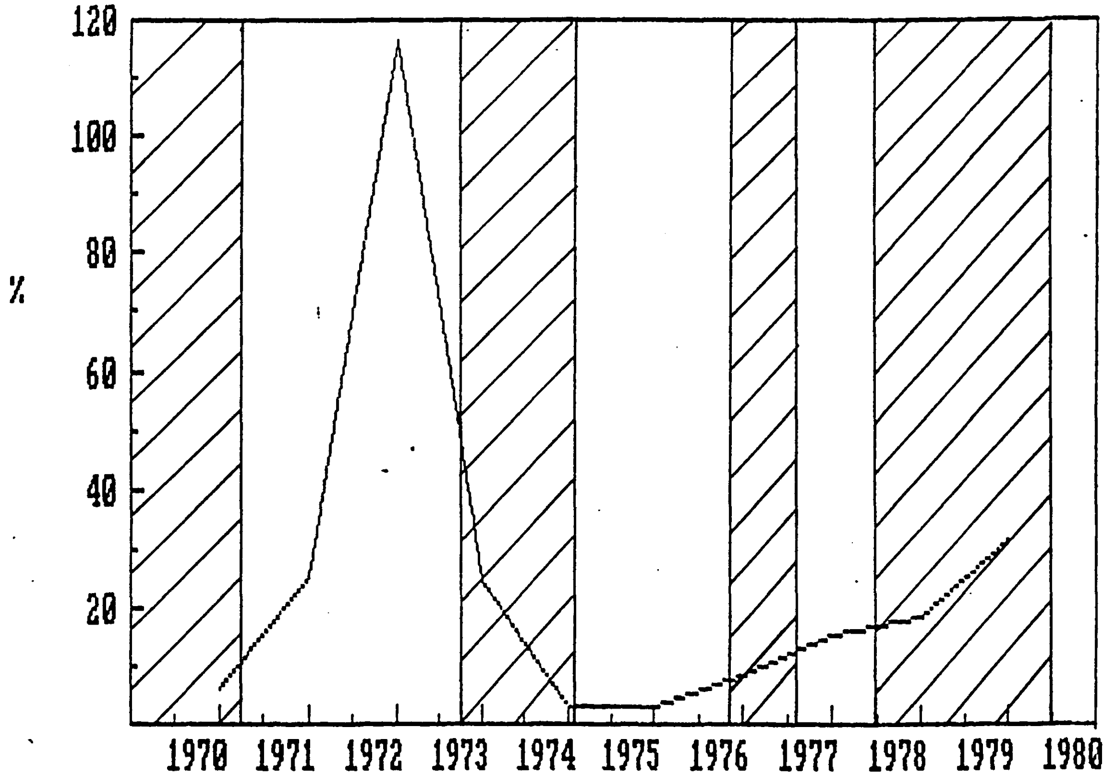
NBPS DEPOSITS WITH THE BANKING SECTOR
(% CHANGE ON PREVIOUS YEAR)

The Bank of England emphasized the importance of reintermediation of funds channelled through the banking system, particularly on the part of the personal sector,

> "Thus on the asset side, after so many years of controls and restrictions, it was hardly surprising that there was a large immediate surge in bank lending to those sectors against which the controls had been most severely directed, such as the personal sector. The extent of the shift was perhaps somewhat exaggerated both by the comparative stagnation in the demand from manufacturing industry for bank finance, though this now seems to be reviving, and also by the various measures taken, for example, in the field of taxation and in the abolition of terms control, which had the effect of encouraging personal borrowing still further".
>
> (Governor of Bank of England, October 1972
> Quoted in BEQB 1984(e) p42)

As can be seen from diagram 3.5 and Table 3.6 bank lending to the personal sector showed particularly fast growth over the period 1971-1972.

DIAGRAM 3.5



BANK LENDING TO THE PERSONAL SECTOR
(% CHANGE ON PREVIOUS YEAR)

Table 3.6

YEAR	£ billion	% Growth
1970	2.0	6.1
1971	2.5	25.0
1972	5.4	116.0
1973(b)	6.7	24.1
1974	6.9	3.0
1975	7.1	3.0
1976	7.7	8.5
1977	8.9	15.6
1978	10.5	18.0
1979	13.8	31.4

Bank Lending to the Personal Sector(a) (end year)(c)

Source: Financial Statistics. Various Issues. Table 10.3

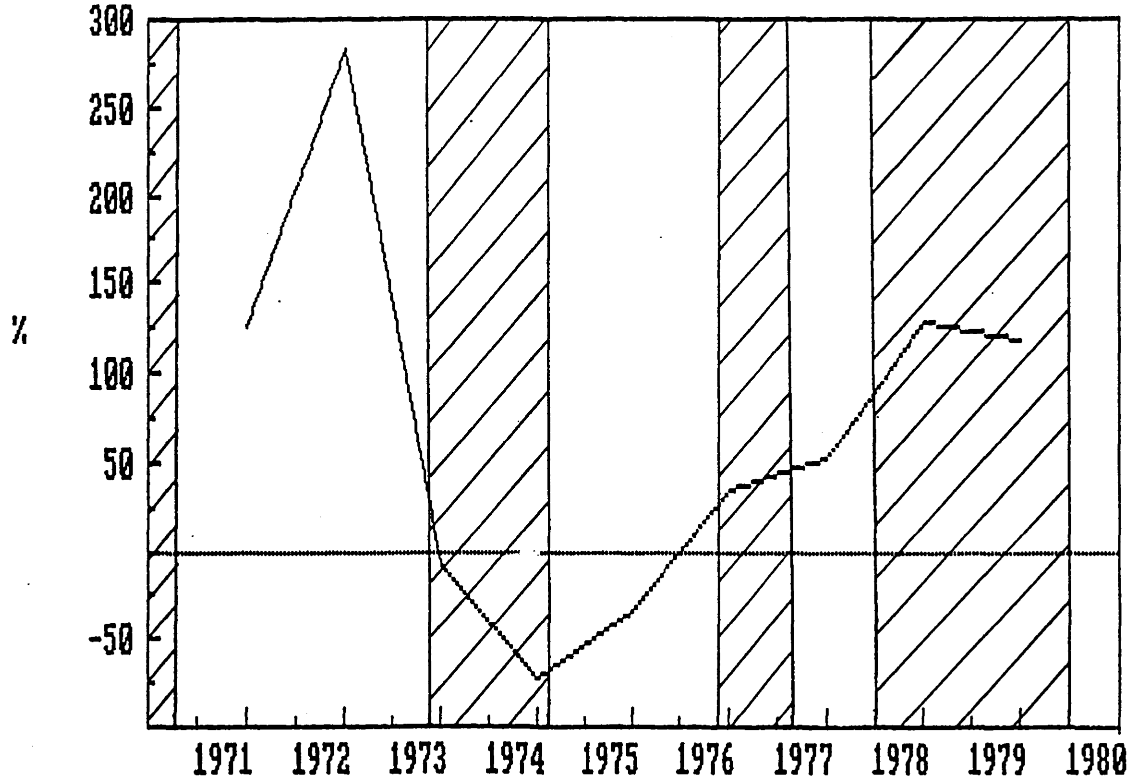
Notes:

(a) and (b) see Notes for Table 3.4

(c) Includes loans for house purchase.

Interestingly, the banks also increased their lending for house purchase, thus competing directly with the building societies for market share, although bank lending for house purchase still accounted for only a small proportion of total mortgage lending. Net new loans for house purchase increased by over 280% during 1972, (Diagram 3.6) although the absolute figures were relatively small compared with the building societies (Table 3.7).

DIAGRAM 3.6



NET NEW BANK LOANS FOR HOUSE PURCHASE
(% CHANGE ON PREVIOUS YEAR)

Table 3.7

YEAR	BUILDING SOCIETIES	BANKS	OTHER[a]
1970	1088	40	181
1971	1600	90	227
1972	2215	345	475
1973	1999	310	584
1974	1490	90	859
1975	2768	60	902
1976	3618	80	230
1977	4100	121	141
1978	5715	275	47
1979	5271	597	593

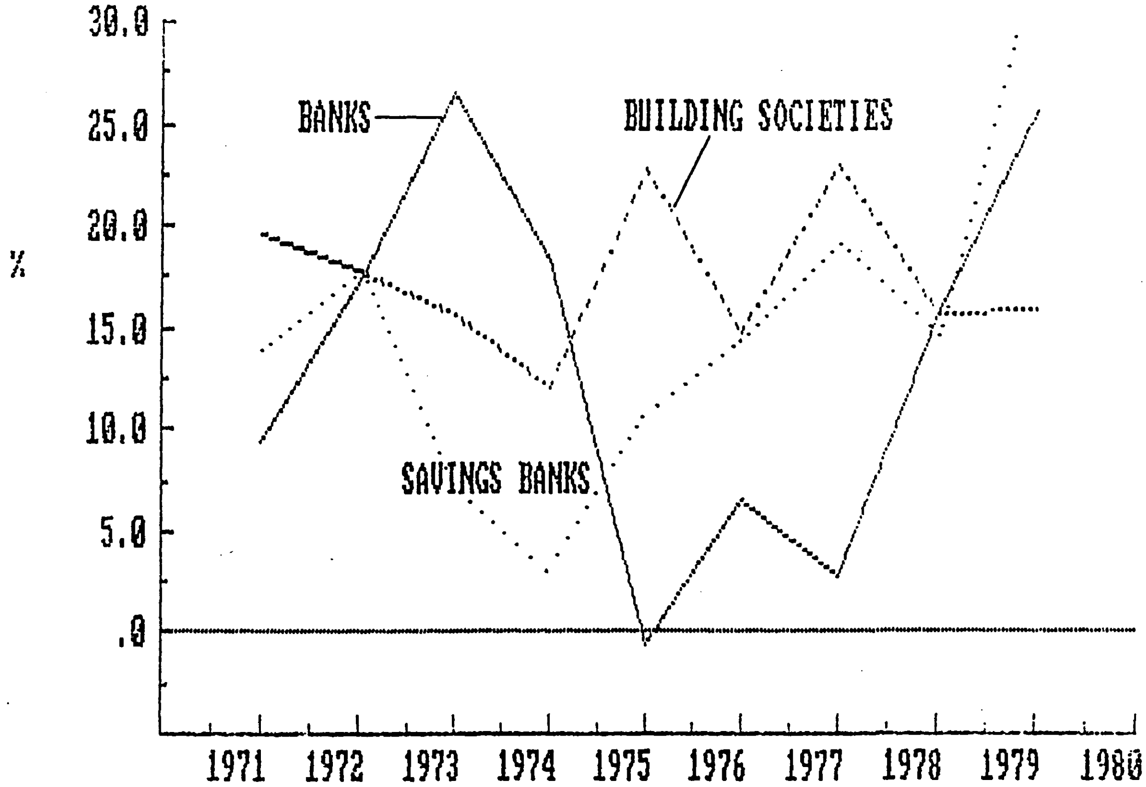
Net New Loans for House Purchase (end period, £ million)

Source: Table 9.4 Financial Statistics, various issues.

(a) Other: Local Authorities, Insurance Companies, Pension Funds, other Public Sector.

The extent to which the banks were able to attract retail deposits is shown in diagram 3.7 and table 3.8. Personal sector deposits held with the monetary sector grew by over 25% in 1973, although it is clear that most of the growth in money balances in 1973 and 1974 were at the expense of the 'other' category, rather than the building society sector.

DIAGRAM 3.7



PERSONAL SECTOR HOLDINGS OF SELECTED LIQUID ASSETS(% CHANGE,END YEAR)

Table 3.8

<table>
<tr><th>YEAR</th><th colspan="2">DEPOSITS WITH MONETARY SECTOR</th><th>DEPOSITS WITH BUILDING SOCIETIES</th><th>DEPOSITS WITH SAVINGS BANKS</th></tr>
<tr><th></th><th>SIGHT</th><th>TIME</th><th></th><th></th></tr>
<tr><td>1970</td><td colspan="2">10062</td><td>10059</td><td>1772.</td></tr>
<tr><td>1971</td><td colspan="2">11015</td><td>12020</td><td>2013</td></tr>
<tr><td>1972</td><td colspan="2">12901</td><td>14159</td><td>2367</td></tr>
<tr><td>1973</td><td colspan="2">16317</td><td>16347</td><td>2533</td></tr>
<tr><td>1974</td><td colspan="2">19290</td><td>18316</td><td>2595</td></tr>
<tr><td>1975</td><td colspan="2">19206</td><td>22477</td><td>2866</td></tr>
<tr><td>1976</td><td colspan="2">20461</td><td>25778</td><td>3281</td></tr>
<tr><td>1977</td><td>10372</td><td>10646</td><td>31710</td><td>3892</td></tr>
<tr><td>1978</td><td>12010</td><td>12164</td><td>36609</td><td>4463</td></tr>
<tr><td>1979</td><td>13209</td><td>17148</td><td>42442</td><td>6896</td></tr>
</table>

Personal Sector Holdings of Liquid Assets. (End period, £ million)

Source: Table 9.5 Financial Statistics. Various Issues.

Given the rapid growth of lending and deposits, the chosen monetary control system appeared to be a failure,

> "clearly the standard control mechanism had not worked; the first need was to discover why this was. An important factor, in my view, was that we had failed to foresee the likely course of bank behaviour in an unconstrained system (a failure which may be more easily understood since the British banks had not had the chance of operating in such a *milieu* in living memory). In particular, in an oligopolistic banking system, with a large element of 'endowment' profits accruing on assets held against zero-yielding current accounts, the extent to which the banks might take the expansionary and competitive bit between their teeth and gallop off was unexpected".
>
> (Goodhart (1981, p123)

Under CCC, there were two major transmission channels by which interest rates were expected to affect the money supply. Firstly, an increase in interest rates on public sector debt was expected to result in funds being transferred by the non-bank private sector out of bank deposits and into holdings of public sector debt. Increases in rates on public sector debt were not expected to be matched by increases in rates on bank deposits, as the latter were presumed to be stickier.

However, under the competitive, aggressive system unleashed by CCC, the banks' competed strongly for deposits (particularly wholesale), such that there was not such a decisive change in interest differentials between public sector debt and bank deposits when the former were raised. If differentials were unaffected, a policy of raising interest rates to induce a shift out of deposits into public sector debt would have no affect on interest differentials, and hence no effect on monetary expansion.

This placed much more emphasis on the second main channel, the effect of interest rates on the demand for bank borrowing, which appeared to be a relatively weak relationship (Bank of England 1984 (e), p44).

The main problem, as far as monetary control was concerned, was the liability management policies of the commercial banks. The advent of liability management meant that the retail banks were largely credit driven, rather than being deposit driven i.e. the banks granted credit, and then changed their liability portfolio in response to this increase in assets, rather than vice versa, Goodhart, (1986(a) p88). Traditionally, equilibrium between assets and liabilities was maintained by buying or selling marketable government securities; with the advent of a robust inter-bank market the retail banks increased the tendency to rely on raising wholesale deposits at short notice. Such "liability side liquidity" allowed the retails banks to fulfil the demand for credit.

To counteract the banks aggressive bidding for funds through liability management, the Supplementary Special Deposits (SSD)[9] scheme was introduced, colloquially known as the 'corset'. The SSD scheme represented an attempt by the monetary authorities to inhibit the banking sector from utilizing the practice of liability management, in the face of a strong demand for credit. Under the SSD scheme, non-interest bearing Supplementary Special Deposits had to be placed at the Bank of England if a bank's interest-bearing eligible liabilities (IBEL's) grew faster than the specified penalty-free rate, which was a percentage figure of the base level of IBEL's. The periods during which the corset applied are shown in Table 3.9.

TABLE 3·9 THE SSD SCHEME

- The scheme applied in principle to all 'listed' banks and deposit-taking finance houses; but small institutions and (because of the special circumstances there) institutions in Northern Ireland were exempt.
- Institutions were required to lodge non-interest-bearing deposits with the Bank of England if their interest-bearing eligible liabilities (see ne: box) grew faster than a specified rate. The rate of deposit was progressive from 5% to 50% as the amount of excess growth increased.
- The liability to pay SSDs was calculated monthly, on a moving three-month average of IBELs.
- The precise details which applied to each activation of the scheme are shown below.

Scheme announced	Base period[a]	Allowable growth	Rate of deposit	Exemption[b]	Scheme termin
17 Dec. 1973	Oct.–Dec. 1973	8% over first six months; 1½% per month thereafter	*Until Nov. 1974* 5% in respect of excess of up to 1% 25% „ „ „ „ of 1%–3% 50% „ „ „ „ of over 3%	£3 million	28 Feb. 1975
			From Nov. 1974 5% in respect of excess of up to 3% 25% „ „ „ „ of 3%–5% 50% „ „ „ „ of over 5%	£5 million	
18 Nov. 1976	Aug.–Oct. 1976	3% over first six months; ½% per month thereafter	As above	£5 million	11 Aug. 1977
8 June 1978	Nov. 1977–Apr. 1978	4% over period to Aug.–Oct. 1978; 1% per month thereafter	As above	£10 million	18 June 1980[c]

(a) The base level was the average level of IBELs over the period shown.
(b) The scheme did not apply to institutions with IBELs below the amount shown.
(c) The announcement of the termination of the scheme was made on 26 March; final deposits were repaid in August.

The underlying motive of the corset was to force the banks into a decision-making process limited to the choice between accepting lower profits on any additional lending undertaken, or to widen their margins. The incentive to widen margins was provided by the face that the opportunity cost of placing non-interest bearing SSD's with the Bank was greater than the cost of acquiring extra reserve assets (BEQB March 1982). The expected result was summed up by the Bank of England,

> "To the extent that they widened their margins a 'wedge' was driven between their deposit and loan rates. Even if higher lending rates had only a small short-run impact on the demand for credit, lower wholesale deposit rates relative to base rates were expected to reduce the opportunities for round-tripping. There was also some hope that the reduced profitability of marginal business might deter the banks from expanding their balance sheets either by pursuing innovative lending policies, or by making loans with a high default risk. The ability of the SSD scheme to encourage non-price rationing by the banks might have been important because of the interest-sensitivity, at least in the short-run, of the demand for credit".
>
> (BEQB March 1982, p77)

Alongside the corset, the Bank of England also imposed qualitative lending guidelines to the banking system. The Bank of England consumer credit notice of 17 December 1973 requested the banks to exercise restraint on lending to the personal sector and to property companies. The request was reaffirmed in subsequent credit control notices, such that the banking sector was effectively constrained in their lending policies to the personal sector throughout the 1974-1979 period. [10]. This had a major effect on their ability to compete in the personal sector retail financial markets. Furthermore, the retail banks were also requested to restrict the interest rate paid on deposits of less than £10,000 to 9½% between September 1973 and February 1975. The retail banks were thus for a time constrained in their ability to compete with the building societies for personal sector deposits.

Largely as a result of the SSD scheme and the qualitative lending guidelines inhibiting the banks' potential for competition, the building society movement faced a favourable market environment over the majority of the period 1974-1979. Bank lending to the NBPS dropped dramatically during the first phase of the SSD scheme (see Diagram 3.3) and remained stable over the second and third phases. Total bank lending to persons, and lending solely for house purchase were also curtailed, particularly in 1973 and 1974, (Diagrams 3.5 and 3.6). The retail banks were also unable to effectively compete for retail deposits during the operation of the corset and the enforced lending guidelines, and the rate of growth of bank balances held by the personal sector declined rapidly from 1973 to 1977.

The periodic imposition of direct monetary controls between December 1973 and June 1980, aimed at reducing the banks deposit bases, thus restricted a major element of the potential competition for retail funds, strengthening the competitive position of the building societies. Table 3.10 shows clearly the rapid growth in personal sector holdings of money as a proportion of gross financial wealth over 1971-1974, and the decline after 1974 as a result of stringent portfolio controls on the banks.

Leigh-Pemberton, then the Chairman of the National Westminster Bank, put forward the objections of the banking community to the asymmetry of monetary control,

Table 3.10

YEAR	MONEY[a]	BUILDING SOCIETY SHARES & DEPOSITS	NATIONAL SAVINGS	OTHERS[b]
1970	13.7	10.8	7.1	70.4
1971	12.5	10.7	6.3	70.6
1972	12.8	11.2	5.9	70.1
1973	16.5	13.5	6.3	63.6
1974	21.7	16.9	7.0	54.4
1975	17.2	16.0	5.7	61.1
1976	17.1	16.8	5.5	60.6
1977	14.5	16.7	5.1	63.7
1978	15.2	17.5	5.4	61.9
1979	16.0	17.6	4.5	61.9

Personal Sector Holdings of Gross financial wealth by asset types as a percentage of total (end period).

Source: Financial Statistics, Various Issues. Table 14.4

(a) Notes and coin plus sterling and foreign currency sight and time deposits at UK banks.

(b) Local authority temporary loans, savings bank deposits, UK stocks and shares, public sector long-term debt, trade credit, equity in insurance and pension funds, accrual of taxes and interest and other overseas and domestic assets.

> "Another area in which the banks feel that they are the victims of discrimination is in credit control. In these days of practical monetarism and monetary targetry, bank deposits as a major constituent of sterling M3 come in for a great deal of attention. Other institutions, whose liabilities may in fact be very close substitutes for bank deposits, are outside this control, and to the extent that these institutions are able to meet any unsatisfied demand for credit the regulation of demand for real resources is frustrated. It also means that in times of bank credit restriction, non-banks are better able to capture market shares of deposits and lending from the banks. The 'corset' limiting the growth of bank interest-bearing deposits, is a particularly invidious form of control".
>
> (1979 p9(italics added))

According to Leigh-Pemberton, the changing nature of Building society deposits necessitated placing building societies under the same controls as were placed on the banks (both in terms of fairness to banks and in terms of efficiency of monetary control),

> "The nearer other institutions liabilities become to bank deposits, and the greater their volume, the stronger the case for bringing these institutions within the ambit of credit control".
>
> (1979. p9)

It would be expected, according to traditional economic theory, that the building societies would have taken advantage of the monetary controls on the retail banks,

> "a combination of restrictive monetary policy and accumulating debt creates the opportunities for non-bank intermediaries to offer more expensive attractions to creditors and hence to compete more actively with banks".
>
> (Gurley and Shaw 1955, p532)

Building Societies represented a special case, however, in terms of their mutuality and the existence of the cartel. The building societies did not actively compete with one another on price terms, and hence probably did not attract as many deposits from the banking system as they may have done if they were price competitive.

The growth of building societies over the period 1974-1977 was largely at the expense of the retail banks, whilst the corset was in operation, (Table 3.11).

Table 3.11

Year	Banks	Building Societies	National Savings
1963-72	+0.3	+16.2	-16.3
1972-74	+5.5	+ 0.2	- 5.1
1974-77	-8.5	+ 9.5	- 0.7
1977-79	+0.4	- 0.4	-
1963-79	-2.3	+25.5	-22.1

Deposits of the Personal Sector.Changes in Market Share (end period)

Source: Vittas and Frazer (1980)

The evidence appears to indicate that the corset had a major affect on the ability of the banking sector to compete with the building societies. The banks lost market share to societies particularly over the period 1974-1977, a time of heavy corset restrictions.

Building Societies thus faced little effective competition for retail funds, reflected in their product variety and product range (Lewis 1987), (Table 3.12).

Throughout the 1970's the building societies' funds were dominated by the ordinary account. Ordinary shares represented over 87% of total savings at building societies in 1974, falling slightly to 80.5% by 1979 as a result of the limited growth in term shares.

Table 3.12

End Year	Ordinary accounts %	Term accounts %	Regular Savings + SAYE	Other
1974	87.2	5.6	3.8	3.5
1975	85.7	7.3	3.6	3.4
1976	84.6	8.5	3.6	3.3
1977	83.2	9.4	3.4	3.9
1978	83.1	9.9	3.5	3.5
1979	80.5	13.0	3.4	3.0

Distribution of Savings Accounts at Building Societies 1974-1979

Source: Boleat (1986, p21).

Some commentators would argue that a major factor affecting the competitive environment was the lack of competitive neutrality (Llewellyn 1986 (a), (b), 1987). In particular, the Committee of London Clearing Banks complained that Building Societies have enjoyed various unfair artificial competitive advantages, (CLCB 1977, p189).

In relation to the supply of funds to building societies, it has often been argued that the existence of the composite rate tax system [11] gave them a competitive advantage relative to the retail banks (until the extension of that system to the retail banks in April 1985). The composite rate system worked such that, for example, with an ordinary share rate of 9.75%, a basic tax rate of 30% and a composite rate of 25.25% the gross effective yield to tax paying investors is 13.93%, but the gross cost to Societies of their funds is only 13%. Thus the composite rate system allowed building societies to maintain a lower mortgage rate than would be necessary under tax procedures applied to the banking system at the time (BSA 1972). The banks complained that this represented a fiscal advantage in that it acted as an inducement to those paying income tax to deposit with building societies rather than the retail banks. In the example above, to an investor liable to the basic rate of tax, the gross equivalent yield is 13.93%, whilst for an investor not liable to tax the gross equivalent yield is the same as the net yield, 9.75%. According to the CLCB, building societies benefited to the extent that tax paying investors are more sensitive to differentials in interest rates between institutions than are non-tax payers. Thus the portfolio preferences of the users of the financial system were being affected by the non-neutral taxation considerations between building societies and banks. Boleat (1986), points out however, that the relative competitive advantage is dependent on the elasticities of demand for building society shares and deposits for basic-rate tax payers and those not liable to tax. He disputes the point that those liable to the basic rate of tax are more interest sensitive than those not liable to tax. Also, it should be noted that whilst the composite rate may mean that societies gain a competitive advantage by attracting money from tax-payers, at the same time they may suffer a disadvantage in attracting money from non-tax payers.

It has also been argued that building societies have received favourable treatment in respect of their corporation tax liability (formerly it was set at a rate of

40%, as opposed to the standard 52% rate applied to the clearing banks) and the exemption from taxation of the capital gains on their gilt-edged securities transactions (provided they have been held for more than twelve months). It should be noted, however, that due to leasing arrangements banks rarely paid the full 52% corporation tax, in fact more commonly banks pay effective tax rates of about 20%.

The main factors affecting the activities of the building societies and banks can be seen in terms of a regulatory matrix (Table 3.13), after Llewellyn (1987) ('regulatory' here used to mean any form of regulation, official or unofficial, that in some way affects the operations of building societies and banks). The functions or business areas which the banks could undertake were largely prohibited by the monetary controls examined earlier, and they were unable to actively compete in the personal sector savings market or the mortgage market. Their pricing policies were also affected to the extent that they were effectively restrained from actively competing for deposits. In addition, moral suasion was at times used to affect the lending and pricing policies of the banks.

The building societies, by contrast, were not included in the portfolio monetary controls and hence were unrestrained in this manner in terms of their pricing activities. However, the building societies, as emphasized earlier, affected their own pricing by operating the self-imposed interest rate setting cartel, such that they too

Table 3.13

	Geographical	Functional	Ownership	Pricing	Standards	Business Operations
Portfolio Controls		Y_1		Y_2		
Moral Suasion		Y_3		Y_4		
Legal		X_1Y_5	X_2Y_6			
Self Imposed				X_3		
Self Regulation					X_4Y_7	X_5Y_8
No Regulation	XY					

Key:

X = Building Societies

Y = Banks

Y_1 = Monetary controls affecting the banks' ability to compete in the mortgage market.

Y_2 = Monetary controls affecting the banks' ability to compete on price terms for deposits.

Y_3 = Moral suasion by the Bank of England on the sectors to which the retail banks should lend.

Y_4 = Moral suasion by the Bank of England on maximum deposit interest rates of the retail banks

Y_5 = Legal restrictions on permitted activities of banks.

Y_6 = Legal restrictions on banks' ownership of insurance companies.

Y_7 and Y_8 = Self-regulation by the Bank of England upon capital and liquidity requirements and standards.

X_1 = Legal restrictions on permitted activities of building societies.

X_2 = Legal restrictions on ownership of building societies, and building societies' ownership of other financial institutions.

X_3 = Self-imposed cartel.

X_4 and X_5 = Self-regulation by the Building Societies Commission on liquidity, reserves, standards.

Regulatory Matrix for Banks and Building Societies 1974-1980 faced pricing constraints, but as a result of unofficial regulation. On their functional side, the building societies were not constrained by portfolio controls as the banks were, but were more strictly regulated in terms of the areas of business allowed under the Building Societies Act (1962).

3.4 Conclusion

The mix of institutional features and asymmetric monetary control have been important determinants of the modus operandi of building societies and banks pre 1980, and hence major factors in both the nature of competition between these financial intermediaries and the degree of financial innovation.

The recommended rate system operated by the building societies ran counter to the traditional economic model of a cartel. Whilst most cartels aim to raise prices, the building societies' cartel maintained the deposit and mortgage interest rates below market clearing levels. It has been shown in section 3.2 that the existence of the cartel had a marked effect on the form of competition for retail personal sector financial business and subsequently on the level of innovation. As a change in interest rates was only carried out en masse, price competition was effectively stifled. The mix of competition in terms of price versus non-price aspects was thus aimed almost exclusively at non-price initiatives. The fast growth of building society branches was a major non-price competitive element, as was the degree of advertising.

The cartel tended to encourage the building society industry to adopt balance sheet growth as its main objective. The existence of fixed, wide margins led to large surpluses for the more efficient societies, which tended to provide further impetus to non-price forms of competition, and stifle any need for product innovation on the part of building societies.

The cartel smoothed and stabilized building societies' interest rates as compared to general market rates, causing a high level of excess mortgage demand when interest rates were rising, and lower excess mortgage demand when interest rates were falling. The price effects of the abolition of the cartel on the effectiveness of monetary control are examined in detail in Chapter Seven.

A major factor in the degree of competition and innovation in the personal sector retail financial market lay in the degree of asymmetry of monetary control with regards to the retail banks. The effect of monetary control, in particular the SSD scheme, was to inhibit the retail banks from entering the mortgage market on any significant scale or from effectively competing for personal sector deposits. This lack of competitive neutrality had a significant effect on the mortgage market and the way in which building societies operated. The cartel could only be operational if the building societies faced no effective competition from other financial institutions. With no competition from the banks the building societies were able to maintain deposit and mortgage rates below market clearing levels, and operate a policy of rationing mortgage supply. Lack of financial innovation reflected in the simple and homogeneous nature of building society and bank deposit accounts was determined by the mutuality ethos, the cartel, restrictive monetary controls placed on the banks, and subsequent low level of competition.

Notes

[1] Simons (1936) was one of the first economists interested in the interaction between financial innovation and the monetary system.

[2] For broad overviews of financial innovation in the U.K. see Fforde (1983(b)), and for a somewhat earlier perspective, Greenbaum and Heywood (1971). For the United States see Broaddus (1985), Lindsey (1982), Porter et al (1979), Pierce (1983), Simpson (1984). For Canada see C Freedman (1983) and R F Lucas (1983).

[3] On the broad issues relating to the recent evolution and growth of the U.K. building societies sector, see Boddy (1980). Fforde (1983)(b), and Boleat (1986). See Cleary (1965) for an earlier perspective, and Bellman (1927) for a historical picture.

[4] The Building Societies Act 1986 has of course superseded this Act (see Chapter Four).

[5] This is confirmed by the variety of objective functions expounded in econometric models of building society behaviour. See Dodds (1981) for a survey of the literature on building society modelling.

[6] The ability of the building society movement to operate a cartel explicitly exempt from the Restrictive Trade Practices Act (1976) is an example of the privileged position building societies occupied as major providers of home loans. See Boleat (1986) pp175-177 for a review of the historical development of the cartel.

[7] Between September 1971 and January 1981, each bank was required to hold at least 12½% of its eligible liabilities in the form of reserve assets. The reserve asset ratio was reduced to 10% in January 1981, temporarily reduced to 8% for most of March and April 1981, and abolished in August 1981. Reserve assets comprised of:

(a) Balances at the Bank of England (other than special or supplementary deposits).

(b) British government and Northern Ireland Treasury Bills.

(c) Secured money at call with London discount market institutions.

(d) British government stocks with a residual maturity of less than one year.

(e) Local authority bills eligible for re-discount at the Bank.

(f) Commercial bills eligible for re-discount at the Bank (i.e. eligible bank bills) up to a maximum of 2% of eligible liabilities.

[8] Between 1971 and 1980 eligible liabilities mainly comprised of:

(a) All sterling deposits, of an original maturity of two years or under, from U.K. residents (other than banks) and from overseas residents (other than overseas offices).

(b) All sterling deposits of whatever term, from the U.K. Banking sector <u>net</u> of sterling claims (including non-reserve asset lending to listed discount market institutions).

(c) All sterling certificates of deposit issued, of whatever term, less any holdings of such certificates.

(d) The bank's net deposit liability, if any, in sterling to its overseas offices.

(e) The bank's net liability, if any, in conveniences other than sterling.

[9] A full account of the SSD scheme is found in BEQB, March 1982.

[10] It was possible, however, for lenders and borrowers to be brought together outside of the banking sector. Such "disintermediation" occurred when large corporate customers borrowed through the use of an acceptance rather than an advance, under which a bank would agree to accept and guarantee bills issued by the customer. These bank-bills were close substitutes for certificates of deposit in terms of liquidity, marketability and default risk, yet, as they were only a contingent liability of an accepting bank, they were represented for accounting purposes as off-balance-sheet items and hence excluded from the IBELs definition and from £M3. (See Chapter Seven for further analysis of disintermediation activities).

[11] Through the composite tax rate scheme the Inland Revenue collects directly from Building Societies and retail banks the amount of tax revenue which would be

paid in aggregate by the individual depositors on their interest receipts if they were received gross and the basic rate of income tax applied to all tax-paying depositors. Thus, as some deposits have always earned incomes below the minimum income tax threshold, the composite rate of tax has always been somewhat below the basic rate of income tax.

CHAPTER FOUR

RE-REGULATION, COMPETITION AND INNOVATION BY BUILDING SOCIETIES AND BANKS 1980-1987

4.0 Introduction

One of the main factors affecting the degree of competition and innovation by the building societies and retail banks in the 1970's has been isolated as regulatory constraint. Monetary controls affecting the banking sector and creating a regulatory asymmetry tended to limit competition for personal sector retail financial business for the majority of the 1970's. The building societies recommended rate system could only really exist in such an environment characterised by ineffective competition. Regulatory constraint, lack of competition, and the cartel were the major determinants of the low level of innovation during this period. To the extent that building societies did not come under the aegis of monetary control, they enjoyed a major competitive advantage over the banks.

Given the above constraints on competition and innovation, an obvious starting point for an analysis of the main catalysts of financial change and innovation would be to concentrate on structural change involving the above factors - regulation, competition, and the cartel. Section 4.1 assesses the immediate effect of re-regulation in terms of changes in the modus operandi of monetary controls upon the competitive aspect of the personal sector retail financial services market, and analyses the importance of regulatory-induced financial change. The effects of changing monetary controls upon the operations of the retail banks are detailed, including an analysis of the effects upon the market for mortgage loans. It is of some importance to the monetary authorities if changes in monetary control procedures stimulate financial innovations which may subsequently affect the very same controls.

The implications of a change in market structure and competition upon the operation of the building societies' recommended rate system is considered in Section 4.2. The effects of a competitive financial market on the degree of financial innovation are investigated in terms of both economic theory and events that occurred in practice. The particular innovations introduced by building societies and banks are analysed, as is the changing mix of price and non-price competition that has occurred over time.

Special emphasis is placed on the change in interest rate strategy adopted by the building societies. The average mortgage rate and deposit rates in the more competitive dynamic system are compared with the 1970's average interest rates for evidence of policy change. The fluidity of interest rate movements is analysed, to investigate whether or not building society interest rate changes have become less 'sticky' as economic theory would tend to suggest. An analysis is also made of the effect of competition on building society and bank margins. Given that one of the major policy instruments of monetary control is the manipulation of interest rates,(see Chapter Seven) it is of some importance to establish if there has been a change in interest rate policy by the financial institutions concerned.

Particular attention is paid to the abolition of the cartel, the subsequent dimninished role of mortgage rationing by building societies, and the increased importance of the 'price' of mortgages as reflected in a more market related mortgage interest rate.

Section 4.3 examines the relative market shares of building societies and banks, and the changing competitive advantage over time, and assesses the impact of regulatory convergence on the activities of these financial intermediaries. An analysis is made of the degree to which building society's and banks have become less differentiated in their activities as a result of regulatory change (particularly as a result of new powers given to building societies under the Building Societies Act 1986), and as a result of increased competition and innovation. The extent to which building societies and banks are becoming more homogeneous may be of some importance to the operation of monetary control (this point is raised in more detail in Chapter Five).

Section 4.4 concludes by summarizing the main innovations introduced, and the major determinants acting as catalysts for financial innovation.

4.1 Re-regulation and competition in the personal sector retail financial market

Since the beginning of the 1980's the building societies sector has undergone considerable evolution, in terms of both the innovative financial services offered and the apparently more commercial orientation of business objectives.[1] The metamorphosis of the building society movement has been emphasized by Llewellyn,

> "The industry is now changing substantially in three major respects:
>
> (i) the internal cohesion of the industry is being eroded as a more aggressively individualistic business ethos develops,
>
> (ii) individual societies are adopting a more explicitly commercial approach to their business, and
>
> (iii) in the process of becoming more aggressive, building societies are becoming less 'passive reactors' to their environment"
>
> (Llewellyn, 1985a, p29)

It is possible to isolate the major factors that have brought this about: regulatory change, competition and technology appear to have been the main influences affecting the personal sector retail financial market.[2] An analysis of the determinants of financial change by building societies and banks is obviously of some importance, particularly if it is found that new modes of monetary control result in innovation by financial intermediaries.

Changes in the U.K. monetary control framework, introduced at the beginning of the 1980's, appear to have been the major catalyst in stimulating increasingly competitive conditions within the retail financial sector.

Many of the subsequent innovations by building societies and banks appear to have resulted indirectly from this change in monetary control through the increased level of competition. Recently, Hester (1981), commenting on the U.S. financial system, has pointed to the possible link between regulation and institutional change:

> "Monetary policy is poorly designed if it fails to take into account the possibility that conditions which result from policy changes may lead to innovations". (p142)

Indeed, the effects of Competition and Credit Control upon the activities of the retail banks (isolated in Chapter Three), appear to be a classic example of this form of regulatory induced innovation.

Monetary controls, placed on the retail banks in the 1970's, effectively precluded them from entering the personal sector financial market on any significant scale. This meant that the building societies sector faced relatively little competition from the retail banks. Re-regulation via a change in the system of monetary control had a particularly immediate effect on the competitive aspect of the mortgage market. Whilst the corset was in operation, the banks were largely inhibited from competing for mortgage business. The direct monetary controls acted as an artificial constraint on the banks' ability to expand into this area, by creating a restrictive environment in which they could operate. The abolition of exchange controls in October 1979 heralded the demise of the corset with the possibility that banks could by-pass the corset controls by disintermediation through the Euro sterling market. Official recognition of the inefficiencies in direct monetary controls (outlined in detail in Chapter Seven - disintermediation, hard arbitrage, competitive non-neutrality) - came with a series of publications, the Green Paper on Monetary Control (1980), Background note on methods of monetary control (BEQB December 1980), Monetary control - provisions (BEQB September 1981), and Monetary control - next steps (BEQB March 1981). The main details of the changes in monetary control and their effectiveness are assessed in Chapter Seven. In essence, short-term interest rates were to be maintained within an (unpublished) band, and would be the sole instrument of monetary control. The abolishment of the corset and subsequent new arrangements for the operation of monetary control meant that banks and building societies came under the same instrument of control - interest rates (Congdon 1979), such that the arguments put forward by Leigh Pemberton (see Chapter Three),and Turnbull (1979) as to the asymmetry of monetary control could no longer be applied. Once interest rates were used to restrain monetary growth, there was ultimately no competitive disadvantage to the banking system, as recognized by Rose, (1978, p7),

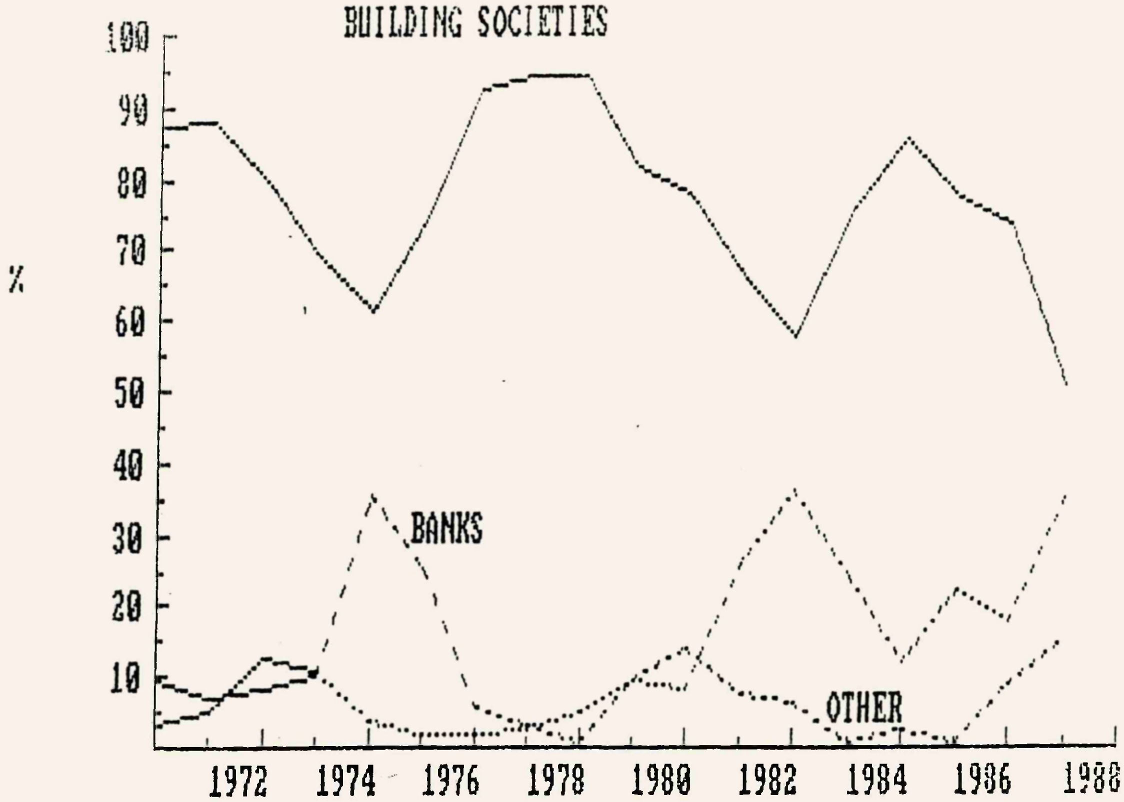
> "If policy aims at controlling the quantity of money and the Government is content to do this solely by allowing interest rates to take whatever levels are needed to sell the necessary quantities of public sector debt, then there is no compelling reason why the result should be to restrict the banks' share of the total deposit market unfairly or to encourage the growth of other institutions".

Removal of the corset constraint in 1980 correspondingly removed the artificially created environment. The changed conditions meant that retail banks could increase their lending for house-purchase if they so wished. The initial competition between banks and building societies was thus on the assets side of the balance sheet, stimulated by a change in monetary control.

There was a substantial re-adjustment on the part of the retail banks to rectify a loan portfolio imbalance once the inhibiting controls were removed. In effect, the banks merely adjusted their portfolios to a level that they would have preferred had controls not been implemented.[3] It thus partly represented a once-for-all portfolio adjustment. With the building societies offering mortgage rates below the market clearing level, there had previously existed a mortgage queue, with demand outstripping supply, and hence a certain amount of non-price rationing by building societies. The banks were also able to concentrate on large mortgages (over £30,000) as a result of the building societies reluctance to lend at the higher end of the market.

Under such circumstances, there was scope for profitable lending by the retail banks, (Diagram 4.1). Once direct controls were removed, the prime reason for the growth of bank lending for house purchase was that of profitability. Another facet of the banks rationale for entering the mortgage market can be explained in terms of their overall strategy aimed at the ultimate objective of offering a complete package of financial services to the

DIAGRAM 4.1



MARKET SHARE OF NET MORTGAGE ADVANCES

personal sector. Mortgage lending was thus used as a device for introducing other business such as insurance, home improvement loans and unsecured lending, both to extend their customer base and to offer new services to existing customers. The underlying factor, however, was that of profit. Mortgage lending and total lending to the personal sector tended to be a growth area for the retail banks, in view of the relatively slower growth in the demand for bank loans by the companies and overseas sectors (BEQB, February 1988(b)p81).The Bank of England has recognised the importance of regulatory changes which may affect the degree of competition and financial innovation in financial markets,

> "Regulatory changes have also impinged on the provision of housing finance, although the catalyst for change can often be traced back to regulatory changes in a quite different market. This point is well illustrated in the United Kingdom, where the abolition of exchange controls in 1979 rendered direct controls on the growth of banks' balance sheets ineffective, and these controls were subsequently abandoned in 1980. Freed from controls on their sterling lending, the major retail banks felt less inhibited about entering the mainstream mortgage market, which they only did in 1982. The building societies' response to the competitive challenge led to the ending of the previous system of queues and mortgage rationing, and the setting of lending rates at market-clearing levels".
> (BEBQ December 1986 p529)

Although an increase in bank intermediation was expected after the removal of controls in 1980, it appears that the Bank of England was surprised at the subsequent market effects,

> "What was not so easily predictable was that the response would go far beyond a simple stock adjustment to contribute to an entirely new dynamic in competition between financial intermediaries".
> (BEQB December 1986, p501)

The entry of the retail banks into the mortgage market precipitated an increased level of competition for personal sector funds,

> "Competition between banks and building societies is not confined to their mortgage lending, but extends also into competition for deposits. The effect has been substantially to improve the attractiveness of personal sector liquid asset holdings relative to other assets".
> (BEQB May 1987(a), p213)

It appears that there was a change in the retail banks funding strategy in terms of the retail/wholesale mix. The banks placed greater emphasis on raising funds from the retail market, resulting in a slowdown in the earlier 1970's trend of increasing wholesale funds. This change in funding mix is in large part a result of the change in competition between banks and building societies in the 1980's, (Llewellyn and Drake, 1987).

Traditionally banks have not perceived the building societies as being major competitors because they were not in competition for lending, and because funds attracted by building societies are maintained within the banking system (only the ownership of deposits changes, whilst the total volume of deposits at banks remain unchanged). However, once banks and building societies were competing for mortgage and other business, it became logical to compete for deposits. Funds held or attracted by the retail banks at the expense of building societies will tend to reduce the societies' ability to lend for mortgage purposes. Moreover it became advantageous to attract deposit customers as this allowed customer relationships to develop and the customer base to grow, with substantial opportunities for increasing fee income and cross-selling financial services.

The entry of the retail banks into the mortgage market expedited the breakdown of the building societies cartel. Several smaller societies had already been offering interest rate premia above the cartel rate. The Abbey National Building Society, then the largest in the U.K., formally announced its withdrawal from the cartel in 1983. For a short period of time (October 1983 to November 1984), the Building Societies Association issued 'advised' rather than 'recommended' rates of interest, although this was also later abandoned in November 1984[4]. A further significant factor in forcing the breakdown of the cartel, was the increasing reliance placed by the government on funding the public sector borrowing requirement (PSBR) through National Savings. Attractive interest rates were offered on National Savings investment accounts, representing a further increase in competition for building societies.

In particular, there was a target of £3 billion set for the contribution of National Savings to finance the PSBR in the 1981 Budget.

Of course, the government has a competitive advantage over the banks and building societies in the collection of funds through National Savings. The government has no liquidity or capital adequacy constraints, and can choose the returns on National Savings necessary to attract the desired inflpow of funds. Furthermore, the government can place favourable tax arrangements on National Savings in order to raise funds.

The importance of regulatory change can be seen from the regulatory matrix for banks and building societies for post 1980. In contrast to the earlier regulatory matrix, it can be seen that portfolio controls and moral suasion now constrain neither banks nor building societies. The retail banks functional areas are no longer limited as earlier by monetary controls, and they have been able to enter the mortgage market. Similarly, they can now compete on price terms with the abolition of the corset and the abrogation of moral suasion on lending to the personal sector.

Although the building societies have been granted substantial new powers in terms of the functional areas of business they are empowered to carry out, they are nevertheless still legally hindered by the Building Societies Act 1986, as outlined earlier. It may well prove to be the case that the removal of the remaining legal constraints on building societies functional activities will be the main catalyst for financial innovation and change in the future. It is also noticeable that there are no official or unofficial regulations affecting the pricing policies of the building societies or the banks, the former having abandoned their self-imposed constraint of the cartel in 1983.

Finally, it is of interest that both building societies and banks are regulated to a far greater degree than before by external agencies, in the form of the securities and Investments Board (SIB) and the various Self Regulatory

Table 4.1

	Geographical	Functional	Ownership	Pricing	standards	Business operations
Portfolio Controls						
Moral Suasion						
legal		X	X			
Self Imposed						
Self Regulation					XY	XY
External Agency		Y			XY	XY
No regulation	XY		Y	XY		

Building Societies = X

Banks = Y

Regulatory Matrix for Banks and Building Societies 1980-1988

Organizations (SRO's) established under the Financial Services Act, 1987.

4.2 Financial Innovation by Building Societies and Retail Banks

According to economic theory, in a competitive market system with no cartel restrictions, the entry of a large new competitor will have significant effects upon both the price and output of the incumbents product/service.

One major effect of banks competing for retail deposits has been a change in the intensity and mix of price and non-price competition. Prior to 1980, building societies competed against each other almost exclusively on non-price terms, in particular through the extension of the branch network rather than through innovating their share and deposit accounts. The entry of the retail banks into the mortgage market and competing more aggressively for retail deposits, entailed a shift towards more explicit price competition and innovation in types of account being offered by both banks and building societies. Indeed, the rapid development of the branch network in the 1970's slowed considerably in the 1980's as building societies concentrated more on innovative accounts and interest rate competition. The rather simple, homogeneous nature of building society ordinary shares, which dominated building societies funding in the 1970's, has declined dramatically in the 1980's.

This provides an interesting extension to Kane's "regulatory dialectic" which,

> "treats political processes of regulation and economic processes of regulatory avoidance as opposing forces that, like riders on a see-saw, adapt continually to each other". (1981, p355)

Kane argues that innovation is regulation induced, in that,

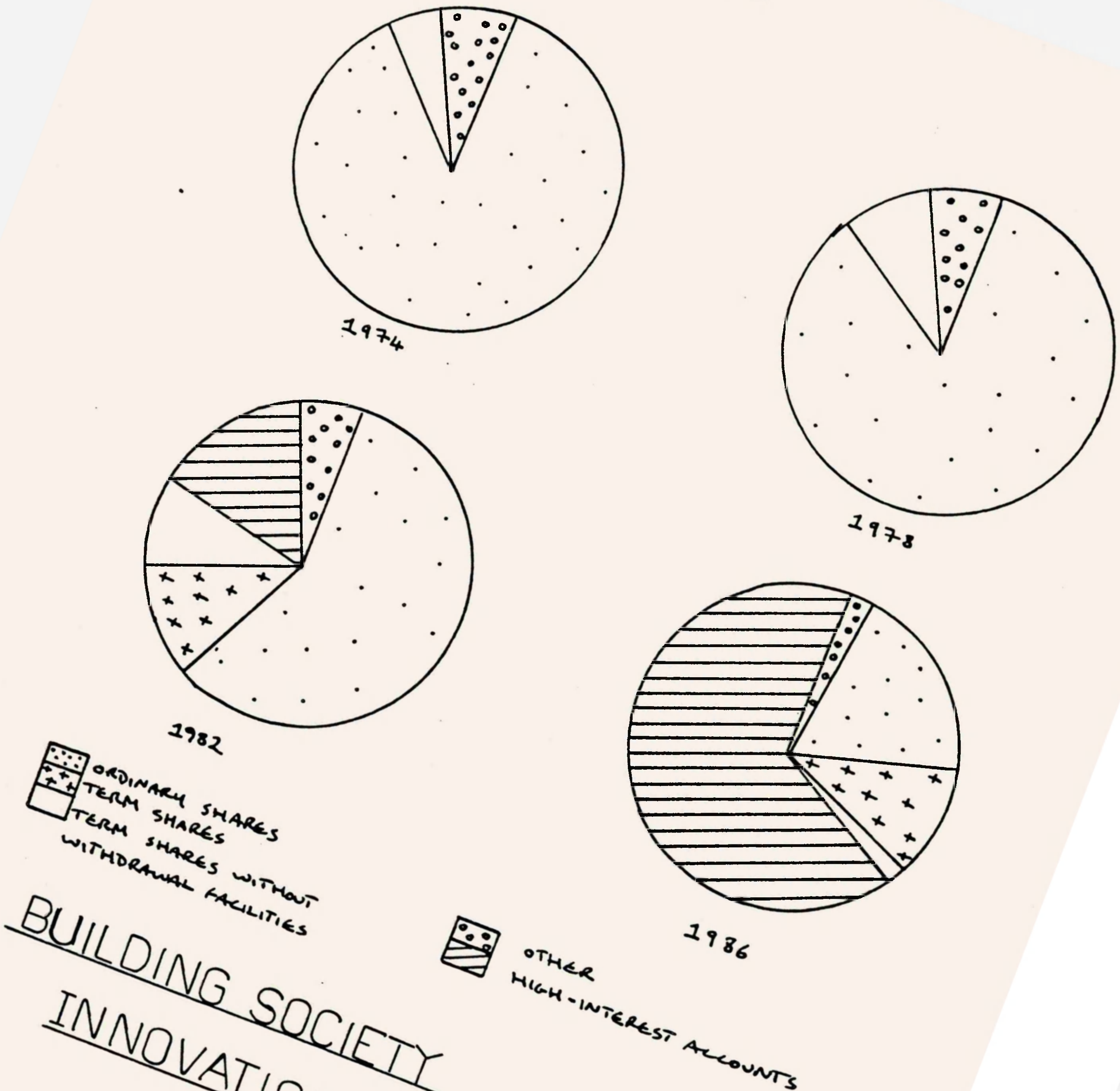
> "in a regulated firm, an innovation can be justified....by its productivity in regulatory avoidance". (1981, p358)

An example of this regulation-innovation cycle in the U.K. was the 'bill-leak' outlined in Chapter Three; the growth of banks bills held outside the banking system in order to facilitate off balance sheet lending and hence avoid the corset restrictions. It appears, however, that the events after the release of the banks from the corset are qualitatively different from the cycle described by Kane.In 1980, re-regulation led to innovation in that it engendered an increase in competition. Re-regulation of banks in the form of the ending of the corset and subsequent competition in the mortgage market, led to innovation by those institutions <u>not</u> previously regulated (the building societies) <u>and</u> by those previously regulated (the retail banks). Rather than restrictive controls leading to regulatory avoidance through financial innovation, the <u>liberalisation</u> of controls through re-regulation contributed to competitive financial innovations.

Diagram 4.2 gives some indication of the degree of innovation by building societies [5]. It indicates the relative movements in the distribution of balances held at building societies.

Pre 1980, most societies limited the investment choices available to members, as reflected in the diagram. Ordinary shares accounted for 87.2% of shares and deposits at end-

DIAGRAM 4:2



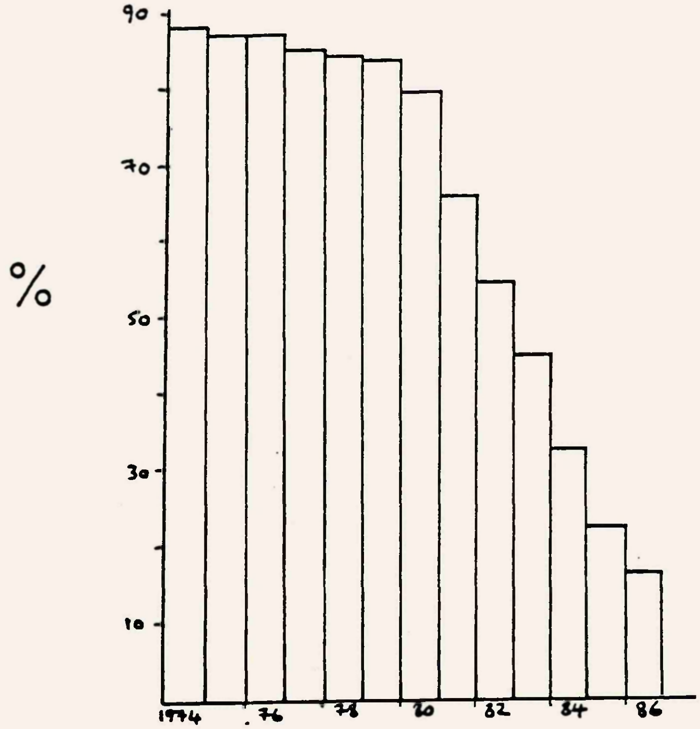
BUILDING SOCIETY INNOVATION

year 1974, falling slightly to 79% in 1980. Since 1980, however, ordinary accounts have fallen dramatically in terms of the share of retail deposits held at building societies (63% in 1981 as opposed to 16.5 % in 1986 - see diagram 4.3).

Ordinary share accounts were superseded in terms of net inflow by <u>term shares</u>. First introduced in 1973, these accounts offered a guaranteed differential over ordinary share rates, in return for investing for a fixed time period. Pre 1980 term shares tended to be relatively restrictive in that they were less liquid than both existing building society share accounts and bank seven-day deposits. Money could not be withdrawn from term shares before the original term to maturity had expired, often a period of between two to five years. In terms of balances held at building societies, term shares grew relatively slowly from 5.6% in 1974 to 9.9% in 1978. During the 1980's many of these restrictions were considerably reduced in severity, in particular by the introduction of term shares with withdrawal facilities (but often with an interest penalty). Subsequently, there was a greater rate of growth of term shares as a proportion of total balances, from less than 10% in 1978 to 23.4% in 1982.

The relative decline in the growth of term shares after 1983 is largely a result of a new innovation, the <u>high interest account</u>. From 1983 onwards there has been an outflow of deposits from all types of accounts except high interest accounts. These were first offered in 1980, paying premia over ordinary shares, with varying withdrawal periods

DIAGRAM 4·3



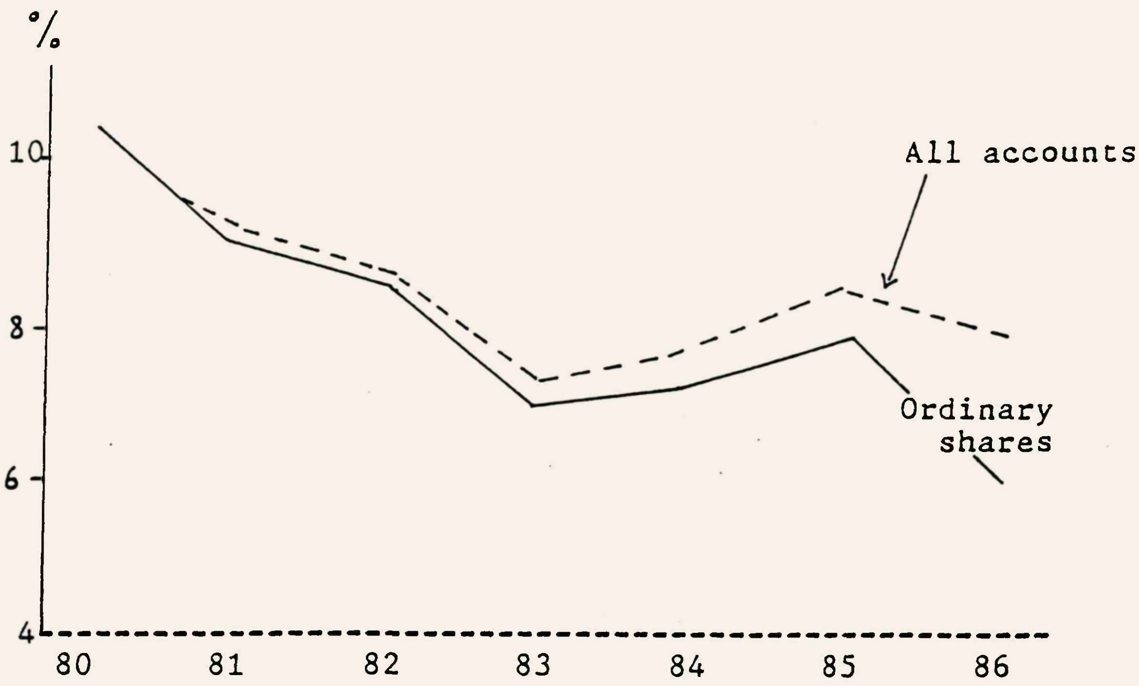
% of balances in ordinary accounts

(usually seven days) and minimum deposits (sometimes only £500). These accounts have gradually become increasingly flexible, especially in terms of accessibility, many societies offering immediate withdrawal facilities. There is little difference between many high interest accounts and ordinary accounts except in terms of the former's higher return. Less than ten per cent of balances were held in high interest accounts in 1981, growing swiftly to over 70% by the end of 1987.

The growth of high interest accounts at building societies has increased the average rate for all building society deposits above the interest rate on ordinary shares (see Diagram 4.4). A premium of approximately 2% above the ordinary share rate is paid on high interest accounts. In many cases, the withdrawal terms and minimum balance requirements to qualify for premium rates are scarcely more onerous than the restrictions on ordinary share accounts. Moreover it appears that building society accounts are being treated more like transactions accounts, according to diagram 4.5 which shows the number of accounts and transactions at a representative Building Society, Bristol and West, typical of most large building societies.

Technology has played a major part in building societies' financial intermediation activities.

Diagram 4.4



Interest on Ordinary Share accounts and average for all accounts

Source: Bristol & West factual background Autumn 1987.

The intervention of the automatic teller machine (ATM) could be argued to be an advantage to the building society industry, [6]

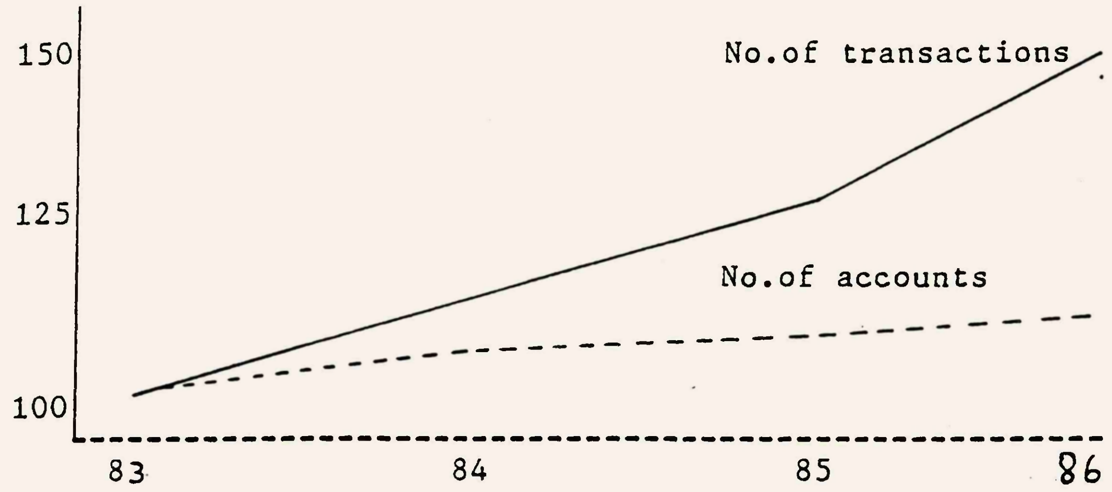
> "[The A.T.M.] makes it technically possible for building societies and others to provide cash dispensing and money transmission services in competition with the banks but without incurring the heavy operating costs of the present paper-based system. The banks' virtual monopoly of money transmission serivces is thus put in question at the very moment when competition for deposits between the banks and other deposit-taking institutions is, for separate reasons already explained, becoming more intense" [7]
>
> (BEQB September 1983 pp372-373)

The advent of new technologies are also argued to provide a spur to the level of competition in the retail financial market,

> "Technological innovation seems likely to increase the competitive aggressiveness that is already apparent among the institutions concerned and in particular among the larger ones whose independent survival and prosperity will be very dependent upon maintenance of market share in a period of rapid change".
>
> (BEQB September 1983, p374)

Technological innovation can thus have a major effect on the nature and degree of competition in the personal sector financial markets. Technology enhances the ability of institutions to offer new financial services through lowering the cost of providing such services, and also promote efficiency in existing financial services. Prohibitive barriers to entry in the form of high costs tend to be eroded by technology, such as the increased attractiveness of joining the money payments system for building societies due to cost reductions (Revell, 1986, Revell and Barnes (1984)). Some building societies have taken their financial innovation much further and announced the introduction of <u>interest bearing cheque accounts</u>. Such a strategy confirms the aggressive nature of building societies operations and further erodes the distinction between building societies and banks.

Diagram 4.5



Growth in Accounts and Transactions 1983 = index of 100

Source: Bristol & West Factual Background Autumn 1987

The effect of the building societies offering cheque books and being part of the money transmission system may have considerable effects. In particular if building societies' market share of the money payments system increases, as seems likely, the greater will be the redepository ratio of the building societies. Quite simply, a greater proportion of funds paid out of building society accounts will tend to return directly to building societies, such that at the extreme, they will have the same ability as banks to create credit (Rose, 1986, p24) [8].

Unfortunately comparable figures on financial innovation by the retail banking industry are not available. Certain evidence does point, however, to substantial changes in the retail banks funding structure. The clearing banks started offering interest bearing sight accounts in 1983/84, and higher rate sight deposit accounts in 1985.The main innovation of the banks has been the introduction of high interest sight deposits. Table 4.2 shows the growth of high interest personal accounts compared to current accounts and total sterling sight deposits. From the available evidence, it can be seen that high interest personal accounts have grown considerably since 1984, from 3.2% of total sight deposits to 17.5%. Non-interest bearing current accounts, by contrast, have fallen as a proportion of total sight deposits since 1980.

Seven day deposit accounts have also declined in recent years (Table 4.3), from 20.8% of total time deposits in 1985 to 15.9% by 1987. The decline in both non-interest bearing current accounts and seven day deposit accounts, will be partly as a result of switching towards high interest sight accounts, although the extent of this is difficult to determine given the available data.

An analysis of the residual maturity of bank deposits (Table 4.4), reveals that the proportion of sterling sight deposits as a percentage of total sterling deposits has grown steadily since 1981, from 34.6% to 46.4% of the total. This appears to be mainly as a result of the decline in deposits with a residual maturity of less than eight days. Short-term deposits at retail banks have thus become far more liquid in the 1980's, and instant access sight deposits represent just under 50% of total sterling deposits combined with innovation by building societies and banks on their deposit accounts.

Substantial change also occurred in the mortgage market, with the abandonment of the cartel and greater competition. The mortgage queues that existed as a direct result of the building societies policy of rationing mortgage supply largely disappeared as supply was increased to meet demand. Mortgage loans became far more freely available, representing substantial liberalisation in this market, particularly in 1981 and 1982 (Table 4.5). Loans were advanced for a greater percentage of purchase price than previously, and higher multiples of income were accepted. The building societies policy of charging different rates for loans over £35,000 was also competed away.

Table 4.2

	TOTAL	OF WHICH CURRENT ACCOUNTS	%	OF WHICH HIGH INTEREST ACCOUNTS	%
1978	17,747	14547		N/A	-
1979	20,936	16068		N/A	-
1980(a)	19,989	15879	79.4	N/A	-
1981	22,664	16956	74.8	N/A	-
1982	26,609	18424	69.2	N/A	-
1983	30,808	19810	64.3	N/A	-
1984(b)	36,491	21705	59.5	1156	3.2
1985(c)	47,810	22850	47.8	6279	13.2
1986	67,960	30173	44.4	10779	16.0
1987(d)	78,677	34110	43.4	13698	17.5

CLSB GROUP'S DEPOSITS : ANALYSIS BY TYPE

STERLING SIGHT DEPOSITS (£ Millions)

Notes:

(a) Change from Banking Sector to Monetary Sector.

(b) Formation of CLSB including Standard Chartered Group.

(c) Inclusion of TSB Group in the CLSB and change from banking month to Calendar month reporting.

(d) Excludes Clydesdale Bank and five other subsidiaries.

Source: Abstract of Banking Statistics, May 1988.

Table 4.3

	TOTAL	OF WHICH 7 DAY DEPOSIT ACCOUNTS	%
1978	24,448	N/A	-
1979	29,968	N/A	-
1980(a)	37,836	N/A	-
1981	45,876	N/A	-
1982	59,511	N/A	-
1983	63,757	N/A	-
1984(b)	68,433	N/A	-
1985(c)	74,437	15483	20.8
1986	88,805	17705	19.9
1987(d)	101,073	16130	15.9

CLSB GROUPS' DEPOSITS : ANALYSIS BY TYPE

STERLING TIME DEPOSITS (£ millions)

Notes: see table 4.2

Source: Abstract of Banking Statistics, May 1988

Table 4.4

	Sight	Less than 8 days	Up to One month	Up to three months	Up to six months	Up to one year
1981	23515 (34.6)	24381 (35.8)	6984 (10.2)	6710 (9.9)	2914 (4.3)	1591 (2.3)
1982	27779 (32.3)	27513 (32.0)	11633 (13.5)	8879 (10.3)	4317 (5.0)	3151 (3.7)
1983	32246 (34.1)	27906 (29.5)	12239 (12.9)	10707 (11.3)	4502 (4.8)	3644 (3.9)
1984(c)	38191 (36.4)	27703 (26.4)	15511 (14.8)	11907 (11.3)	4753 (4.5)	3396 (3.2)
1985(d)	50198 (41.1)	27391 (22.4)	17131 (14.0)	14714 (12.0)	5489 (4.5)	3408 (2.8)
1986	68957 (44.0)	32545 (20.8)	20309 (13.0)	17564 (11.2)	7753 (4.9)	5485 (3.5)
1987(e)	80159 (46.4)	33007 (19.1)	18049 (10.5)	20214 (11.7)	9337 (5.4)	7668 (4.5)

(a) Analysed by residual period to earliest maturity date (which could be the first roll-over date or the shortest period of notice.
(b) Figures prior to 1986 are as at mid-November.
(c) Formation of CLSB Group including Standard Chartered Group.
(d) Inclusion of TSB Group in the CLSB and change from banking month to Calendar month reporting.
(e) Excludes Clydesdale Bank and five other subsidiaries.
(f) Figures in brackets are percentages of total.
(g) Deposits of over a year's maturity are excluded (as such the percentages do not sum to 100%).

Source: Abstract of Banking Statistics May 1988

CLSB GROUPS' STERLING DEPOSITS : ANALYSIS BY RESIDUAL MATURITY (a)

End October (b)

Table 4.5

YEAR	TOTAL (£m)	INCREASE (%)
1975	3730	-
1976	3928	5.3
1977	4362	11.1
1978	5437	24.6
1979	6461	18.8
1980	7333	13.5
1981	9489	29.4
1982	14141	49.0
1983	14525	27.0
1984	17072	17.5
1985	19116	12.0
1986	26581	39.0
1987	28976	9.0

Growth in Mortage Lending, 1975-1987

Source: B.S.A. Bulletin, April 1989.

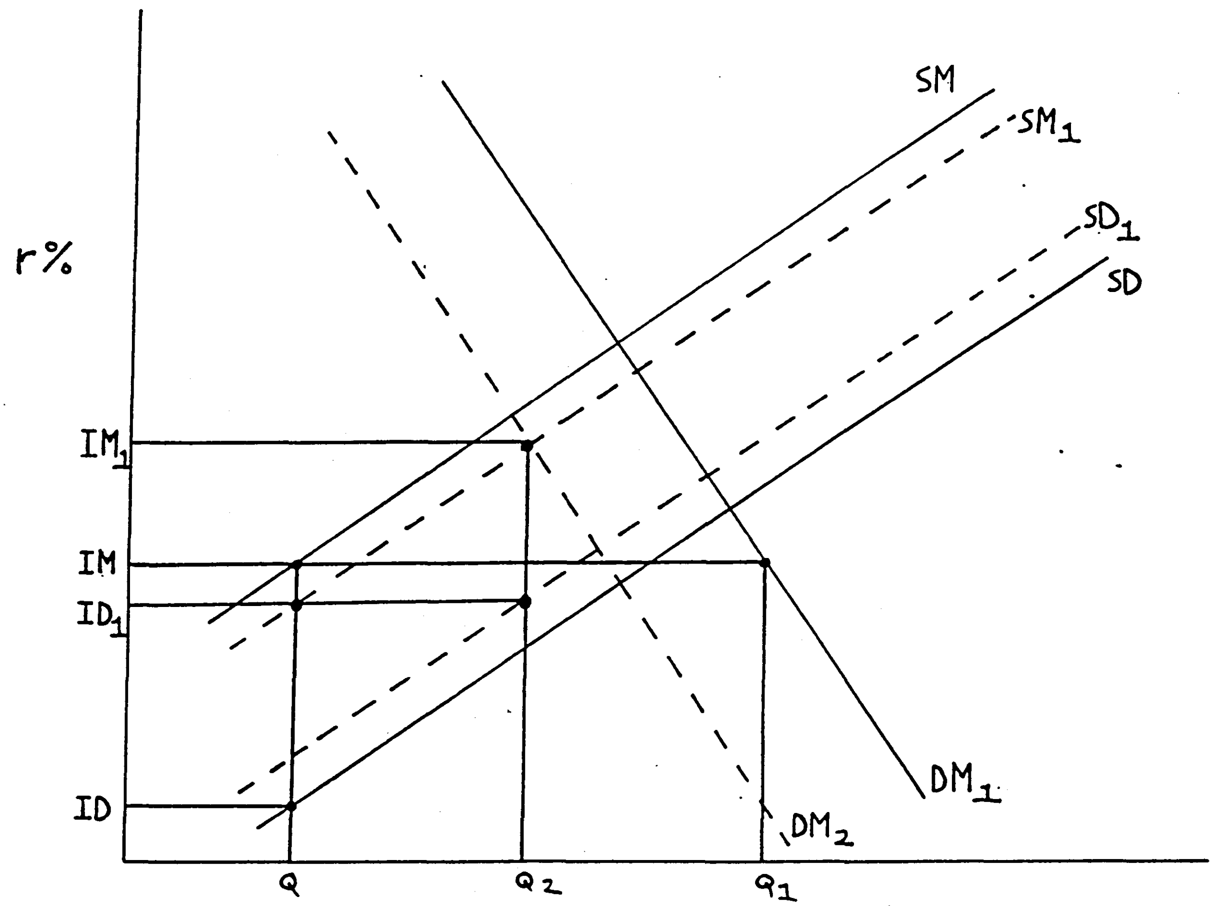
According to economic theory, the entry of banks into the mortgage market would be expected to shift the demand curve for mortgages faced by building societies (e.g. DM_1 to DM_2) (in Diagram 4.6), unless the banks cause the total demand for mortgage loans to increase in a manner which more than compensates for the decline in market share. The effective margin or spread faced by societies will be reduced by a shift in the supply of mortgages SM to SM_1 and a shift in the supply curve for deposits (SD to SD_1) as competition bids up the cost of funds. With the cartel removed, and with increased competition from banks (the new entrants), the previous non-market-clearing mortgage rate would also be expected to rise (e.g.to IM_1).

It was maintained in Chapter Three that the building societies' interest rate cartel had the effect of creating an excess demand for mortgages, the size of which varied with movements in the general level of interest rates, and also tended to smooth out fluctuations in building society interest rates in relation to market rates. The cartel thus limited the impact of the 'price' of mortgages in equilibriating the supply of and demand for funds.

It would be expected that the abolition of the cartel would lead to more market related building society interest rates, and hence a greater importance of the price of mortgages as compared with earlier.

In practice it appears that the building societies rate setting behaviour <u>has</u> changed. Building societies have shown an increased willingness to accommodate demand for mortgage

DIAGRAM 4·6



MORTGAGE MARKET and COMPETITION

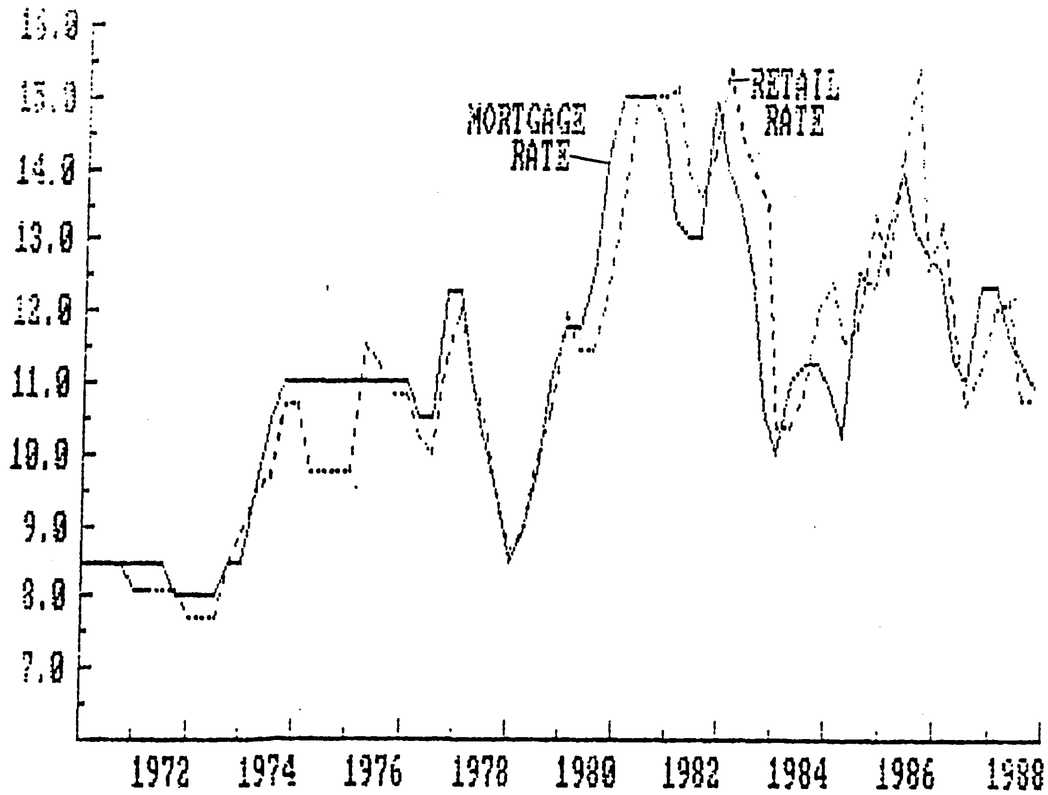
source : Llewellyn(1987(a))

loans, whereas previously non-price rationing was in force. This has entailed a new interest rate setting strategy, allowing higher mortgage rates rather than the previously adopted policy of pegging mortgage rates below market clearing levels. Diagram 4.7 shows the relationship between the mortgage rate of interest and the maximum retail rate of interest. Mortgage rates have invariably been above retail rates over the period 1970-1980. Since around 1980, however, the difference between mortgage rates and deposit rates has tended to decrease, with deposit rates at several times exceeding mortgage rates. So, as would be expected, the spread between building society mortgage lending and deposit rates has indeed been reduced.

Furthermore, as expected, the mortgage rate has in general risen relative to other market rates. Diagram 4.8 shows the mortgage rate and a representative money market rate - the London Inter-Bank Offer Rate (LIBOR). In general the mortgage rate has been above LIBOR over the period 1981-1987. In contrast, LIBOR was generally above the mortgage rate prior to 1981. LIBOR has only tended to be below the mortgage rate when money market rates were falling. [Recently (1988) LIBOR has again risen relative to mortgage interest rates]. Moreover, Diagram 4.9 shows that since about 1981 the cost of retail funds have risen relative to wholesale funds and have on average been more expensive than wholesale funds. So, the average cost of funds has decreased and the spread between mortgage rates and the average cost of funds has risen.

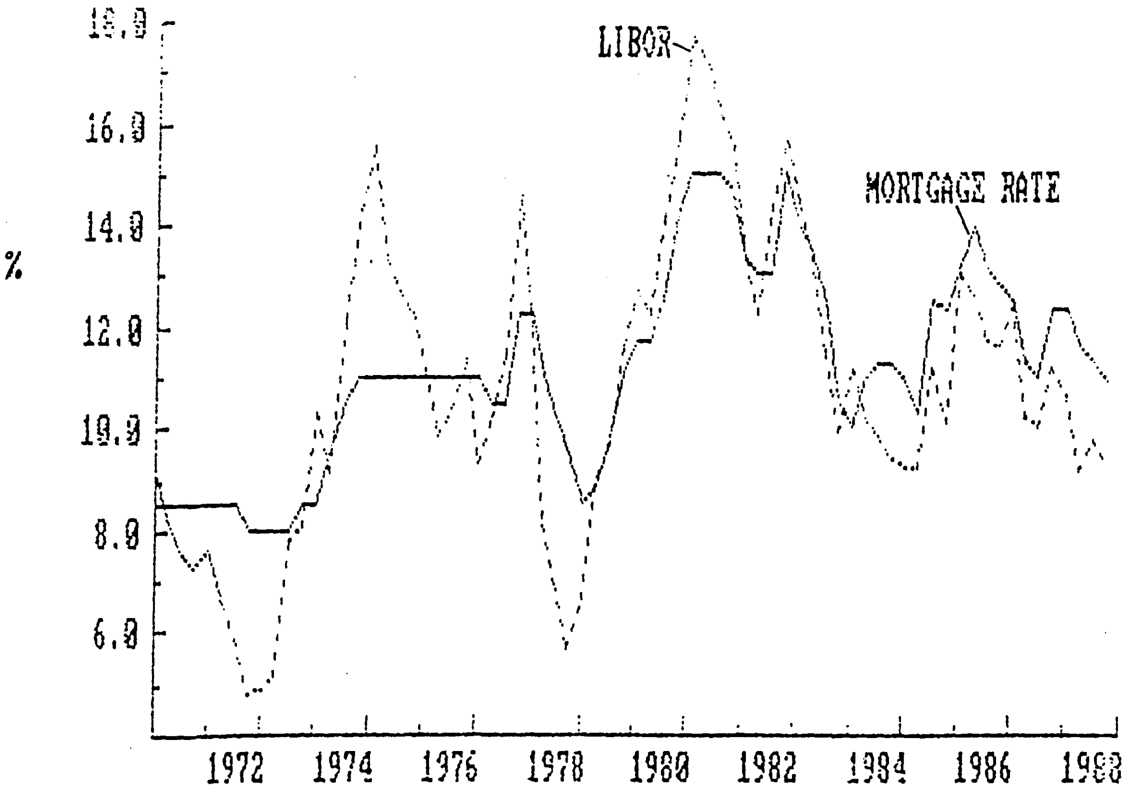
Allied with an increase in competition, building society deposit rates have tended to move more in line with

DIAGRAM 4.7



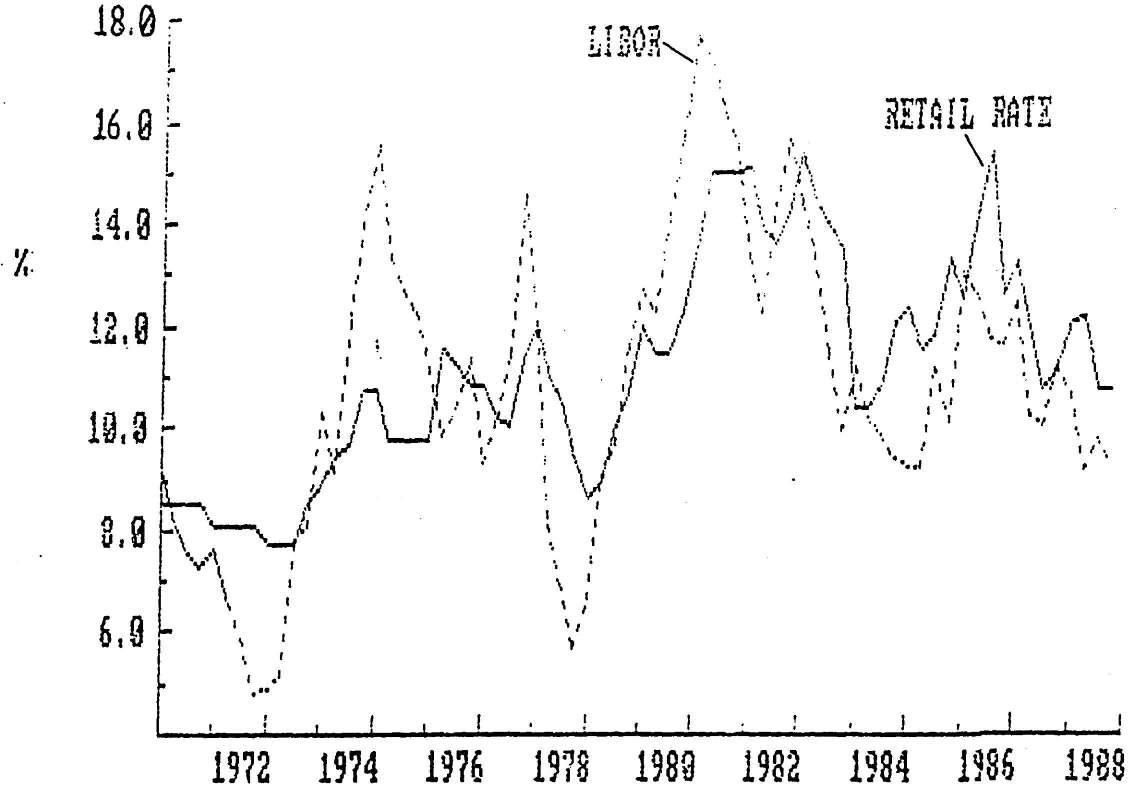
MORTGAGE RATE AND MAXIMUM RETAIL RATE AT BUILDING SOCIETIES

DIAGRAM 4.8



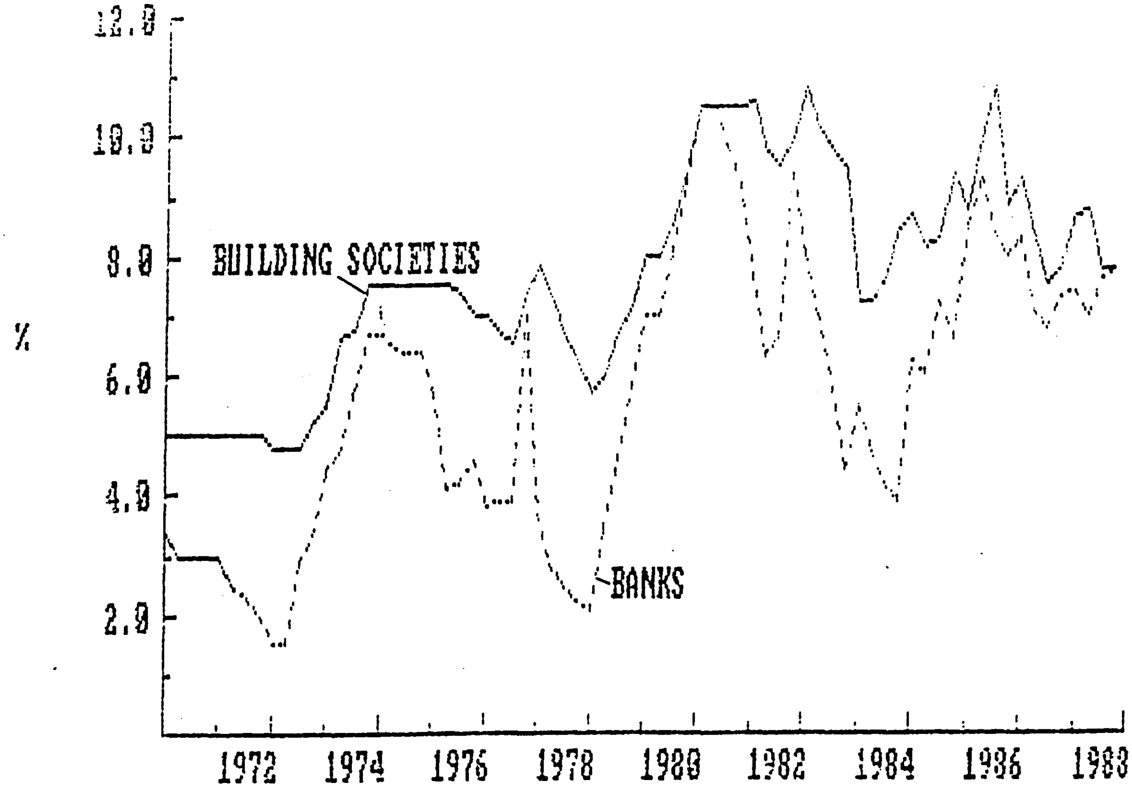
MORTGAGE RATE AND LIBOR (WHOLESALE RATE)

DIAGRAM 4.9



MAXIMUM RETAIL RATE AT BUILDING SOCIETIES
AND LIBOR (WHOLESALE RATE)

DIAGRAM 4.10



MAXIMUM RETAIL RATE (NET) AT BUILDING SOCIETIES AND BANKS other competing rates. Diagram 4.10 shows the maximum retail rates at building societies and banks. It can be seen that building society rates are far more fluid and far more market related after 1980. In other words, interest on building society deposit accounts has become less 'sticky', resulting in more flexible rates in relation to changes in competitors rates,

> "More intense competition both within a more homogeneous financial system and from other institutions at the periphery of traditional domestic banking has led to substantial product innovation and contributed to greater adjustment of interest rates faced by customers".
>
> (Bingham 1983, p2)

The tendency for financial institutions to pay market-related rates of interest has been termed "marketization" by Bingham (1983).

Casual analysis of the data thus appears to show that building societies have changed their interest rate structure in the 1980's. Llewellyn (1988(b)) attempts a more rigorous test to see if there has been a structural shift in the relationship between the level of LIBOR (a representative wholesale rate) and the interest differential between the maximum retail rate of societies and LIBOR. A regression of the differential against LIBOR (using ordinary least squares) tends to confirm that structural change has indeed taken place. The results show that building society retail rates have become much more responsive to movements in market rates.

The abolition of the cartel had the effect of eliminating the variable excess mortgage demand that existed under the recommended rate system, and eradicated the need for non-price rationing on the part of building societies. With building societies interest rates being more fluid, the price of mortgages became the prime determinant of the supply of mortgage funds.

4.3 Regulatory convergence, and Relative Market Shares in Building Societies and Banks

The relative competitive positions of banks and building societies in the market for personal sector balances is shown in Table 4.6. After an initial setback by building societies in 1981 (largely at the expense of National Savings) the relative competitive advantage of building societies is reflected in their increasing share of personal sector liquid assets. The share of liquid assets at building societies increased from 46.8% to 53.0% over the period 1982-1987, whereas those held at banks fell from 38.3% to 32.6%

Table 4.6

	Building Societies	Monetary Sector	National Savings
1980	50.5	37.2	12.3
1981	46.8	38.3	15.0
1982	48.3	36.1	15.6
1983	49.7	34.4	15.8
1984	51.7	32.3	16.0
1985	53.1	31.4	15.5
1986	53.2	31.9	15.0
1987	53.0	32.6	14.4

Relative Shares in Personal Sector Liquid Assets.

Source: BEQB (May 1987)

The relative interest rate relationships between the mortgage rate and LIBOR examined earlier means that it has been profitable for new entrants to the mortgage market which are exclusively funded by wholesale money (such as the National Home Loans Corporation and the Household Mortgage Corporation). It has also been suggested that building societies suffer a competitive disadvantage in that regulation constrains the societies to funding the majority (60%) of their mortgage lending in the relatively high cost retail market. Building Societies have only been able to secure wholesale funds since 1981.[9] In view of the structure of interest rates prevailing since then (with mortgage rates and retail deposit rates consistently above money market rates) it is hardly surprising that building societies have increased their wholesale funding as a proportion of total funding (see table 4.7). It could be argued that the lack of competitive neutrality in terms of restraints on building societies wholesale funding has increased the tendency for building societies to adopt an aggressive innovative strategy in the retail market. Paradoxically, it is partly this aggressive competitive strategy which has driven up the cost of retail funds relative to wholesale funds. In 1988 however, conditions reversed somewhat with wholesale rates rising above retail rates. Combined with the stock market crash in October 1987, which has led to substantial inflows to building societies, this has given building societies a considerable advantage in 1988.

It is interesting to note that there is some degree of convergence in the liabilities portfolios of the building societies and retail banks. Building societies are increasing their wholesale funding operations whilst banks are attempting to increase their retail funding (see Llewellyn and Drake 1987). Thus these institutions are becoming less differentiated in funding structures (within the confines of the Building Societies Act 1986).

Table 4.7

	Net inflow from wholesale Sources (£million)	Net receipts of shares and deposits (£million)	Wholesale as % of total
1981	102	3601	2.8
1982	252	6466	3.8
1983	1635	6839	19.3
1984	2228	8572	20.6
1985	3093	7462	29.3
1986	6141	6635	48.1
1987	3159	7487	29.7

Building Societies Wholesale and Retail Funding

Source: Building Societies Yearbook (1988)

Moreover, the previous stability of retail funds has tended to fall. The changing competitive positions of competing financial institutions and the increasing financial sophistication of the personal sector means that retail funds can at times be extremely volatile (building societies are also particularly hit by outflows of funds for privatization issues). Thus the advantage of the stability of retail funds over wholesale has tended to decline.

Furthermore, the marginal cost of retail funds to building societies can be relatively expensive as compared to the marginal cost of wholesale funds.

This is because increasing the rate of interest on deposits to raise more funds will increase the rate on funds already deposited with the building society (alternatively a rise in one type of deposit e.g. term shares, may induce switching from lower rate accounts). Wholesale funds by contrast, will not affect the cost of funds already held at the building society. Wholesale funds can thus be extremely attractive to building societies.

Wholesale funds have the advantage that building societies can actively engage in liability management (as the banks do) which gives societies greater flexibility. Wholesale funds are generally readily available when needed, and can be used to stabilize mortgage lending flows. Indeed, the use of wholesale funds means that building societies can reduce their average liquidity levels. Traditionally, building societies have run down liquid assets at times of low funds inflows to stabilize mortgage lending. If wholesale funds can be used for this purpose, societies can reduce their holdings of low yielding liquid assets. Building societies would be expected to move towards an optimal mix of wholesale and retail funds that minimizes costs. Also, portfolio diversification into a greater variety of sources of funds should create greater stability of inflows. Given the advantages offered by wholesale funding, and the tendency for regulatory convergence (Llewellyn (1988(b)), it is likely that the funding mix of banks and building societies will tend to become less differentiated over time.

A further factor affecting competition in the retail market is the stipulation that building societies unsecured lending be limited to £10,000. Some would argue (Llewellyn 1987a) that the ability of the retail banks to offer mortgages at the same rate of interest as building societies (despite building societies lower operating expense ratios) is the ability of the banks to cross-subsidize mortgage lending with their high-priced profitable lending business, such as consumer loans.

Llewellyn argues that this has also allowed the retail banks to offset the cost of their high-interest retail deposits. The new legislation (Building Societies Act 1986) allows building societies also to engage in such cross-subsidization with the ability to diversify into unsecured lending. The building societies face a regulatory asymmetry however, in the constraints imposed on the limits to their unsecured lending activities. The limit of £10,000 represents a lack of competitive neutrality vis-a-vis the ability of banks to lend unsecured only constrained by prudential limits.

It may be that this lack of competitive neutrality which curtails building societies' ability to cross-subsidize high-cost retail funding, has been an important factor in the offering of non-price inducements, such as increased liquidity of most balances held at building societies.

Increased competitive pressure has been partly responsible for the increase in the rate of decline in the number of building societies in the 1980's (see Table 4.8). The decline in the number of societies has been due to mergers, rather than dissolution of societies. This had a marked effect on the degree of concentration in the building society industry in the 1980's, which affects the ability of the building society industry to compete. Notice that when the cartel was in operation, large interest rate margins allowed inefficient societies to survive (see Chapter Three).

Indeed, this was one of the stated objectives of the cartel. The abolition of cartel and greater competition in the personal sector retail financial market, combined with a reduction in spreads, has increased the pressure for smaller, less efficient societies to transfer their business to larger building societies. The majority of mergers since 1979 have been of this type.

Table 4.8

Decade	Average rate of Decline (%)	Year	Annual Rate of Decline (%)
1900-10	2.8	1980	4.9
1910-20	3.0	1981	7.3
1920-30	2.1	1982	10.3
1930-40	0.7	1983	9.3
1940-50	1.5	1984	7.8
1950-60	1.2	1985	12.1
1960-70	4.0	1986	9.6
1970-80	5.5	1987	8.6

Rate of Decline in Number of Building Societies

Average 1980 - 1987 = 8.74

Source: B.S.A. Bulletin. October 1987.

There has also been an increasing number of mergers between large building societies in the 1980's. Table 4.9 shows mergers between building societies which have more than 0.5% of the industry's assets. The number of mergers between large societies has increased dramatically during 1982-1987, as predicted by the Wilson Report (1979) (see Chapter Three). In the fifty years between 1928 and 1978 there were twelve 'large' mergers (i.e. both building societies with more than 0.5% of the industry's assets), compared with eight between 1982-1987. The average size of society after merger as a total of industry assets between 1928-78 was 4.8% compared with 6.85% over the period 1982-1987. The tendency to merge has meant that the largest societies have gained an increasing share of the industries assets (Table 4.10).

Table 4.9

YEAR	MERGING SOCIETIES	ASSETS AS % OF INDUSTRY ASSETS
1982	PROVINCIAL	3.0
	BURNLEY	1.6
1983	ANGLIA	
	LONDON AND SOUTH	3.6
	of england	0.7
1985	ALLIANCE	3.1
	LEICESTER	2.9
1987	NATIONWIDE	8.7
	ANGLIA	3.8

Mergers Involving Large Building Societies 1982-1987

Source: B.S.A. Bulletin October 1987.

Table 4.10

YEAR	LARGEST 20 BUILDING SOCIETIES TOTAL ASSETS (£m)	LARGEST 20 BUILDING SOCIETIES SHARE OF TOTAL (%)	ALL BUILDING SOCIETIES TOTAL ASSETS (£m)
1980	45374	84.3	53793
1981	52413	84.8	61815
1982	63062	86.3	73033
1983	74746	87.0	85868
1984	90059	87.7	102688
1985	107012	88.6	120764
1986	125392	89.4	140603
1987	149561	93.2	160411

Concentration in the Building Society Industry. 1980-1987

Source: B.S.A. Bulletin October 1987

Moreover, it has been argued (Morgan 1988) that only building societies with an asset base of £10-15 billion will be likely to thrive over the next decade (at October 1988 only three building societies had assets of over £10 billion). Morgan foresees only six to ten large mutual societies existing in ten years time. If correct, this means that there will be a rapid growth in mergers in the building society industry and a large concentration of assets. This is important given the evidence of increased efficiency and economies of scale due to size and growth through mergers (Drake 1987b)[10]. It suggests that increasing concentration in the building society industry leads to a greater ability to compete through cost efficiency. Building societies have a major competitive advantage in the efficiency of their business over banks. Building societies can operate on a narrower spread between the average cost of funds and the average interest rate on mortgages. Their ability to do this stems from their relative 'efficiency' vis-a-vis retail banks. They can operate with a narrower interest rate spread largely because of their uncomplicated business. It is interesting to note that building society operating expense ratios were increasing up until 1982 whereas they declined after that date. This is partly a result of the decrease in the annual growth rate of the number of building society branches (see Table 3·2 Chapter Three), which, in turn, may be a reflection of the increase in price competition rather than the previous predominance of non-price competition which resulted in a proliferation of building society branches. The reduction in building society operating expense ratios would appear to justify Silber's (1975) claim that cost efficient firms are the main innovators. However, this must be treated with caution as there is a strong positive relationship between operating expense ratios and the rate of inflation, and as such the building societies have not had absolute control over this ratio. It is not therefore possible to adequately maintain that building societies have deliberately become more efficient in the 1980's as a matter of policy.

Moreover, the retail banks 'endowment effect' has been decreasing in recent years. The increasing importance of interest bearing deposits at retail banks and the fall in non-interest bearing sight deposits has eroded the banks' source of traditionally cheap retail funds (non-interest bearing sight deposits are not free as the banks provide for the costs of the payments system). Retail deposits have become increasingly expensive at the margin for retail banks, and the decline in the endowment effect affects bank profitability. It is clear from Table 4.11 that there has been a decline in the banks' proportion of total income derived from their interest margin. Net interest has fallen from being over 70% of total income in 1982 to only 64.3% in 1987. In contrast, fee income has grown from 22.6% of total income in 1982 to 28% in 1987. Indeed, non interest income (foreign exchange, fees and concessions, and other) has grown from 29.7% in 1982 to 36% in 1987. The Bank of England (1988) points out that this largely results from a deliberate policy change towards fee income growth, particularly through diversification into insurance, asset management and estate agency. Note that interest margins have, however, remained relatively stable over 1982-1987.

Of course, the increasing cost of retail funds will tend to have an affect on building societies profitability as well. It must be remembered however, that building societies have their own version of the 'endowment effect'. Building societies face a zero cost of reserve capital. This is because, as mutual institutions, they do not have to

Table 4.11

	1983	%	1984	%	1985	%	1986	%	1987	%
Net Interest	6.54	68.1	7.51	66.6	7.82	67.6	8.34	66.1	8.78	64.3
Foreign Exchange	0.24	2.5	0.26	2.3	0.28	2.4	0.41	3.3	0.36	2.6
Fees and Commissions	2.49	25.9	2.98	26.4	2.99	2.6	3.30	26.2	3.80	27.8
Other	0.35	3.6	0.52	4.6	0.47	4.1	0.56	3.3	0.71	5.2
Total Income	9.61		11.27		11.56		12.61		13.65	

Four Largest Bank's Sources of Income

service their capital. Societies thus have free reserves, the level of which can affect profitability. A society with a large volume of free reserves will tend to be more profitable as it will have a relatively high proportion of capital on which interest does not have to be paid compared with its amount of assets which are non-income earning. This results in free reserve income, which provides an endowment effect when interest rates are rising. As interest rates rise, societies will have an endowment effect as interest bearing liabilities will be less than interest bearing assets by the size of the free reserves. This may be a powerful advantage to building societies during periods of rising interest rates.[11]

A further stimulus in the broadening of the similarities of building societies and banks was the Building Societies Act 1986. Under section 34 of the Act a building society or a subsidiary of a building society may provide the services listed in Schedule 8 of the Act (and the review of Schedule 8 in February 1988). The building societies have been given the powers to undertake inter alia, money transmission services, foreign exchange services, personal equity plans, nsecured loans, estate agency, administration of pension schemes, investment services, insurance, and unit trust schemes.

The ability to diversify into these areas is a powerful example of the decreasing differentiation between building societies and banks. Indeed, the Act allows for conversion from mutual status to public limited company status, with the permission of the members.

Such a society (and at least one - the Abbey National, has taken this action) would be regulated by the Bank of England, rather than by the building societies commission.[12] This may prove advantageous in view of the degree of regulatory asymmetry between retail banks and building societies - particularly concerning wholesale funding, unsecured lending, and capital adequacy requirements.[13] The views of one commentator on the inevitability of convergence must be taken into account however,

> "The Building Societies Commission (superseding the Registrar of Friendly Societies) is a product of this evolutionary process but is unlikely to be the ultimate regulatory authority. The central conclusion of this paper is that the BSC is a transitional phase between a highly specialised set of institutions regulated by the Registry of Friendly Societies, and mutual banks (with full or near-full banking status) regulated by the Bank of England". (Llewellyn, 1988b)

The constant evolution of the financial system is in this case likely to lead to both building societies and banks coming under the umbrella of one regulator - the Bank of England. In the extreme, there may be nominal or zero difference between the regulations of the two sets of institutions, and between their main operations and activities (notwithstanding the possibility of smaller building societies adopting specialist or 'niche' strategies according to their relative strengths and weaknesses).

4.4 Conclusion

Section 4.1 analysed the main factors impinging upon the degree of competition in the personal sector retail financial market and the main determinants of financial innovation. Re-regulation via a change in monetary control was shown to be a major catalyst for an increase in competition and financial innovation. The removal of distorting direct monetary controls from the retail banks enabled a portfolio re-distribution towards mortgage lending. The retail banks entrance into the mortgage market precipitated the breakdown of the interest rate cartel. The effects on interest rates of the abandonment of the cartel and an increase in competition have been as would be expected from economic theory (see Section 4.2). Greater competition for personal sector retail funds was combined with innovation in the type and variety of deposit accounts offered by both building societies and banks. In particular, high interest easy access accounts were introduced, by both sets of institutions. One major effect of increased competition and innovation has been to alter the interest rate policies of the building societies and the banks. Firstly, the average rate of interest paid on retail funds at building societies and banks has tended to increase. Secondly, the average rate charged on mortgage loans has also increased. Thirdly, building society interest rates have tended to become less sticky, and now move more in line with other rates of interest. This has resulted in building society interest rates becoming more flexible and fluid in relation to competitors rates.

Building Society interest rates becoming more market related and fluid has meant a greater role for the 'price' of mortgages in influencing the supply and demand for mortgage funds. The importance of the price of mortgages and the greater fluidity of mortgage interest rates for the effectiveness of monetary control are examined in detail in Chapter Seven.

There has also been substantial change in the mortgage policies of the building societies. As would be expected, the higher mortgage rate charged for larger loans has been competed away. The supply of mortgage loans, previously rationed, has become more responsive to demand conditions, such that mortgage queues have disappeared. Large multiples of income have been advanced for the purchase of houses, as have larger percentages of the sale price (100% advances not being uncommon). This has resulted in substantial liberalization of credit conditions to the personal sector.

Section 4.3 analysed the relative market shares of building societies and retail banks of the personal sector retail financial market, with particular reference to the changing extent of heterogeneity between these institutions. Banks and building societies are becoming less differentiated and more homogeneous in nature. This is especially noticeable in the more dynamic, aggressive, and innovative nature of building societies. This is exemplified in the recent decision of a number of building societies to offer interest bearing cheque accounts, further eroding the retail banks' traditional monopoly of money transmission services and increasing the degree of similarity between these institutions. It is likely that banks too, will be forced to adopt interest bearing cheque accounts (and hence further depressing their endowment effect). The range of services that building societies are empowered to adopt under the Building Societies Act 1986 further increases the areas in which banks and building societies are in competition. It is likely that the tendency for regulatory convergence will ensure that any regulatory asymmetries vis-a-vis banks and building societies will be altered over time, encouraging the tendency towards homogeneity.

1. Recall that, if a money supply targeting strategy is to be pursued, a reasonably stable relationship between the policy instrument used and the monetary aggregate(s), and a reasonably stable relationship between the monetary aggregate(s) and the ultimate goal are necessities. Comment has tended to emphasize the possibility that financial innovation by building societies and banks has in some way affected the growth rates of the monetary aggregates in relation to nominal incomes. Having examined the main events and innovations in the early 1980's it is possible to

further extend this hypothesis. It has been noted that the average rate of interest on building society and bank accounts has risen considerably as a result of innovation, alongside an increase in liquidity of these accounts, such that many high interest accounts are instantly accessible. It is feasible that such a structural change, representing considerable improvement in the terms offered to personal customers, may have affected the growth rates of the monetary aggregates relative to nominal incomes. This is likely to be a stock effect as financial innovation occurred, rather than a continuing effect. Future financial innovations may have similar stock effects however. Indeed, the payment of interest on balances that are to all intents and purposes transactions accounts may have altered the meaning and function of money. These hypotheses are considered in detail in Chapter Five. The change in the nature of the mortgage market may also have affected the growth rates of the monetary aggregates. The transition from variable mortgage queues and the rationing of mortgage supply to a position of market clearing represents a major liberalization of credit conditions for the personal sector and a major stock effect. This credit side 'shock' may have led to an increase in the monetary aggregates over and above the growth of nominal incomes. This is examined in detail in Chapter Six.

2. The necessity of a stable demand for money function for the monetarist policy of control of the money supply was noted in Chapter Two. Very little research into the effects of financial change and innovation upon the demand for money function has been carried out. Given the hypothesis in (1) above as to the effects of financial innovation on the growth rates of the monetary aggregates (and precursing the analysis of that hypothesis in Chapter Five), it is possible that financial innovation in the form of high interest easily-accessible accounts has affected the stability of the demand for money function although instability may be for only a transitional period as the financial innovations occurred. Such a hypothesis is explored in Chapter Nine.

   Financial liberalization in terms of freer mortgage availability may have provided a shock to the demand for credit function, creating instability. Notwithstanding the analysis of Chapter Six as to the effect of credit changes on the growth rates of the monetary aggregates, the hypothesis that the stability of the demand for credit has been affected by changes in credit conditions is examined econometrically in Chapter Ten.

3. Hypotheses as to the more long term effects of the structural changes in building society interest rates after the breakdown of the cartel on the effectiveness of monetary control are specified in Chapter Seven.

NOTES - CHAPTER FOUR

[1] Gilchrist (1986) provides a straightforward analysis of the overall regulatory changes with respect to building societies. For interesting analyses of the monetary authorities views as to the changing activities of building societies, see Richardson (1978), Davis and Saville (1982), Richardson (1983), and Drayson (1985).

[2] Of seven major innovations introduced in the U.S.A., Hester argues that all were induced by previous monetary policy decisions by the authorities. Simons warned of the dangers of ignoring institutional change as far back as 1936.

Akhtar (1983) outlines the main broad categories of financial change in the United States, the United Kingdom, Canada, Japan, France, Germany and Italy as being:

(a) The increasing use of interest sensitivee funds by banks and other financial institutions,

(b) variable rate lending or borrowing and maturity shortening,

(c) the growth of financial markets and of marketable financial instruments,

(d) the changing shape of retail banking,

(e) the diversification of sources of financial services.

[3] In fact, once they had reached their desired portfolios, the retail banks employed a number of rationing devices on their mortgage lending. Many borrowers had to maintain an account for a minimum period to quality for a mortgage, and restrictions were placed on the maximum amounts banks were willing to lend as a proportion of property value or as a multiple of income. Of course, these are phenomena more normally associated with the building society industry.

[4] The Green Paper "Building Societies: A New Framework" (July 1984) had recommended the abolition of the cartel, deeming it to be anti-competitive, whilst its removal would encourage

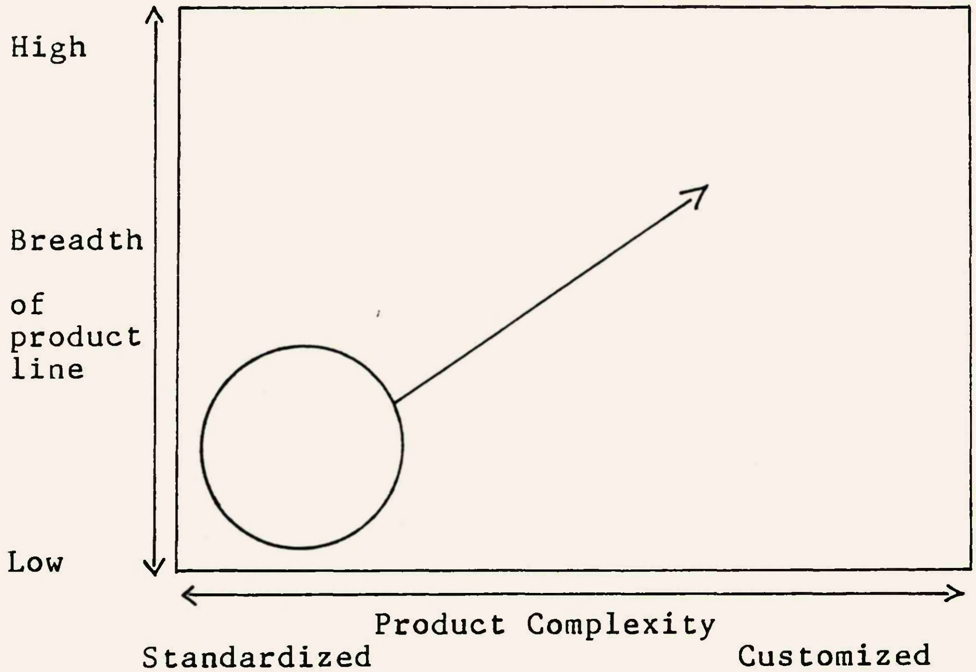
> "the free play of market forces which would ensure the best deal for savers and borrowers".

[5] Financial innovations are alleged to occur in 'clusters' or 'swarms' (Podolski 1985, 1986) as one financial innovation acts as the catalyst for another. It does seem that in practice one financial innovation will trigger off another, particularly in the form of a competitive innovation from a competing financial institution. The evidence as to 'swarms' of financial innovations is not clear-cut, however.

[6] It may be significant that a building society (the Nottingham) was the first institution to offer a full home banking service in conjunction with the Bank of Scotland.

[7] Indeed, Niehans (1982) considers that declining transactions costs are the major determinant of financial innovation, although this hypothesis is not adequately substantiated.

It is possible to illustrate the effects of technological advances upon product variety and product mix by using a product matrix (Lewis 1987). The bottom of the matrix is the product complexity axis whilst the vertical axis shows the breadth of product line. The former runs from standardized services to individually tailored requirements. The latter shows the variety of products offered, ranging from high to low.
It is argued that technological advances allow the product matrix to shift to the right, increasing the complexity and variety of products on offer as a result of low and declining costs.



Impact of Technology upon the Product Matrix for financial Institutions. Source: Lewis (1987)

[8] It is interesting to note that it is not only the retail banks which will have to re-evaluate their strategies. The Halifax Building Society, which alone amongst the big six societies has eschewed a paper based transmission service in favour of electronic-based systems, has announced it is re-examining its policy in light of other building societies offering interest bearing cheque accounts.

[9] The Stow Report BSA (1979) examined the need for societies to adopt wholesale funding. The general conclusion was that traditional sources of funds would be adequate but suggested that issuing certificates of deposit would provide building societies with more flexibility. The Phillips Report (BSA 1980a) examined wholesale funding in more detail and concluded that

building society CD's would help to stabilise lending, and allow societies to operate with lower liquidity ratios. The report did recognise that although in principle, there were no restrictions on society's raising funds in the wholesale markets, they were effectively precluded by the fact that societies were required to pay interest net of tax at the composite rate (the tax being unclaimable).

The Stow and Phillips Reports were written at a time when building society retail rates were generally below other rates. The change in rates such that retail rates were in general above wholesale rates give an impetus to use wholesale markets on a far greater scale than as envisaged by the reports.

[10] For earlier evidence see Gough (1979, 1981) Gilchrist and Rothwell (1980), Barnes and Dodds (1981), Barnes (1985).

[11] There are two further aspects to the societies endowment effect. Interest is only credited to investors accounts every six or twelve months, and of course additional interest is only earned on the original interest from the date of crediting. Building Societies will thus tend to have a pool of interest free funds that has not yet been credited to investors accounts. This is particularly important during periods of high interest rates.

Secondly, building societies will tend to make greater provision for composite rate tax during periods of high interest rates. Until these funds are paid to the government, (normally quarterly) these interest-free funds can be profitably invested.

[12] See Drake and Llewellyn (1988) for a detailed analysis of the conversion to PLC debate.

[13] With respect to capital adequacy requirements, the BSC has stated that building societies will eventually come under the Bank for International Settlements (BIS) proposals for a minimum risk assets ratio of 8%. This represents a major turn towards regulatory convergence (see Llewellyn (1988)) in that banks, PLC societies and mutual societies will be regulated on equal terms for capital measures, but retains asymmetry in terms of the degree to which mutual and PLC societies can diversify.

CHAPTER FIVE

FINANCIAL INNOVATION AND THE MONETARY AGGREGATES

5.0 Introduction

Chapter Five examines the stock adjustment effects of the abolition of the recommended rate system and financial innovation on the growth of the monetary aggregates that are expected to confuse interpretation of monetary conditions as the innovations occur, and points to more continuing effects on monetary control which are analysed in greater depth in Chapter Seven.

The criteria for defining 'money' assets are examined in Section 5.1, where it is noted that defining money is wrought with difficulty even without financial innovation. The institutionalist school argued over two decades ago that, given that financial institutions are constantly developing, new assets would at times be created which may act as substitutes for money. This was not seen as a new process but an example of the evolution of financial institutions. It was argued that new assets which perform the transactions/medium of exchange function would evolve over time leading to an increase in the variety of assets that perform the role of money. Financial innovation is not therefore a phenomenon solely of the 1970's or 1980's, although the variety and pace of financial innovation and change in the building society and retail bank sectors has been unprecendented.

Section 5.2 analyses the development of building society innovations in terms of their increasing similarity and apparently greater substitutability with bank sight deposits. The stock effects on the broad monetary aggregates of 'switching' of balances between building societies and banks are examined, as is the problem of redefining the monetary aggregates in the face of financial innovation.

The effect of financial innovation on the money income relationship is examined in Section 5.3 in terms of the motives for holding money balances. Having noted in Chapter Four that many building society and bank easy access accounts now bear interest, it may be that as well as fulfilling the traditional motives for holding money, financial innovations may have led to money being held for reasons over and above the transactions and precautionary motives. If this is so, then money balances being held for other than transactions/precautionary motives may be responsible for the fast growth of the broad monetary aggregates relative to nominal incomes, as evidenced by the fall in the income velocity of circulation of broad money since 1980.

5.1 Financial Innovation and the Definition of Money

The basis upon which to define money has in the past aroused considerable controversy, even without the added complication of financial innovation. The functional criteria often stipulated as defining 'money' have not been sufficient to set out a definitive classification of 'money'. The a priori approach generally places weight on the specification of, "money is what money does" (Hicks 1967, p1) whereby money is defined by functional criteria. Anything that can perform in the capacity of fulfilling the function that money occupies is assumed to be a constituent part of 'money'.

The role frequently volunteered as distinguishing 'money' from other assets is that of a medium of exchange, or the transactions motive. This is as a result of money performing the intermediary function between buyer and seller that nullifies the necessity of a double-coincidence of wants. It is thus, according to this criteria, anything that is generally acceptable as a medium of exchange. This functional criteria does not however establish an unambiguous classification of assets according to whether or not they should be represented in that group of assets delineated as 'money'. Certainly notes and coin are generally acceptable in exchange, and most would further argue that bank deposits are a form of money, being subject to payment by cheque. As early as 1960 however, there was dispute as to drawing the line there,

> "when I draw a cheque on a current account at a bank, economists would certainly say that I am using money to make a payment. But if this act of writing an instruction to a bank is a use of money, why not also written instruction to the Post Office Savings Bank or a Building Society?"
>
> (Sayers 1960, pp711-712)

Indeed, the Radcliffe Committee (1959) fully rejected the view that money could be defined according to certain functional criteria, and the comments made in the report appear extraordinarily prescient in view of the effects of financial innovation in the 1980's,

> "by 'control of the supply of money' we mean control of the availability of certain assets which are used as media of exchange and stores of value. We have switched from an unambiguous abstraction to a class of marketable objects whose boundary has <u>neither sharpness nor certainty nor permanence</u>".
>
> (Sayers 1960, p711[1])

A largely unquantifiable concept was expounded by the Radcliffe Committee, the very broad concept of "liquidity". According to the report, it is liquidity that determines expenditure decisions, rather than access to money holdings (medium of exchange) per se,

> "A decision to spend depends not simply on whether the would-be-spender has cash or "money in the bank" although that maximum liquidity is obviously the most favourable springboard. There is the alternative of raising funds by selling an asset or by borrowing, and the prospect of a cash flow from future sales of a product both encourages commitment beyond immediately available cash and makes borrowing easier".
>
> (Para 389)

According to Radcliffe there is in existence a wide spectrum of assets, each of which contains to a different extent some of the features of "moneyness". It was further argued that there exist in a developed financial economy many highly liquid assets which are close substitutes for money. Money is thus only a constituent part of the much broader quantum 'liquidity' in the economy. It is therefore,

> "the whole liqudity position that is relevant to spending decisions, and our interest in the supply of money is due to its significance in the whole liqudity picture".
>
> (Para 389)

The report does not, however, provide a clear quantifiable, unambiguous definition of liquidity [2], although an analysis of the 'whole liquidity position' would certainly involve, at the very least, looking at deposits held at the London Clearing Banks, Building Societies, Post Office Savings Banks and the Trustee Savings Banks (Para 478, Table 22).

Whether or not there is a variety of near-money assets highly substitutable for money is an empirical matter. Unfortunately, much of the econometric work has been carried out on American data and moreover, has provided no clear consensus.

The substitutability of money issue is a complex one, compounded by the fact that many researchers have obtained conflicting results (or what they cloaim to be conflicting results). Feige and Pearce (1977) provide an invaluable survey of the pre 1977 work. Much of the problem lies with disagreement over what numerical magnitude of cross-elasticity should be taken as indicative of close substitutability,

> "Thus, while the mean values of the empirical estimates of the relevant cross-elasticities estimated in the foregoing studies are relatively close to one another considering the imprecision with which they are estimated, the semantic interpretations of the results give the impression of considerable disagreement between the studies".
>
> (Feige and Pearce, p456)

This leads them to conclude that,

> "it is not the underlying magnitudes that are primarily at issue, but rather the evaluation of the theoretical and substantive implications of the estimated empirical parameters. The lacuna in the literature is a general theoretical framework that is capable of deeming a consistent set of substantive implications from any given set of empirically estimated substitution parameters".
>
> (p463)

Mills and Wood (1977), as far as is known, are the only authors to examine the issue of substitution of assets in the U.K. They measure the elasticity of substitution by estimating a demand for money function, and observing its interest elasticity. In doing so, they aim to test what they call the "Radcliffe' Hypothesis - that the liabilities of NBFI's must be perfect substitutes of those of the commercial banks before NBFI's can completely frustrate monetary policy as described by the Radcliffe Committee. If the interest elasticity of the demand for money has become infinite, monetary policy cannot affect money market conditions. They found that the interest elasticity of the demand for money for the period 1923-1974 shows no upward trend, and they thus reject the Radcliffe hypothesis. These results must be viewed with caution, however, in view of the doubts as to the econometric specifications of the demand for money of that time, and in the view of the much faster pace of financial innovation since 1980.

Despite the objections of the Radcliffe Committee, only the liabilities of banks were traditionally included in the monetary aggregates (along with notes and coin) largely because of the belief of the banks' 'uniqueness' in terms of their ability to create credit. Traditionally, theory has distinguished sharply between banks that create credit, and financial intermediates (NBFI's) which merely pass it on. Building Societies, it has been pointed out, have to attract a deposit before they can make a loan,

> "they (financial intermediarites) are unable to lend more than savers have decided to place with them.....(and) play a neutral role in the saving-investment balance".
>
> (Riefler 1959 p301)

whereas banks have the ability to create "virulent liquidity" Holtrop (1959). Whilst it is true that building societies were not credit creators as they were not involved in the payments mechanism, the strict demarcation lines were probably unhelpful in terms of classifying financial institutions for the purposes of monetary policy. It tended to propagate the view that NBFI's had no role to play in the monetary process. This was seen in the view that banks would not lose deposits to NBFI's (see Chapters Three and Four and Llewellyn 1979(a)) and neglect of the point that NBFI's could increase the velocity of circulation of money by attracting deposits away from banks. This traditional viewpoint very much promulgated the notion that NBFI's such as building societies were passive institutions that did not affect the monetary process in any way, a standpoint which was challenged by Gurley and Shaw,

> "we take exception to the view that banks stand apart in their ability to create loanable funds out of hand, while other intermediaries in contrast are busy with the modest brokerage function of transmitting loanable funds that are somehow generated elsewhere".
> (1955, p521)

This is backed up by the 'New View' of Tobin (1963(a)) whereby,

> "The distinction between commercial banks and other financial intermediaries has been too sharply drawn. The differences are of degree, not of kind".
> (p418)

The Building Societies have increasingly encroached upon the banks' credit-creating preserve,

> "Given the terms on which they can lend, the ability of institutions to create deposits depends on: the terms on which they can obtain the assets which constitute their liquid reserves and the ratios of these liquid assets to deposits, which together help to determine minimum lending margins; and the extent to which the ultimate payees benefitting from their lending <u>redeposit</u> their proceeds with the intermediaries concerned. The use of bank deposits as a means of payment gives banks a high redeposit ratio; but that of other intermediaries, especially building societies, will presumably grow farther as the attractiveness of their liabilities as liquid instruments increases".
> (Rose 1986 p24)

Of course, the increasing liqudity of building society accounts and, most importantly, the movement of the building societies into the payments transmission mechanism means that building societies are now also credit creators and cannot be ignored for purposes of monetary control [3].

Given that changes in credit correspond quite closely to changes in the broad monetary aggregates, this should not cause too much of a problem in using a broad money definition as a target and as an indicator of monetary conditions. The post Keynesian School, however, argues that monetary theory and control should emphasize credit money rather than 'deposit' money, as the latter is effectively brought about by the former,

> "In modern capitalist economies the total volume of bank deposits is effectively determined by the demand for bank credit".
>
> (Moore 1988 p4)

Monetarists argue that the composition of those assets which are 'money' is an empirical matter. The ultra-monetarist view is that money is an indicator of nominal income, and that control of money will provide control of nominal income. The correct definition of money is then that aggregate of financial assets which most closely follows nominal income (Friedman and Schwartz (1970).

The second empirical approach to defining money stems from the view that if it is possible to identify a stable demand for money, effects of changes in the money supply on the economy may be predictable. Thus the appropriate definition of money is that which provides a stable aggregate demand for money function (Laidler 1969).

In terms of the first approach, Smith (1978), analysed the relationship between national income and five alternative definitions of the money supply for the U.K. He found that both the best fitting function and the best forecasting performance was provided by what he called 'M5' consisting of conventional £M3 plus building society, TSB and NSB deposits over the period 1924-1977.

Mills (1983) also provided an empirical assessment of the monetary aggregates according to their ability to predict future movements in nominal income. He found that £M3 and PSL1 were the most informative aggregates.

There have, however, been doubts cast on the nature of empirical definitions that link the definition of money to the ability to track nominal income. Mason (1976) in particular gives a thorough critique of this methodology.

With reference to the demand for money, it has already been noted (Chapter Two), that the apparent existence of a stable demand function for £M3 persuaded the authorities to adopt it as a target. The adoption of a broad monetary target was also inspired by "Radcliffian views" (Niehans, 1982) of the importance of liqudity in the money supply process, rather than a strict adherence to the transactions based quantity theory,

> "If the targetting of narrow money seemed to rely rather exclusively on the quantity theory, the use of a broad money target could be justified by reference to rather different theories, about the importance of "liquidity" and "credit" as well as by regard for the quantity theory itself".
>
> (Bank of England June 1983, p201)

If the original reason for targetting a broad money definition was influenced by Radcliffe views, it can also be said that the decision to abandon the £M3 aggregate has a Radcliffian ring to it,

> "Starting from a general concept such as broad money or narrow money, any precise definition involves drawing an arbitrary dividing line across a virtual continuum of financial assets. Moreover, a particular measure chosen on the basis of past relationships is liable to be undermined over time by developments in the

> financial system. Given the recent fast pace of financial innovation and liberalisation, the problems of definition have arguably become more acute. There is now a vast array of slightly differentiated financial products available to the retail and wholesale depositor or investor, ranging from cash to long-maturity marketable securities. There is no obvious and appropriate criterion for discriminating unambiguously between those which are 'money' and those which are not".
>
> (BEQB December 1986(b), p500)

Clearly, in one sense, we are all Radcliffeans now.

This appears greatly at odds with the monetarist proposition stated earlier that money is a 'unique' asset.

5.2 Financial innovation and reclassification of the Monetary Aggregates.

Financial innovations which represent close substitutes for money may necessitate a reclassification of the monetary aggregates (Milbourne (1986), Jonson and Rankin (1985)). New financial instruments and improved terms on old ones by building societies has meant that those assets which perform the function of money are not immutable over time,

> "In practice, for some purposes ordinary accounts are like sight deposits with banks, and high interest accounts - which have developed since 1979 - are similar to seven-day deposit accounts".
> (BEQB 1982(c), p535)

Increasing financial innovation by building societies, taking the form of changes in the terms of existing accounts and the new services introduced has meant that the monetary authorities have had to undertake a re-appraisal of such balances for the purposes of monetary control. Three month notice accounts were originally treated as investment balances by the authorities in terms of monetary aggregation because of their fairly strict withdrawal terms. When some building societies reduced the terms to twenty-eight days notice without further penalty, they were deemed to be better represented in the monetary measures as transactions balances. They were thus placed within the M2 aggregate at the end of 1983.

Such innovation by building societies reduces the informational content of the M2 aggregate, and calls into question the introduction of this 'transactions' aggregate.

Similarly, if term shares, which have become increasingly liquid, were included in the PSL2 definition, it would affect its growth rate (diagram 5.1). Less stringent withdrawal facilities on term shares led to them growing rapidly between 1981 and 1984, and adding these term shares to PSL2 would have increased its growth rate during this period. By contrast, after 1984, growth of PSL2 would have been slower if term shares had been included, as a result of the decline in non-withdrawable term shares and slower growth in withdrawable term shares after the initial heavy increase.

A further problem affecting interpretation of the movement in the monetary aggregates has been the competition for retail deposits between banks and building societies. Changes in interest rate differentials and non-price terms offered by building societies and banks have meant that, at different times, short-term portfolio readjustments by the personal sector have resulted in distortions of the growth rates of the broad measures of money. This has tended to confuse interpretation of monetary conditions, and reduced the value of monetary targets,

> "One factor which has rendered the growth of £M3 more erratic than that of the other aggregates, is the process of financial change and in particular its sensitivity to the ebb and flow of the competition between banks and building societies".
> (BEQB December 1986(c) p508-509)

Such stock effects resulted in the relationship amongst the various monetary aggregates, and between the aggregates and nominal income, becoming less stable, although this will have been temporary. For example, the growth of term shares at building societies grew from £5.3bn in 1981 to £15bn in mid 1984 and the subsequent withdrawal (about £6bn) in 1986 distorted the growth of £M3. It has been estimated (BEQB May 1987) that approximately half of the inflow in 1981 was drawn from other types of building society deposit, and the remainder represented 'new' money, most of it from £M3. The rate of growth of £M3 was thus reduced by between 2-4%. On maturity in 1986, withdrawal from term shares and a subsequent portfolio reallocation is believed to have increased the rate of growth of £M3 by about 1%.

It is in situations like this that,

> "policy can be no better than the information that guides it".

(Hester 1982, p43), Financial Innovation, has been part of the reason for the authorities admission that,

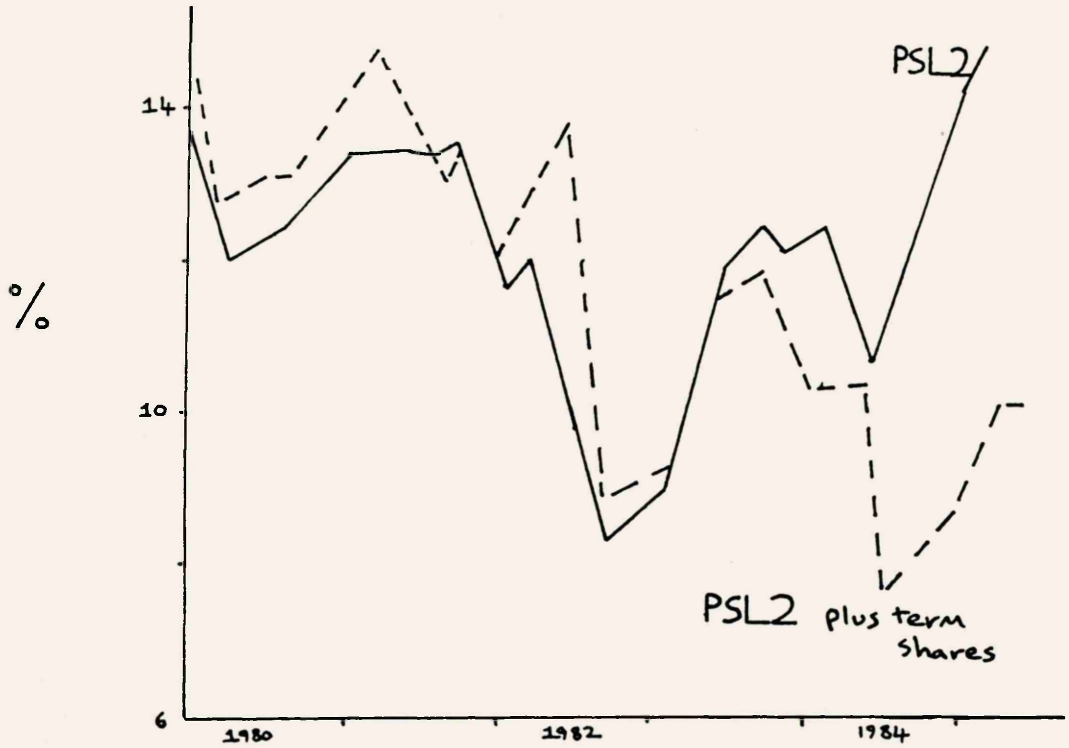
> "the significance of the broad aggregates as monetary indicators has somewhat diminished".
> (Budget Red Book 1985)

Indeed, it has been stipulated by the monetary authorities that a number of variables other than the monetary aggregate in question are monitored,

> "The £M3 rule has never operated in a purely mechanical way; we have always been prepared to over-ride its signals in the light of other, contrary, evidence on the state of monetary conditions".
> (BEQB August 1987, p366)

In terms of the targets and instruments literature, it appears that the monetary authorities have treated the money supply as <u>both</u> an intermediate target and as one of several information variables (Lane 1985), although doubts have

DIAGRAM 5·1



PSL2 and INNOVATION

source: BEQB (march1985)

recently been voiced over the wisdom of the MTFS and the robustness of its theoretical foundation, given the likelihood that financial innovation would occur,

> "What, then, can one say about the design of the MTFS? In its original conception, it was seriously flawed. The central role given to targets for monetary aggregates was a serious error that was repeatedly pointed out at the time. Financial innovation and liberalization over this period robbed these aggregates of whatever informational content they might otherwise have had".
>
> (Currie 1987 p2)

The Bank of England appears to be favouring the 'new' aggregate, M4, which includes building society and bank sterling deposit liabilities to the non-bank, non-building society private sector, and that sectors holdings of notes and coin, largely because building society deposits and bank deposits are becoming increasingly homogeneous,

> "Other liquid (and even illiquid) assets may be becoming better substites for money because of liberalisation and the competition that has ensued. One implication of the increasing convergence between services offered by banks and building societies is that it may be better to look at a broader aggregate than £M3 in examining the personal sectors demand for 'money'".
>
> (BEQB May 1987, p236)

The increasing substitutability of building society and bank deposits has been corroborated econometrically by Weale (1986) in an analysis of the demand for various types of deposit by the personal sector. Greater substitutability, he suggests, implies that emphasis upon £M3 may be inappropriate for the purposes of monetary control.

The problem, however, is not simply one of either a once-for-all reclassification of the monetary aggregates or changing emphasis from £M3 to M4, but the recognition that financial innovation may require continual reclassification as new innovations emerge. This confuses the interpretation of monetary developments, and hampers the operation of monetary control,

> "wherever the boundary is drawn between financial assets included in and those excluded from a definition of 'broad money' there is likely to be considerable scope for substitution of assets across the dividing line".
>
> (BEQB 1987(a), p219)

This means that even an aggregate such as the new M4 may still be vulnerable to switching of funds included in the aggregate and close substitutes excluded fxrom the aggregate.

Traditionally, money has not borne a rate of interest. Indeed, the uniqueness of money and its very importance in monetary economies largely stems from the fact that the rate of interest on money is exogeneously fixed at zero whilst non-money financial assets bear an endogeneously determined rate of interest (Tobin, 1969). [The exogeneity of the zero yield on money should perhaps be amended in the U.K. case, where there have been no specific controls on the payment of interest on money. It is rather that the banks have endogeneously decided not to pay interest on money. Exogeneous or endogeneous, the importance of money bearing zero interest still remains [4].

The fundamental issue which is raised relates to the <u>motives</u> for holding funds in the form of assets included within the various monetary aggregates. The receipt of a market related rate of interest on funds which offer immediate or easy access, often with attached money transmission facilities is likely to blur the distinction between pure transactions balances and pure investment balances. Moreover, from an opposite point of view, pure investment balances are likely to become more like transactions balances with a progressive reduction in illiquidity,

> "building society deposits, which were traditionally dominated by savings balances, have increasingly been used for transaction purposes in recent years".
> (BEQB May 1987(a) p212)

In other words, competition between banks and building societies means that wealth-holders have increasingly been offered the opportunity to hold attractive easy access investment assets which entail no explicit decision having to be made between the placing of funds in a transactions account with a financial intermediary, and the use of funds to purchase additional non-money assets (which must be sold before a means of payment may be obtained) [5]. Times have certainly changed since Keynes remarked,

> "why whould anyone outside a lunatic asylum wish to use money as a store of wealth?"
> (1936, p216)

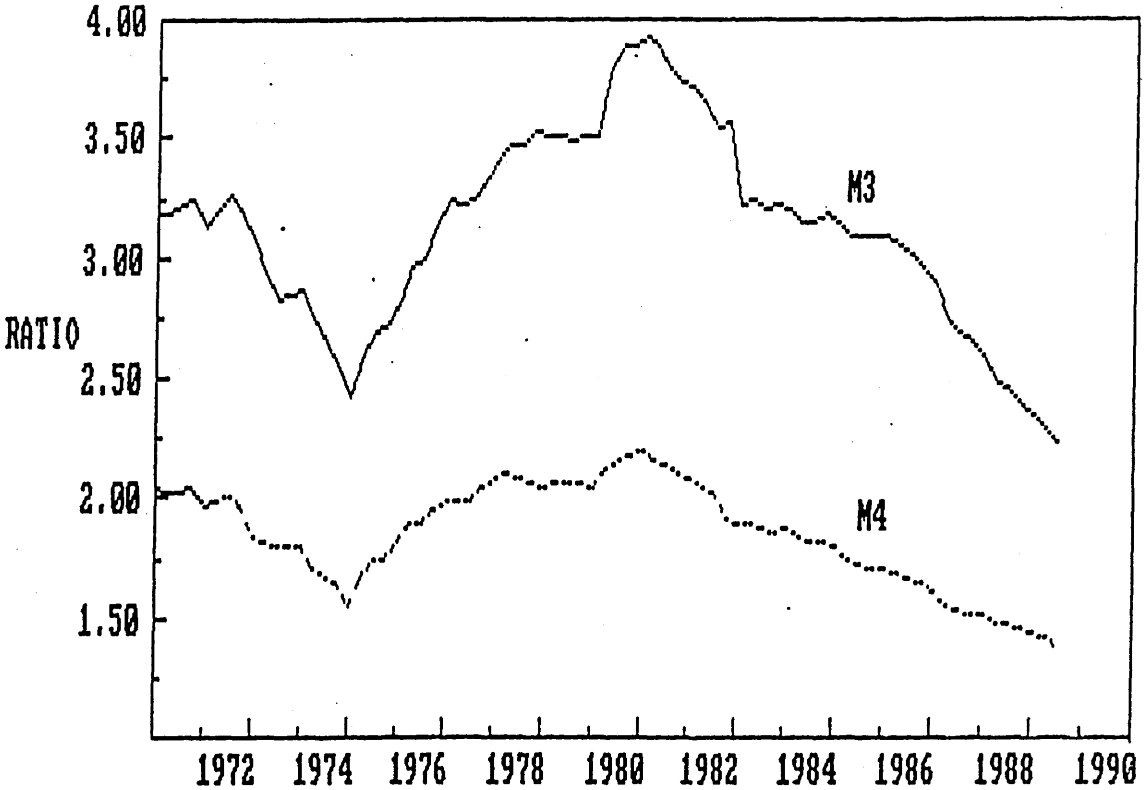
5.3 The Effect of Financial Innovation on the Monetary Aggregates

If monetary aggregates are to be used in a money supply targeting strategy, it is desirable that there is a reasonably stable relationship between the monetary aggregate(s) and the ultimate goal (but not necessarily close or systematic, according to Friedman, due to lags)[6]. Moreover, the motives for holding money should remain consistent over time, such that the growth rates of the aggregates convey accurate information as to the level of expenditure. In monetary control terms, a reduction in the growth rate of the monetary aggregate(s) should thus imply a reduction in the amount of money available for carrying out expenditure decisions. There should therefore be a stable and close relationship between the monetary aggregates and nominal incomes.

It appears that financial innovation may have altered the money-income relationship for the broad money aggregates, although a new stable relationship may exist after the transitional period of financial innovation. The relationship between M3 and nominal income, and between M4 and nominal income, appears to have changed dramatically since 1980. After rising during 1974-79, the income velocity of circulation of M3 and M4 has fallen since 1980 (diagram 5.2). Excessive growth in the monetary aggregates, i.e. in excess of nominal income, has not led to a subsequent increase in prices, as monetarist models would predict. Experience in the 1970's indicated that there was a lag of approximately two years between the growth of M3 and subsequent growth of inflation (see diagram 5.3). A sharp increase in M3 in 1973 was followed by a rise in inflation in 1975. Similarly, a sharp rise in M3 in 1978 was followed by an increase in inflation in 1980. There is not, however, such a relationship after 1980. Indeed, M3 and M4 have grown sharply since 1983, combined with a fall in the rate of inflation. There appears to be no clear relationship between the broad monetary aggregates and inflation, as shown in Table 5.1.

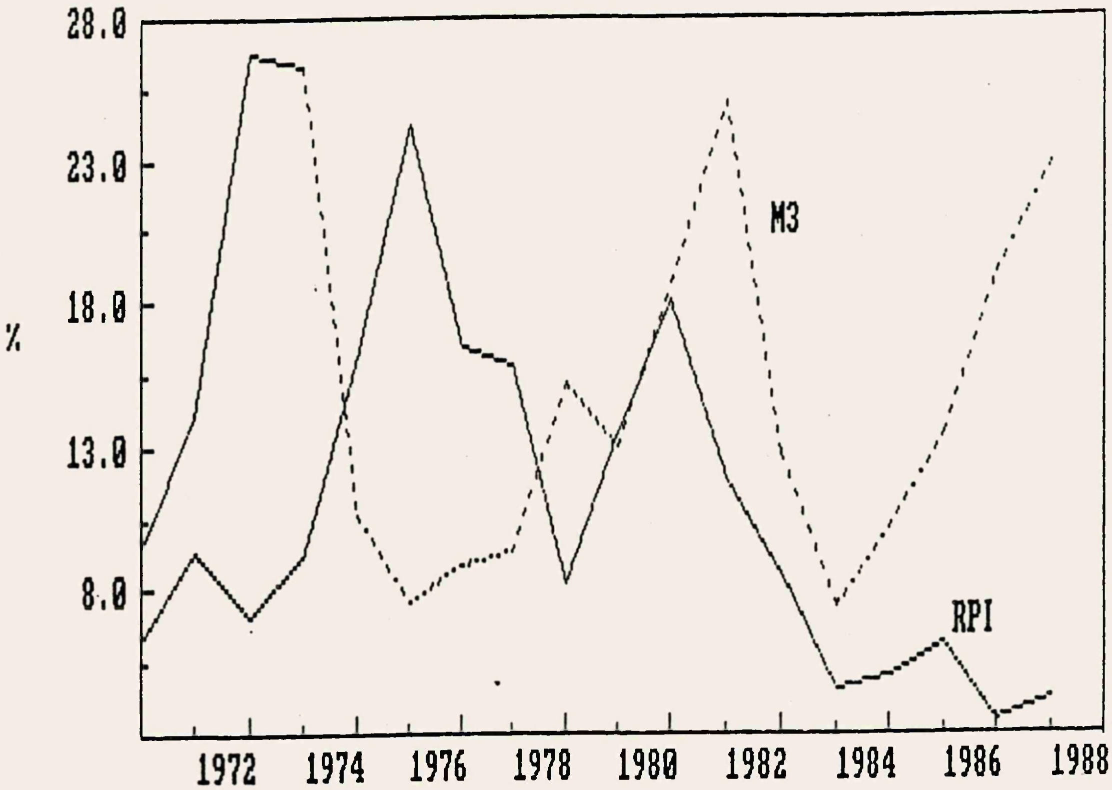
Given this "great velocity decline" (Taylor 1987), to what extent is financial innovation and competition a factor in the rapid growth of the broad monetary aggregates, M3 and M4, relative to nominal income?[7]. In particular, is the fast growth of M3/M4 a consequence of the particular innovations introduced by the retail banks and building societies identified in Chapter Four? It is hypothesized here that the financial innovations examined in Chapter Four which provide a market related rate of interest on easy access accounts have altered the money-income relationship as a result of offering both investment and transactions motives for holding money.

DIAGRAM 5.2



VELOCITY OF M3 AND M4

DIAGRAM 5.3



GROWTH OF M3 AND INFLATION
(% CHANGE ON PREVIOUS YEAR)

Table 5.1

YEAR	INFLATION %	M3 %	M4 %	M5 %
1980	16.4	16.3	16.7	13.5
1981	11.5	19.2	17.6	14.3
1982	8.5	18.6	16.9	12.5
1983	5.2	5.7	13.6	13.6
1984	4.6	15.0	13.0	12.6
1985	5.3	12.7	13.3	13.0
1986	3.4	18.2	15.5	14.7
1987	3.4	19.9	15.1	14.5

Inflation and the Broad Monetary Aggregates

Source: Financial Statistics, Various Issues.
Tables 11.2 and Economic Trends Table 24.

The Bank of England maintains that there are three broad factors which have caused the fall in the velocity of broad money: (BEQB December 1985 p519-520 - reported verbatim)

1. The removal of official restraints on the scale of banks and building societies business (i.e. the removal of monetary controls identified in Chapter Four).

2. The intensification of competition between and among banks and building societies, and offering of more attractive returns and facilities to savers (see below).

3 The persistence of positive real interest rates (see below).

It is the first and second of these points to which attention is now turned.

Recall the hypothesis that 'money' now serves the purpose of both transactions and investment motives. The problem of financial instruments which combine transactions and investment motives summed up by Johnson,

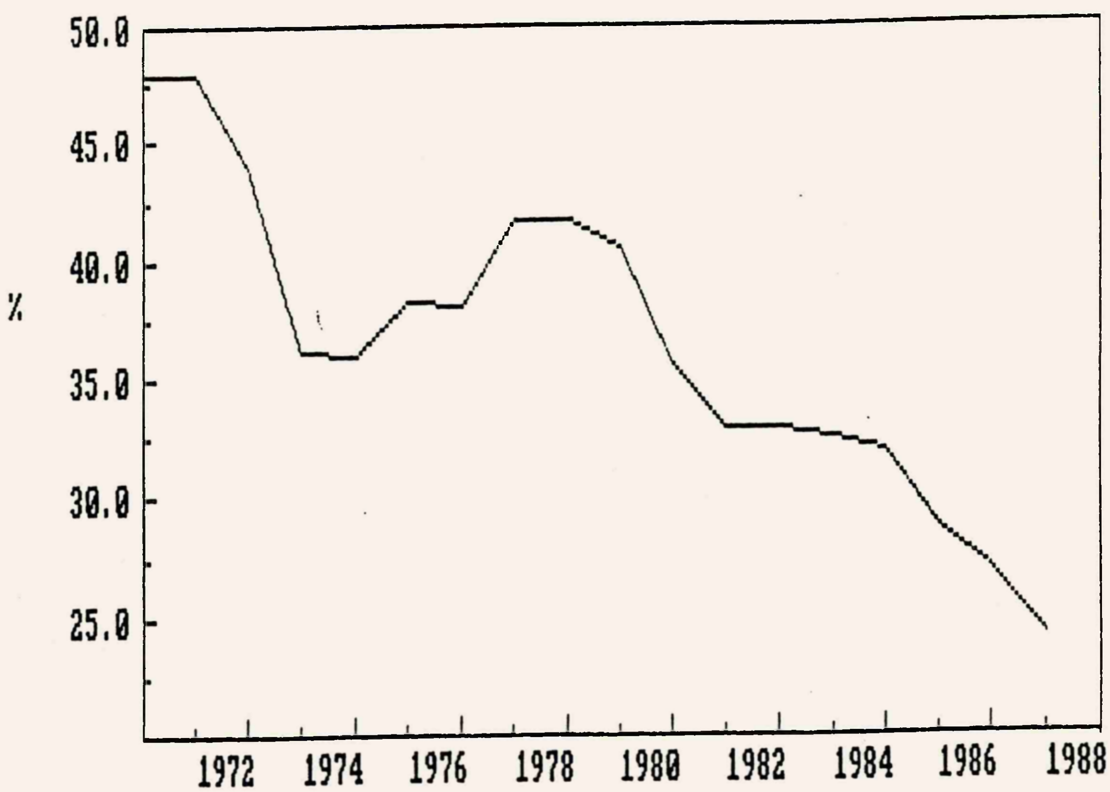
> "The main difficulty for monetary control has been the conceptual one that so many bank liabilities now combine savings characteristics with transaction characteristics. There is an economy, in that the depositor does not have to have two separate kinds of account; one will fulfill his purpose. <u>This means that the velocity of many broad aggregates is tending to fall as people increase their savings with income".</u>

(1986 p356)

It would thus appear worthwhile to further analyse the relationship between the growth of the broad monetary aggregates and financial innovation.

Starting with M3, it may be that the introduction of interest bearing sight deposits, and high interest cheque accounts at banks may have increased the growth rate of M3. Official figures for high interest cheque accounts (HICA) are unfortunately not available. Quilter Goodison (1987)

DIAGRAM 5.4

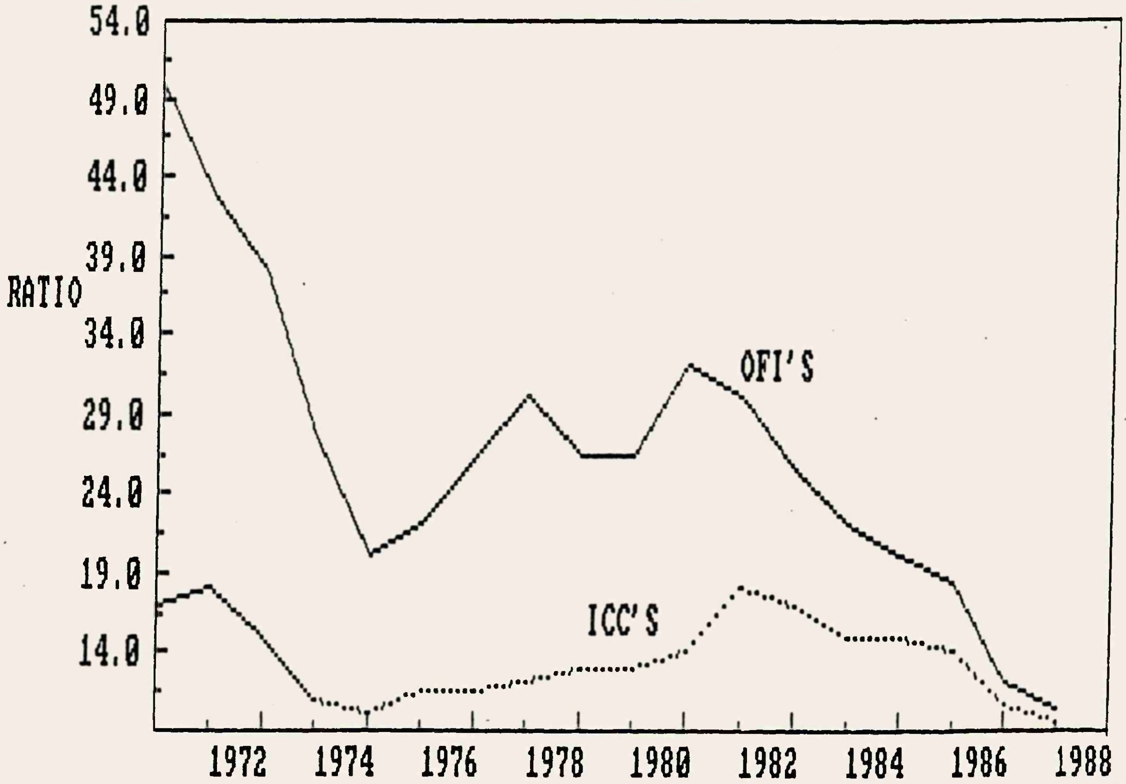


SHARE OF NON-INTEREST BEARING M1 IN M3

estimated that the total figure was £9 billion at the end of 1986. This is however, a conservative estimate, as Midland bank alone had £3 billion on its HICA at this time (personal correspondence). The effect of the growth in interest bearing sight accounts and HICA on the growth rate of M3 depends ultimately upon where the assets have originated from. If interest bearing sight deposits and HICA are so attractive that portfolio redistribution by wealth holders from assets not included in M3 into the new assets included in M3 takes place, then M3 growth will be increased. The growth rate of M3 will not be affected, however, under circumstances whereby portfolio allocation takes place solely between assets included in the M3 aggregate. It is possible, therefore, for there to be a large increase in holdings of the new innovative financial assets, interest bearing sight accounts and HICA, without there being much affect on the growth rate of M3. The fall in the share of non-interest bearing balances is shown in diagram 5.4 and appears to indicate that most of the growth in interest bearing sight deposits has in fact been from switching out of non-interest bearing balances within M3, thus not affecting the growth rate of the aggregate.

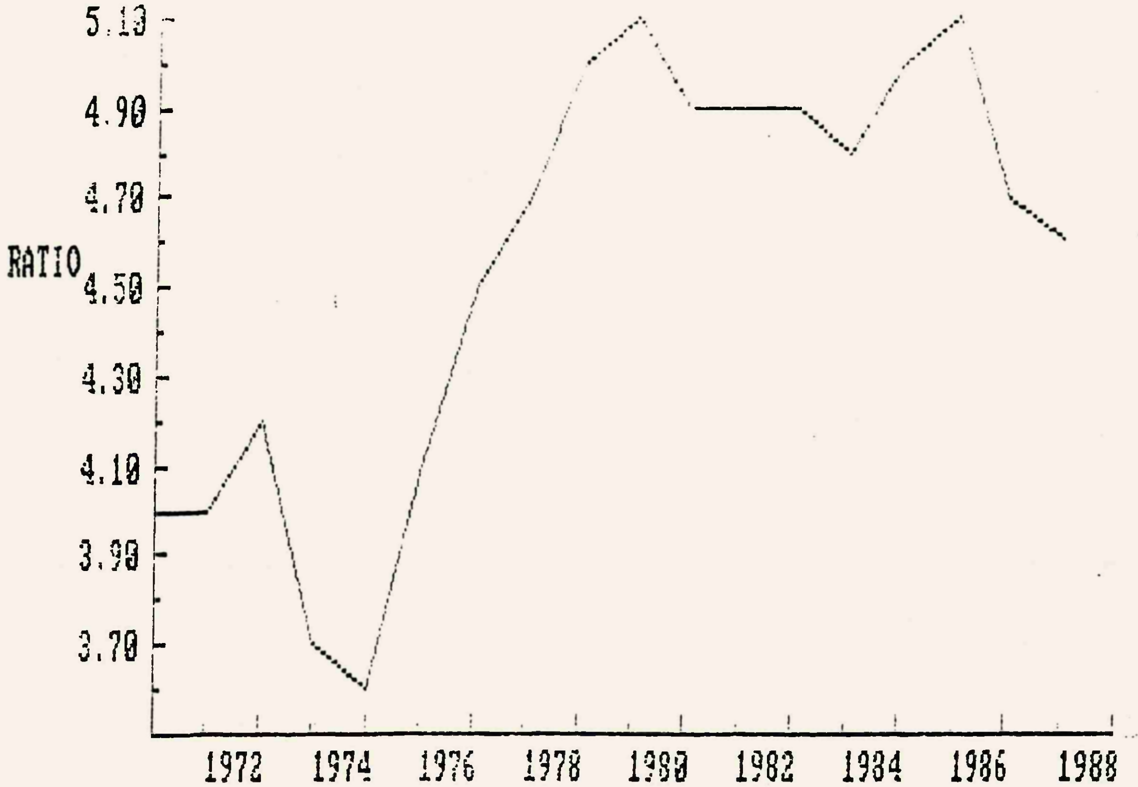
That the fast growth rate of M3 is not directly due to the new bank innovations is further supported by the evidence from the velocity of sectoral M3 holdings. It is immediately obvious from diagram 5.5 and 5.6 that the decline of M3 income velocity is not due to the behaviour of the personal sector. The velocity of personal sector

DIAGRAM 5.5



VELOCITY OF ICC'S AND OFI'S HOLDINGS OF M3

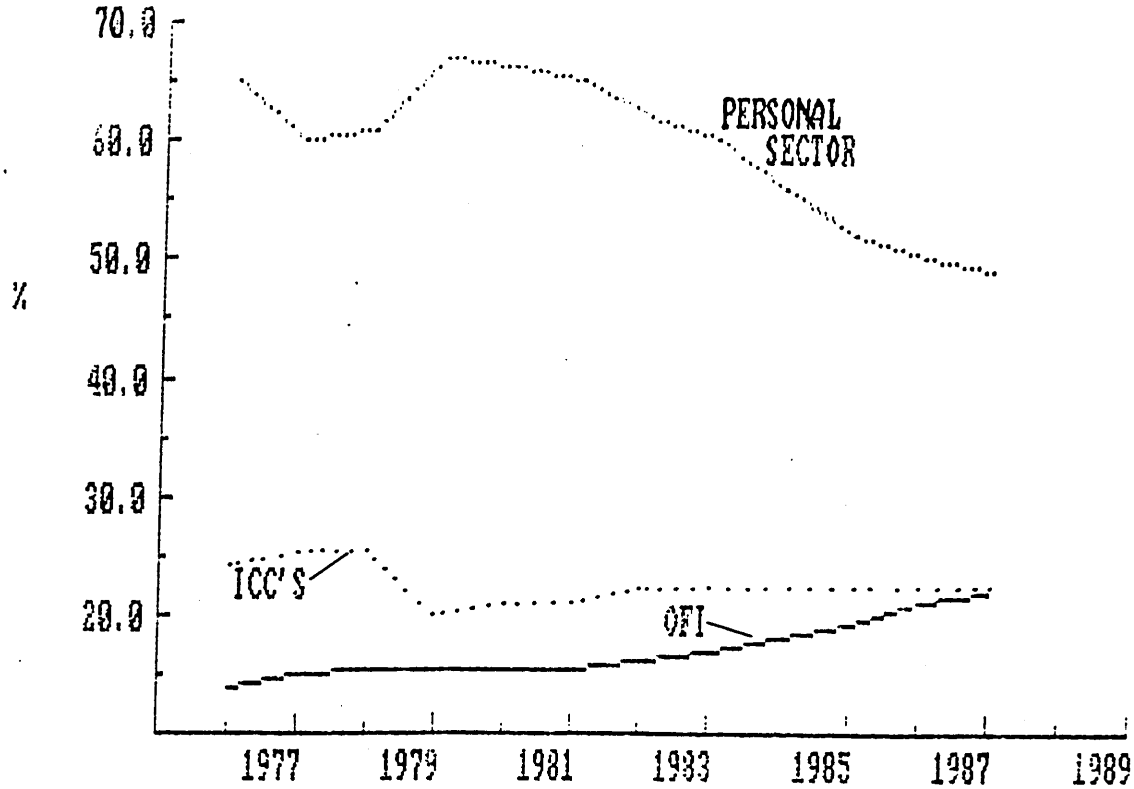
DIAGRAM 5.6



VELOCITY OF PERSONAL SECTOR M3 HOLDINGS

holdings of M3 has remained relatively constant since 1980 (see diagram, 5.6). Relative to personal disposable income, the personal sector's holdings of M3 reached a peak in 1973-74, fell until 1979, and has remained relatively constant since then. In fact, the personal sector's share of M3 assets has fallen, relative to that of ICC's and OFI's (see diagram 5.7). Moreover, from 1977 to 1987, the proportion of personal sector holdings of M3 in gross financial wealth declined from 15% to only 10%, with the greatest part of the fall happening since 1980 (Table 5.2). Given that the vast majority of high interest cheque accounts will be held by the personal sector, it appears that the fast growth of these accounts is not responsible for the rapid increase in M3. The majority of the growth in HICAs must be due to an increase in the opportunity cost of holding non-interest bearing deposits (and a decline in holdings of cash, which of course bears no interest), such that switching of balances by the personal sector has occurred within M3. When analysing holdings of balances within M3, it is evident that the personal sector is not responsible for the fast growth of this aggregate.

DIAGRAM 5.7



SECTORAL SHARE OF M3

Table 5.2

YEAR	HOLDINGS OF M3 %
1977	15.1
1978	14.5
1979	14.7
1980	15.3
1981	14.8
1982	15.5
1983	14.0
1984	12.7
1985	11.5
1986	10.7
1987	10.7

Personal Sector Holdings of M3 as a percentage of Gross Financial Wealth

Source: Financial Statistics, Various Issues, Table 14.4

From Table 5.3 it seems that the behaviour of ICC's and OFI's is responsible for the fall in income velocity of M3, when examining the holdings of M3 assets. OFI's holdings of sterling with the monetary sector has increased nearly six fold over the period 1980-1987, whilst that of ICC's and the personal sector have grown 3½ times and doubled respectively.

Table 5.3

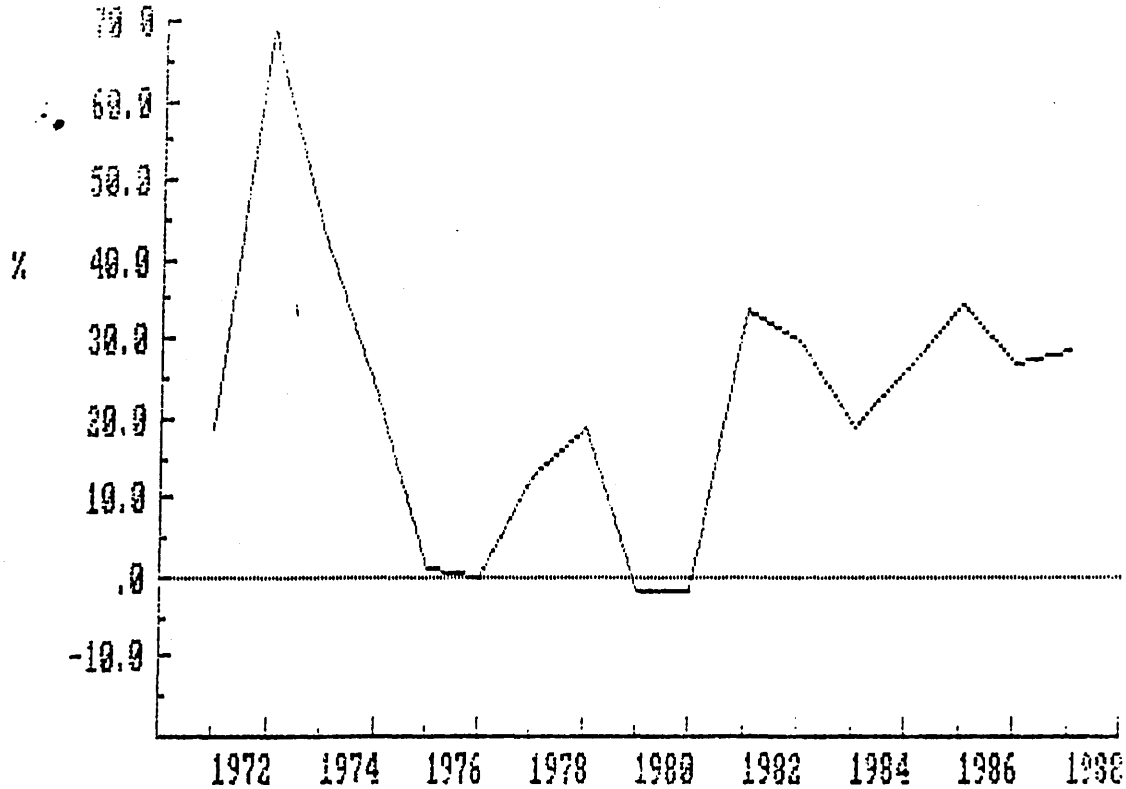
Year	OFI's	ICC's	Personal Sector
1980	7328	13645	36598
1981	9774	17690	46363
1982	12693	18186	50007
1983	15111	21833	53499
1984	19047	24773	56594
1985	25542	27875	61488
1986	32306	36583	69486
1987	41508	45232	76753

Holdings of M3 by Sector (£m)

Source: Financial Statistics, Various Issues. Tables 14.2, 14.3, 14.4.

The growth in holdings of M3 by ICC's has steadily increased relative to nominal income since 1980. This may be the result of a higher average rate of return earned by companies on their liquid assets, relative to interest rates on competing short-term assets during the 1980's compared with the 1970's (BEQB February 1988 p80). The share of OFI's holdings of M3 has shown quite a dramatic increase since 1980. OFI's holdings of M3 grew extremely fast over 1972-73, fell marginally from 1974-79, and then increased very rapidly from 1980 onwards (see diagram 5.8). How can this growth in OFI's holdings of M3 be rationalised? Furthermore, how are increased holdings of 'money' by financial institutions to be interpreted for the purposes of monetary control? A major reason for the build up of OFI deposits at

DIAGRAM 5.8



OTHER FINANCIAL INSTITUTIONS' HOLDINGS OF M3
(% CHANGE, YEAR END)

banks has been regulation induced. Regulations relating to the taxation of building society transactions in gilts were changed in 1984 . The change in regulations made bank deposits attractive relative to gilts, such that there was a portfolio reallocation decision by building societies leading to a significant movement away from holding public sector debt towards holding bank deposits. Building society holdings of bank deposits have, however, been growing fast since 1979-80, such that this regulation-induced effect is obviously not the only factor involved. In fact, it is likely that the change in taxation regulations would have only led to a short-term, portfolio re-adjustment, taking place over 1985-86. As building society holdings of M3 have grown almost nine fold since 1979, there must be other factors at work.

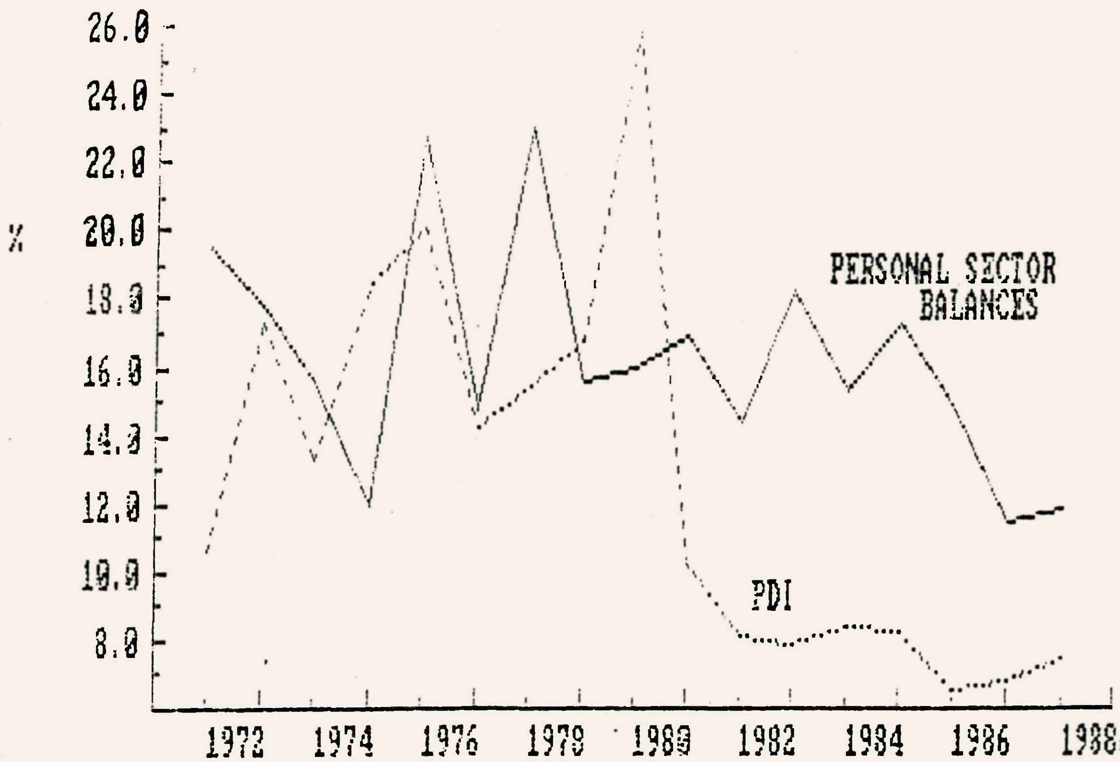
In explaining building societies' holdings of M3, it may be instructive to return to the abolition of the cartel, examined in Chapter Four.

It is clear that for the majority of the period 1980-1987, building societies enjoyed a favourable competitive advantage over retail banks in terms of paying higher deposit rates of interest (see Chapter Four). These high rates of interest have largely been paid on extremely liquid balances, with little or no withdrawal penalties. The competitive advantage of building societies over banks is exemplified in the growth of the building societies share of personal sector liquid assets since 1980, and the decline in the retail banks share. The growth of building society liquid assets held by the personal sector has been much faster than the growth in personal disposable income (see diagram 5.9). Indeed, this growth has been mainly responsible for the fall in income velocity of M4 (see diagram 5.10). It appears that the effect of financial innovation may have been to induce the personal sector to hold more building society deposits relative to income. Financial innovation has not directly led to a fast growth in persons' holdings of M3 relative to income, largely because of the superior interest rate at building societies. It could be argued however that financial innovation has <u>indirectly</u> led to the fall in the income velocity of M3. The personal sector has favoured building society deposits because of the relatively higher interest rates and the 'increased moneyness' of building society accounts (BEQB May 1987 p236). These balances have in part been recycled to banks, thus increasing M3 relative to nominal incomes.

The effect of high interest rates on instant access deposits upon the demand for M4 is examined econometrically in Chapter Ten.

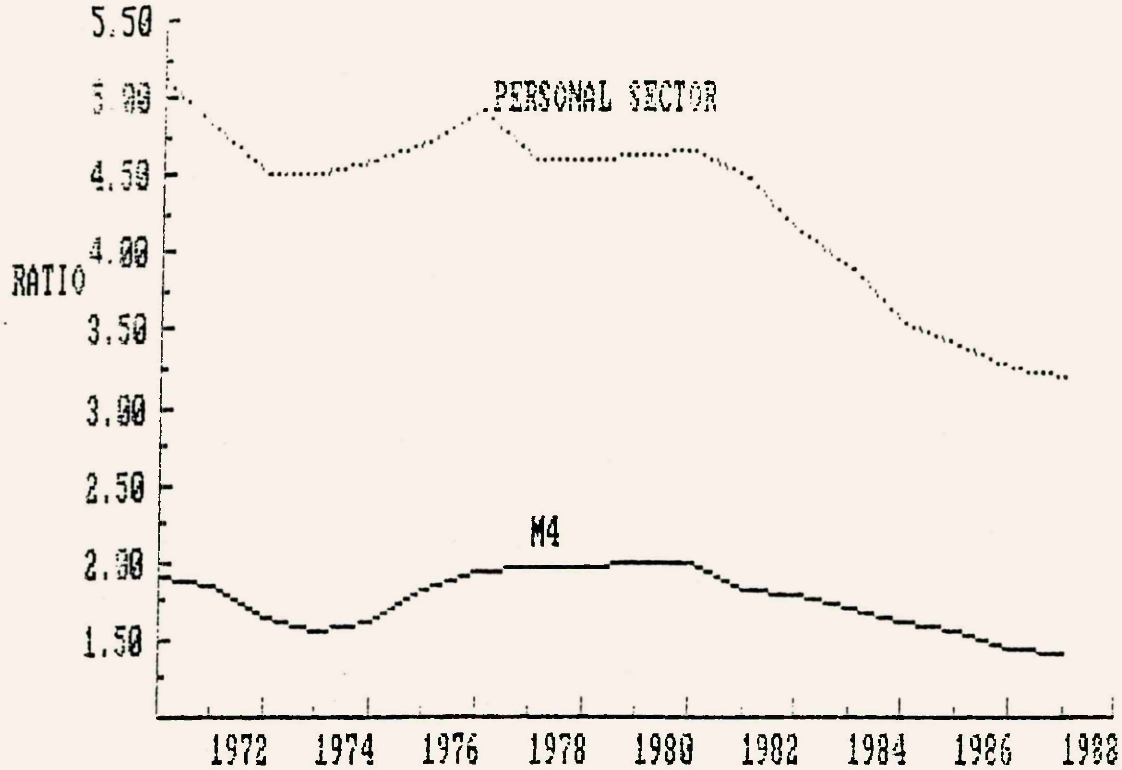
Financial innovation has therefore <u>indirectly</u> led to an increase in M3 relative to income. This is because the abolition of the societies' recommended rate system and innovation induced fast growth of personal sector holdings of building society deposits has a counterpart in the fast build-up of building society holdings of bank deposits (Table 5.4), thus increasing the growth rate of M3.

DIAGRAM 5.9



PERSONAL SECTOR BALANCES AT BUILDING SOCIETIES
PERSONAL DISPOSABLE INCOME (% CHANGE,END YEAR)

DIAGRAM 5.10



VELOCITY OF PERSONAL SECTOR DEPOSITS AT BUILDING SOCIETIES AND M4

Table 5.4

YEAR	HOLDINGS OF BANK DEPOSITS (£m)
1980	2168
1981	2731
1982	4168
1983	5449
1984	6449
1985	9659
1986	8681
1987	11409

Building Society Holdings of Bank Deposits

Source: Financial Statistics, Various Issues, Table 7.7

It must be emphasized that whilst the decision to hold additional liquid investment assets is purely at the margin of financial portfolio selection, it may have crucial implications for the interpretation of movements in the U.K's monetary aggregates, for the stability of money demand, and for the implementation of monetary controls. First, individuals will no longer feel obliged to hold separate accounts for pure transactions funds and for funds held in readiness for making investments or as part of a financial investment portfolio. Secondly, changes in the general level of interest rates will have a much-reduced effect on the opportunity cost of holding liquid transactions balances, and hence it could be expected that such changes would have a smaller and possibly less predictable impact on the growth of the aggregates. Thirdly, there is the problem that even if a predictable relationship could be established between the growth of money and changes in the general level of interest rates, it would still not be possible to determine whether or not individuals had consciously altered the balance between the amount of funds held for transactions purposes and the amount held for investment purposes within their aggregate holdings of financial assets. Thus, it might still be quite possible for an increase in the general level of interest rates to dampen effective aggregate demand for goods and services without that increase having any discernible impact on the growth of the monetary aggregates. Indeed, as individuals would be able to alter the distribution of their financial assets portfolio (in terms of assets being ear-marked for specific functions) without having to take any explicit action (and hence without incurring related transactions costs and taking on the possible risks related to having to switch funds back into a spendable form at short notice), it is quite possible that official manipulation of the level of interest rates could have an enhanced influence on private expenditure decisions. This, therefore, raises the problem of the authorities being in a position whereby they may be unaware of the effects of policy actions. The change in motives for holding liquid funds is likely to have changed any link between money and income. If transactions balances are being held for investment purposes rather than for expenditure purposes, an increase in the money supply may not necessarily lead to an increase in income. An increase in the money supply that is greater than the increase in nominal income may merely represent an increased desire to hold high interest money balances for investment purposes. The effect of high interest instant access balances on the change in the money-income relationship is tested econometrically in Chapter Nine.

The problem of changing motives for holding money has been recognised in recent policy statements,

> "There have been significant changes in the relationship between broad money and spending over the years. Because it is used as a store of value as well as for transactions purposes, what matters so far as subsequent inflationary pressure is concerned is not its growth rate alone but the extent to which people are prepared to hold interest-bearing money balances rather than to spend them".
>
> (Financial Statement and Budget Report March 1989)

The problem for the monetary authorities is to decide whether "excessive" growth of the monetary aggregates (relative to nominal incomes) is indicative of loose policy conditions or whether it is symptomatic of behavioural changes that have not been foreseen and that do not necessarily augur future inflation.

It appears that, in the light of the increase in competition between banks and building societies, and the financial innovations introduced, the build-up of liquidity and subsequent out-of-target growth of the broad monetary aggregates may merely have been a rational response by wealth holders to the behaviour of financial institutions, and may have represented a once-for-all adjustment that only affected monetary control as the adjustment occurred.

If this is so, it may be that, rather than being representative of possible future inflation, it may represent a rational portfolio redistribution on behalf of the non-bank private sector. As recognised by the Bank of England (BEQB December 1986,p503) it is important that the movements of the aggregates be interpreted rather than reacted to in a pavlovian manner. There are problems, of course, in exercising discretion:

> "The difficulty is to know how much of the growth in personal sector liquidity one should explain in this way and how much reflects a build-up of money holdings for purely transactions purposes. For although one can make a qualitative assessment the separate influences cannot easily be quantitatively distinguished".
> (BEQB December 1985.p503)

It is interesting to note the significance already attached by the UK authorities to the changing competitive environment for building societies and banks and the operation of their monetary control regime,

> "Broad money and credit have been growing fast, and I understand the concern that has been aroused on that score. As I pointed out last year, it was clear that the liberalisation of the financial system, the end of mortgage rationing and the increased competition between financial institutions would lead to a steady increase in the ratio of broad money to GDP. This, indeed, has been a consistent feature of the 1980's. There is every sign that people are holding the increased amounts of broad money quite willingly. As long as this is so, its growth is not inflationary".
> (N Lawson, Oct.1986)

However, it should also be recognized that after almost a decade of negative real interest rates on retail financial assets, the 1980's has witnessed a substantial shift back to positive real interest rates on retail assets. Indeed, it is probably correct to suggest that rates of interest paid by both building societies and banks have been higher in real terms during the past three years than at any time during the post-war period.

If, as Lawson suggests, the "increased amounts of broad money" are being willingly held, the continued willingness of the non-bank private sector to hold these balances may depend crucially upon real interest rates being maintained at a high level.

If this is so, then unless it is the desire of the authorities that real interest rates should remain high indefinitely (or at least until domestic productive capacity can be raised sufficiently to allow for the absorption of the increased domestic spending power in a non-inflationary manner), the actual build-up of the money holdings can be neither condoned nor ignored if the control of inflation is to be seen as a long run objective as well as a shorter-term objective of government policy. However, the shorter-term policy dilemma is likely to be that whilst high real rates of interest may be necessary in order to induce holders of interest-bearing money assets to continue to hold the higher levels of liquidity, they are probably a primary cause of the build up in these potentially destabilising balances.

The official policy statements have tended to utilise the developments in the financial institutions framework as a means of calming fears about the build-up of liquidity, (in relation to nominal incomes) in the UK financial system, and as a means of explaining the apparent break-down in the relationship between money supply growth and inflation which had underpinned the government's approach to macro-economic policy. As the Governor of the Bank of England pointed out in a lecture given on 22nd October, 1986:

> ".......a good part of the increase in personal sector liquidity since 1980, which is held largely with building societies rather than banks, can be attributed to a redistribution of personal sector assets as a response to changes in the behaviour of financial intermediaries. To this extent it does not carry the same threatening message about future inflation as the same increase in liquidity would in the absence of the change in financial behaviour".
>
> (BEQB December 1986 p503)

It is possible however, that individuals might amass large amounts of assets for their (liquid) investment characteristics whilst real interest rates remain high, but then rapidly unload these balances through expenditure on goods, services and real assets once the real return on holding liquid assets begins to fall. Thus, whilst a growth rate of the aggregates well in excess of the growth of domestic output might be legitimately rationalised as being of little concern for the short-term course of inflation and the current account of the balance of payments, so long as the monetary policy remains restrictive with high real interest rates, any official action taken to ease monetary controls might have a quite disproportionate effect on the growth of real spending power of the private sector. Not only would the return from holding liquid investment assets be reduced relative to the marginal utility to be gained from current consumption, but also inflationary expectations, stimulated by the recognition of the pent up purchasing power within the economy, may encourage increased expenditures on real goods, services and assets.

This assumes, of course, that the adjustment of money balances will involve expenditure on real goods and services. It may be that (and this is an empirical matter) portfolio re-adjustments take place largely through switching into other financial assets, rather than through consumption expenditure.

The statement that "increased amounts of broad money" are being held of course relates to levels of broad money compared with nominal incomes. As stated earlier the relationship between holdings of broad money and financial wealth have remained fairly constant since 1980. The correct interpretation may be that the relationship between money and income is being restored to levels observed before the inflation shocks of the 1970's. If this is so, it would seem to suggest that the velocity of circulation may soon stop decreasing and "flatten out". It may be that velocity is returning to trend levels of the early 1970's, such that combined with a constant ration of money to financial wealth, holdings of money are neither excessive, nor are they likely to flow into the pool of transactions, nor do they represent a build-up of potential purchasing power as perceived by the balance holders. Rather than being a breakdown of the money-income relationship, there may merely have been a stock effect followed by a new stable relationship,

> "The immediate response of the demand for a broad aggregate, whose marginal components bear interest at market rates, to a policy designed to lower its long-run growth rate, will be to grow more rapidly until it

> has reached the new and higher equilibrium growth level that an increase in its own rate of return dictates".
> (Laidler, 1984, pp36-37)

It is not clear, however, given the continued fast monetary growth of the aggregates in the U.K., when or whether an equilibrium level will be reached.

However, should the monetary authorities attempt to constrain the growth of the monetary aggregates, the financial developments introduced by building societies and banks have made a simplistic growth target inappropriate. Short-term movements of funds in response to interest rate differential changes, in addition to the apparent desire of individuals to hold liquid balances for investment purposes, makes excessive dependence upon the monetary aggregates quite unrealistic. The monetary aggregates may still be part of a monetary <u>package</u>, however, as a guide to discretionary policy in a world of financial innovation,

> "when the relationship between the money stock and the ultimate targets of policy is changing, due to deregulation or whatever reason, the case for utilizing additional information is <u>strengthened</u>. But this does not mean that there is no useful information in the monetary aggregates. Judgements about whether or not the monetary aggregates are growing too quickly will be harder than in a more stable regulatory framework but the information content of the aggregates will not be zero".
> (Jonson and Parkin, 1986 p15)

The reliance of policy on a number of indicators necessitates a judgemental approach as to the relative significance of the various indicators.

It appears that financial innovation means that monetary policy may have to be carried out in a discretionary interpretive manner,

> "It is the counterbalance between the shifting structure of the financial system on the one hand, and the need for rules and pre-commitment on the part of the authorities on the other, that makes it so hard to select an optimal form of monetary targetry, one that could retain underlying discipline, while at the same time allowing a sensible and flexible response to the rapidly changing form of the financial system".
> (Goodhart 1986 p325)

Laidler (1981) appears to concur on the effect of financial innovation on monetary control,

> "I doubt that my own view, that the case for governing monetary policy by rules is impossible to sustain in the face of careful consideration of the influence of institutional change on the behaviour over time of the demand for money function, will find a great deal of support among monetarists at present, while I would be surprised to find it regarded as sufficient of a concession to "fine tuning", and it really is no such thing, to satisfy the Keynesians".
> (P25)

From the evidence of the 1980's, it seems that growth of the money stock in excess of the growth of nominal income does not always cause inflation.

This means that money may still be a <u>necessary</u> cause of inflation but not a <u>sufficient</u> cause of inflation. Essentially a fast rate of growth of the money supply relative to nominal income <u>may</u> or <u>may not</u> cause an increase in inflation, depending on the <u>nature</u> of the monetary expansion.

A fast rate of growth of the money supply induced by financial innovation may have no effect on inflation. The problem for the monetary authorities is to <u>interpret</u> the nature of the monetary expansion and decide as to its possible effects (if any) and hence policy actions. The existence of financial innovation, or the possibility that it might occur, hinders the operation of monetary control.

5.4 Conclusion

Two broad effects of building societies' and Banks' financial innovation on the relationship between money and income have been identified. Firstly, there are those new financial assets that carry out what are termed the 'traditional' motives for holding money (transactions and precautionary) that at times make it necessary for the monetary authorities to reclassify the monetary aggregates (as in the case of building society innovations and M2/PSL2), and which may also lead to short-term distortion in the growth rates of the monetary aggregates. Such innovation, it is argued, it not a new phenomenon, but merely the changing evolutionary development of the financial system. The institutionalist school has for many years pointed to the existence and emergence of close substitutes for money. The difference in the 1980's is the variety and pace of financial innovation and change. Financial innovations which perform the traditional functions of money inhibit the short-term operation of monetary control through temporary stock adjustment effects. There will often be a time lag between the introduction of an innovation and the identification of that innovation by the monetary authorities. There may be a further time lag between analysing the innovation and deciding whether or not the monetary aggregates need to be reclassified. During this time, the growth of the new asset may lead to distortions in some of the targetted money supply figures, causing problems of interpretation of monetary conditions. Redefinition of the monetary aggregates to include a new asset may also invite scepticism as to the authorities approach to monetary control in terms of accusations of manipulating the figures and/or "moving the goalposts" - (Johnson 1986. P3).

Secondly, there are those financial innovations that may be held for their investment properties. Highly liquid monetary assets (many of which are instantly accessible) have evolved which offer extremely competitive market-related rates of interest. 'Money' has not historically paid explicit interest. The payment of interest on instant access accounts means that these balances increasingly represent attractive repositories for investment balances. Moreover, these new assets <u>also</u> tend to fulfill the traditional functions of money. The important aspect of these assets is that they require no explicit action on the part of their holders to switch them from being investment balances to media of exchange/expenditure balances. These investment balances usually have the property of being instantly realisable. There tend to be few prohibitive transactions costs, investment and expenditure balances being kept in the same account, and merely perceived as being separate in the mind of the holder.

These interest bearing transactions balances may be relatively interest inelastic, and so may have more continuing effects on monetary control (see Chapter Seven).

An analysis of the growth of the monetary aggregates in section 5.3 suggests that the introduction of easy access high interest accounts that offer both transactions and investment characteristics may have been responsible for the change in of the money-income relationship. The fall in the income velocity of broad money since 1980, i.e. the tendency for broad money aggregates to grow faster than nominal incomes, may be explained by the increasing emphasis placed on money balances as investment assets. The further attraction of high real interest rates on money appears to have altered the money-income link. Thus, the money income relationship appears to have changed due to the new role assigned to money by balance holders. This may however be a simple stock adjustment, and the relationship may have stabilized. The specific hypothesis that financial innovation in terms of high interest money balances has affected the money-income link through the demand for money function is tested econometrically in Chapter Nine.

It may certainly be concluded from the evidence of this Chapter that at the very least, the operation of monetary policy should be carried out in an interpretive, discretionary manner, rather than through some pre-stated monetary rule. The usefulness of a discretionary policy will depend, moreover, on the ability of the authorities to control the money supply and on the stability of the demand for money, which are investigated in Chapters Nine and Ten.

Notes

[1] Sayers was one of the major authors of the Radcliffe Report.

[2] See also Coghlan (1977, 1978).

[3] The Building Societies Association has recently argued that Building Society accounts are primarily used for investment purposes (BSA 1983), but with the introduction of interest-bearing cheque accounts, there are an increasing number of accounts that combine both transactions and investment services.

[4] Hadjimichalakis (1982) examines the effects of payment of interest on money upon the operation of monetary control in a U.S. context. As much of the analysis concentrates upon the effects of the lifting of Regulation Q, the conclusions are not strictly transferable to the U.K.

[5] It has been suggested that a solution to the breakdown of the money-income relationship may be to specify the monetary aggregates in Divisia Index form, Barnett (1978), Spindt (1984), Barnett et al (1984). The present monetary aggregates give equal weights to all asset components, whereas a Divisia monetary aggregate would weight assets according to their 'money' services or 'user costs' (the difference between a bench mark asset and the asset's yield). Although this seems intuitively plausible, the new aggregates would be difficult for economic agents to understand, and moreover Mills (1983) reports that it is not possible,

according to his research, to specify a demand for money equation for a broad Divisia aggregate.

[6] See Mills (1983) and Bailey et al (1982) for analyses of the information content of the monetary aggregates in the U.K. in terms of their ability to statistically 'explain' nominal income.

[7] See Bordo and Jonung (1981) for an international perspective of the trends in the income velocity of circulation of money.

CHAPTER SIX

COMPETITION, MORTGAGE LENDING, AND THE MONEY-INCOME RELATIONSHIP

6.0 Introduction

It is not simply money balances, of course, that are important for monetary control or that affect the growth rates of the monetary aggregates. The level of borrowing is also of importance for the analysis of monetary developments. Section 6.1 examines the relationship between movements in the monetary aggregates and the growth of borrowing. It is noted that there has been a rapid expansion in both borrowing and the monetary aggregates since 1980, particularly by the personal sector, and largely for house purchase. This is a response to the factors outlined in Chapter four, relating to the stock effects of the abolition of the building societies' cartel and the ending of the corset.

As personal sector borrowing has been a major factor in the rapid growth of the broad monetary aggregates it may be possible to rationalise the fast increase in the money supply figures in relation to nominal incomes by reference to lending to the personal sector. Indeed, it has been suggested by some authors that the personal sector 'mortgage leak' is responsible for the slow growth of nominal incomes compared with the broad monetary aggregates. This argument is explained and fully examined in section 6.1. An alternative hypothesis as to the effect of personal sector borrowing on the fall in the income velocity of money is presented in section 6.2.Specifically, the combined effect of an increased level of mortgage lending and greater financial innovation by building societies and banks upon the activities of 'last-time sellers' is analysed.

The hypothesis outlined in Chapter Four that finite stock adjustments following the abolition of the recommended rate system and the ending of the corset may have temporarily affected the stability of the demand for money and credit is examined in further detail.

The effect of deposit and credit shocks upon the operation of monetary control are examined in section 6.3 in terms of the buffer stock model, and conclusions are drawn as to the applicability of this model both in theory and in reality. Section 6.4 analyses the debate as to whether the money supply is exogenous or endogenous in terms of the activities of building societies and banks as set out in section 6.1 and in view of the effects of supply-side credit shocks to the economy.

6.1 House Purchase, the Mortgage 'leak' and the Money-Income relationship

It may be useful to examine the growth of the monetary aggregates in terms of the effects of building society and bank lending. Any analysis of the transmission mechanism between money and prices must include both the money and credit markets to get a full picture. Some would argue that this point has not always been expressly acknowledged,

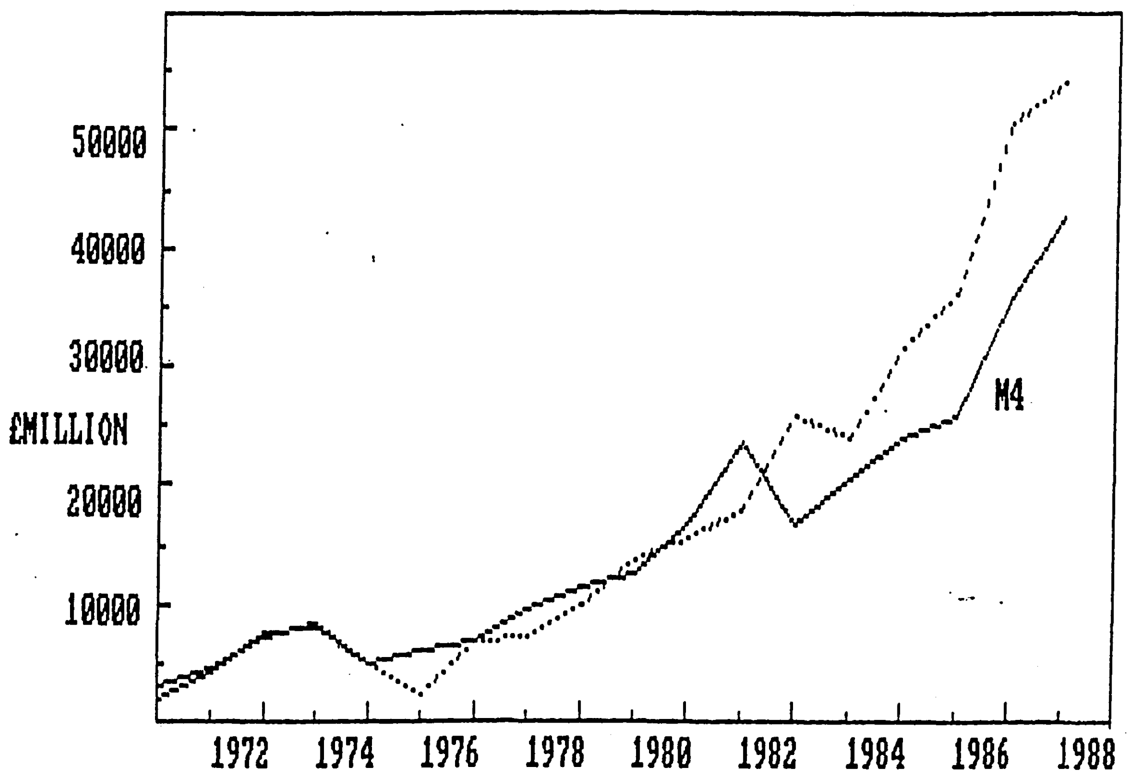
> "For many years, economists ignored the role of the credit markets. Recently there has been some change. The analysis of the transmission process is incomplete without both the money and credit markets and their interaction".
>
> (Brunner and Meltzer 1988 p446)

Indeed, the neglect of the credit market is exemplified in the IS/LM analysis introduced in Chgapter Two, where money determines aggregate demand, all other financial instruments (including credit) being categorized, under the amorphous heading of 'bonds'. Bernanke and Blinder (1988) and Brunner and Meltzer (1988) have extended the basic IS/LM framework to accommodate the roles of both money and credit.

The importance of the credit market to growth in the monetary aggregates can be seen in diagram 6.1 which shows the change in bank and building soceity lending to the non-bank private sector and change in M4. It is clear that there is a close relationship between credit and growth in the money supply.

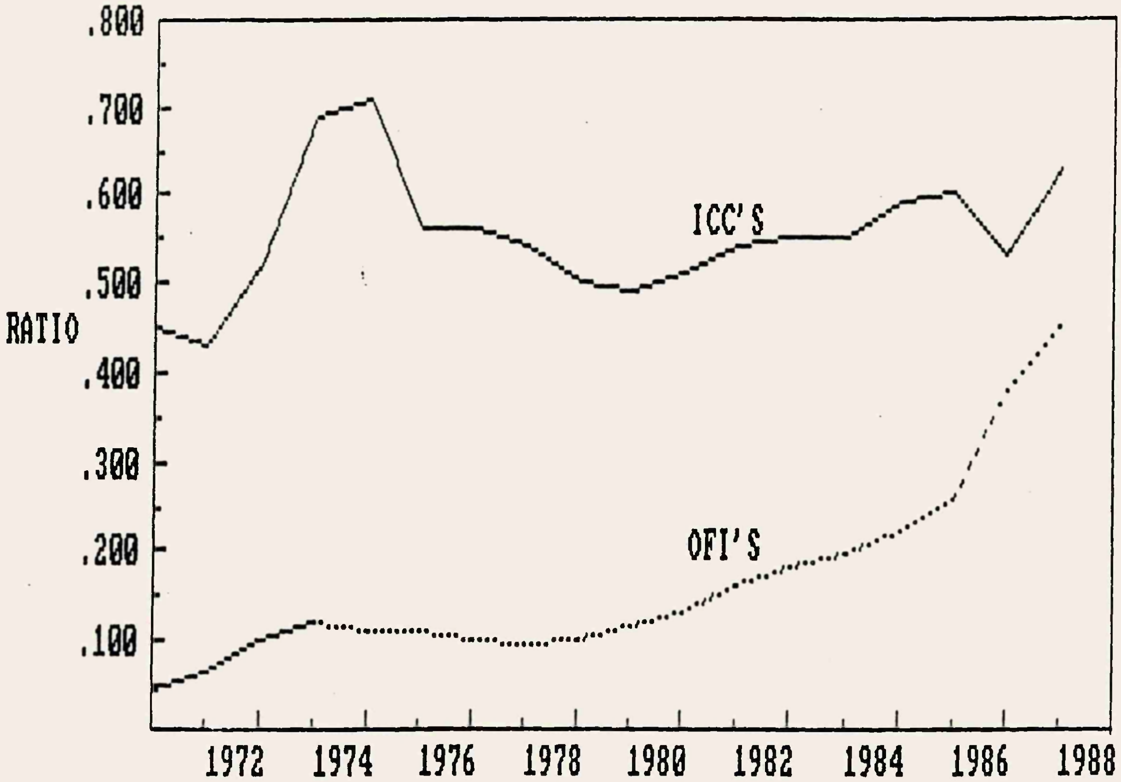
Diagrams 6.2 and 6.3 show that borrowing by ICC's, OFI's and the personal sector have all growth extremely fast since 1980. In terms of volume, personal sector borrowing

DIAGRAM 6.1



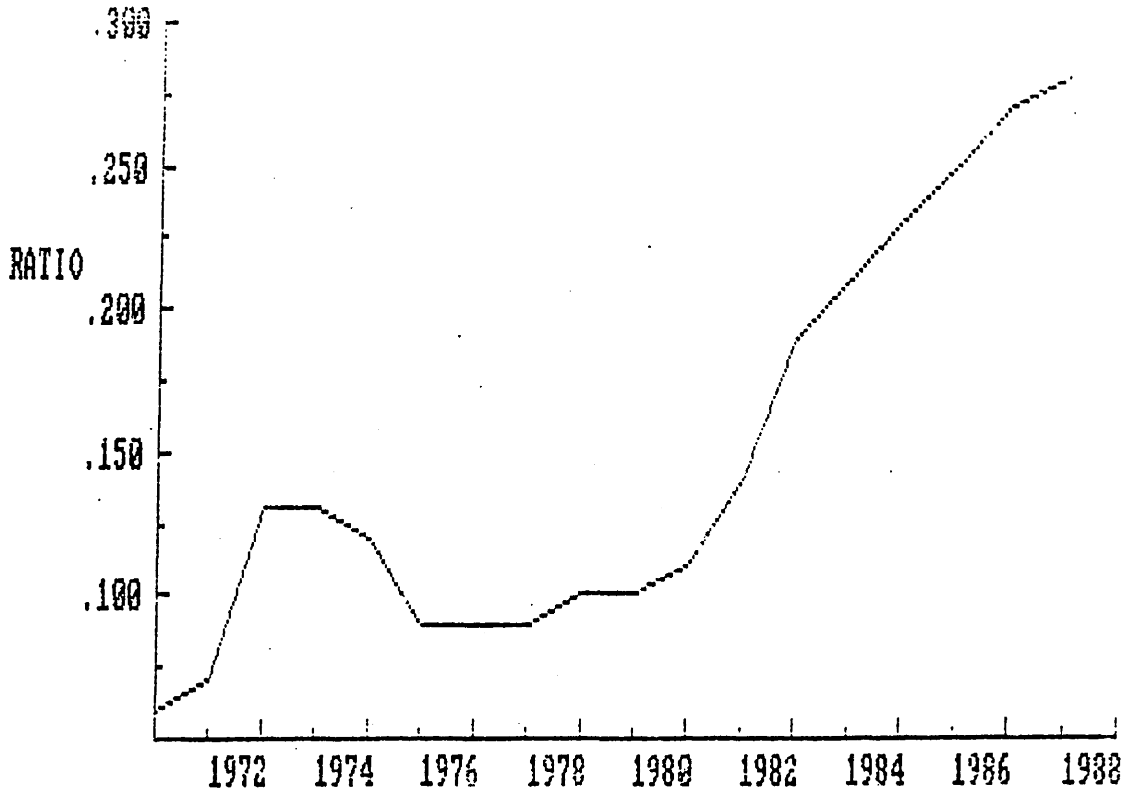
CHANGE IN M4 AND BANK AND BUILDING SOCIETY LENDING TO THE NBPS (£ MILLION)

DIAGRAM 6.2



BANK BORROWING BY ICC'S AND OFI'S
(RELATIVE TO NOMINAL GDP)

DIAGRAM 6.3

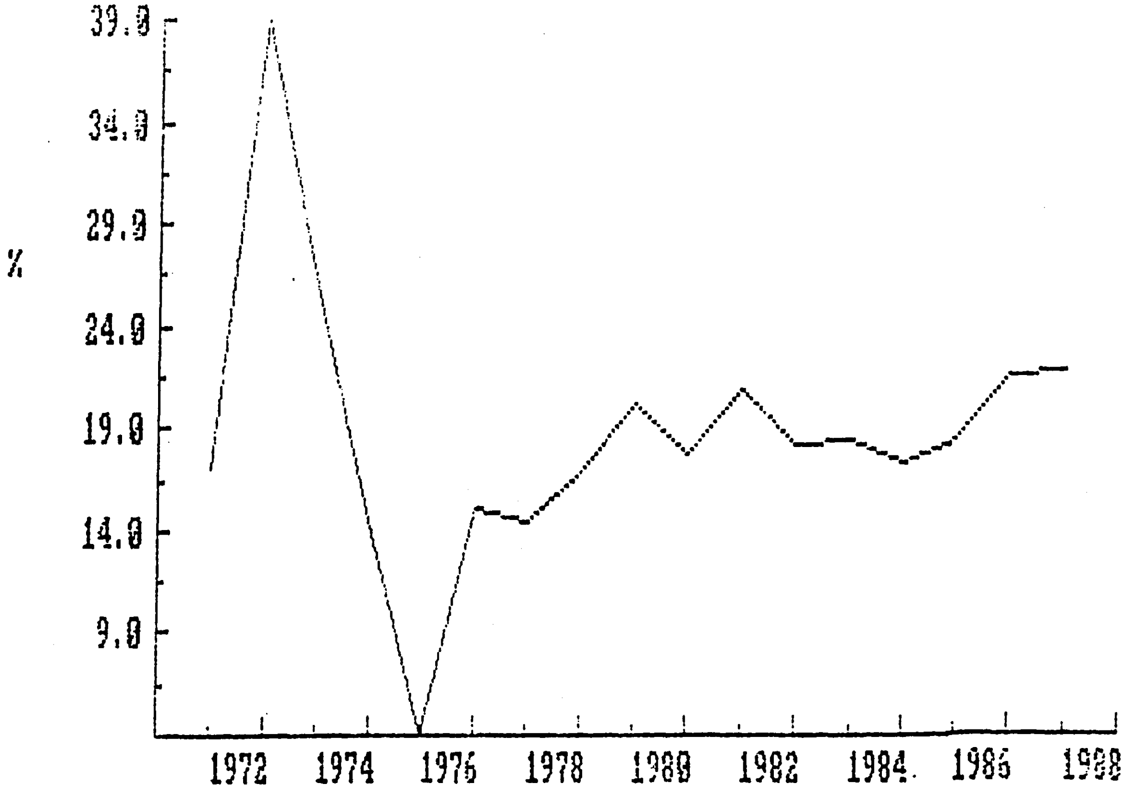


PERSONAL SECTOR BANK BORROWING (RELATIVE TO
PERSONAL DISPOSABLE INCOME, ANNUALISED)

from banks and building societies has grown from 10.8 billion in 1970 to 220 billion by the end of 1987, with the majority of the growth coming since 1980. That of OFI's has also grown fast, from 0.5 billion to 48 billion over the same period, with bank borrowing by ICC's growing from 6.9 billion to 87 billion. As can be seen from diagrams 6.4 and 6.5 there have been marked trends in the growth of bank and building society sterling lending to the three categories that form to make up the non-bank private sector. Much of the growth in bank and building society lending has been to the personal sector. The proportion of total bank lending to persons has increased from 22% in 1970 to 43% in 1987, with much of the growth coming since 1980.

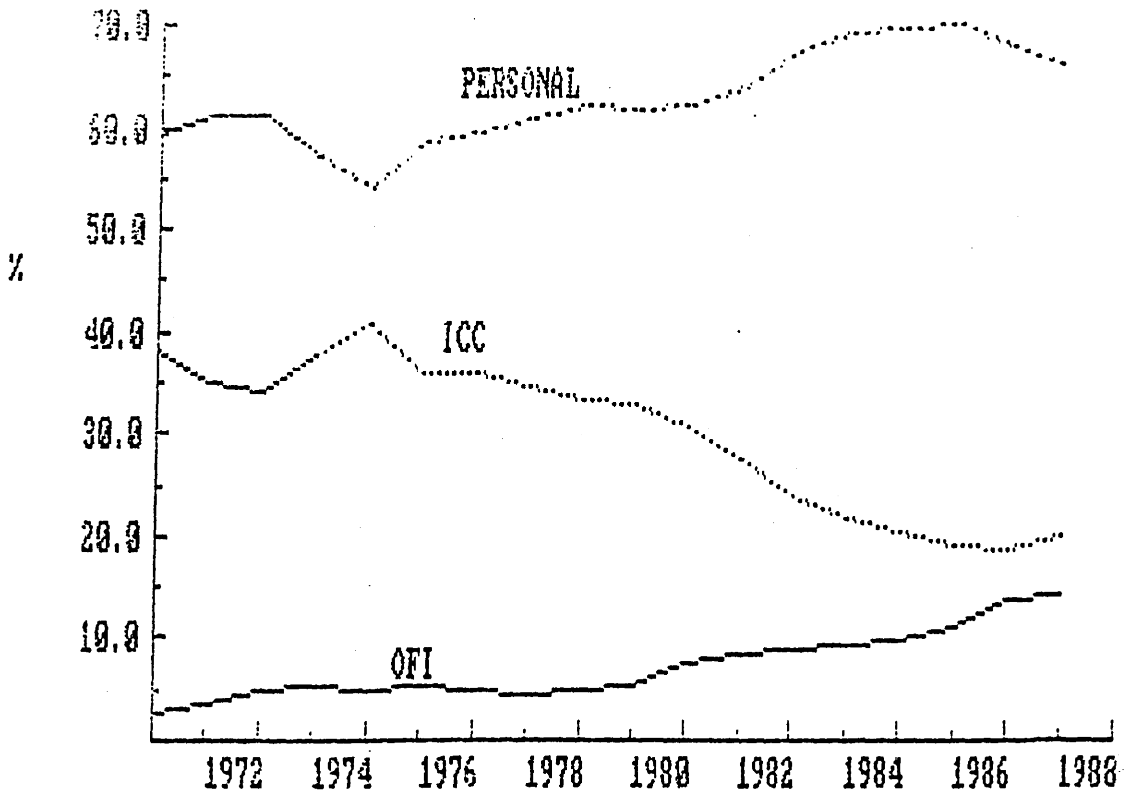
By contrast, bank lending to ICC's as a proportion of total bank lending has fallen from over 70% in 1970, to 33% in 1987. The growth of bank borrowing by OFI's has also grown markedly. For an analysis of OFI and ICC bank borrowing see BEQB December 1986.

DIAGRAM 6.4



BANK AND BUILDING SOCIETY LENDING TO THE NON--BANK PRIVATE SECTOR (% CHANGE, END YEAR)

DIAGRAM 6.5



SECTORAL SHARES OF BANK AND BUILDING SOCIETY LENDING TO THE NON-BANK PRIVATE SECTOR

Table 6.1

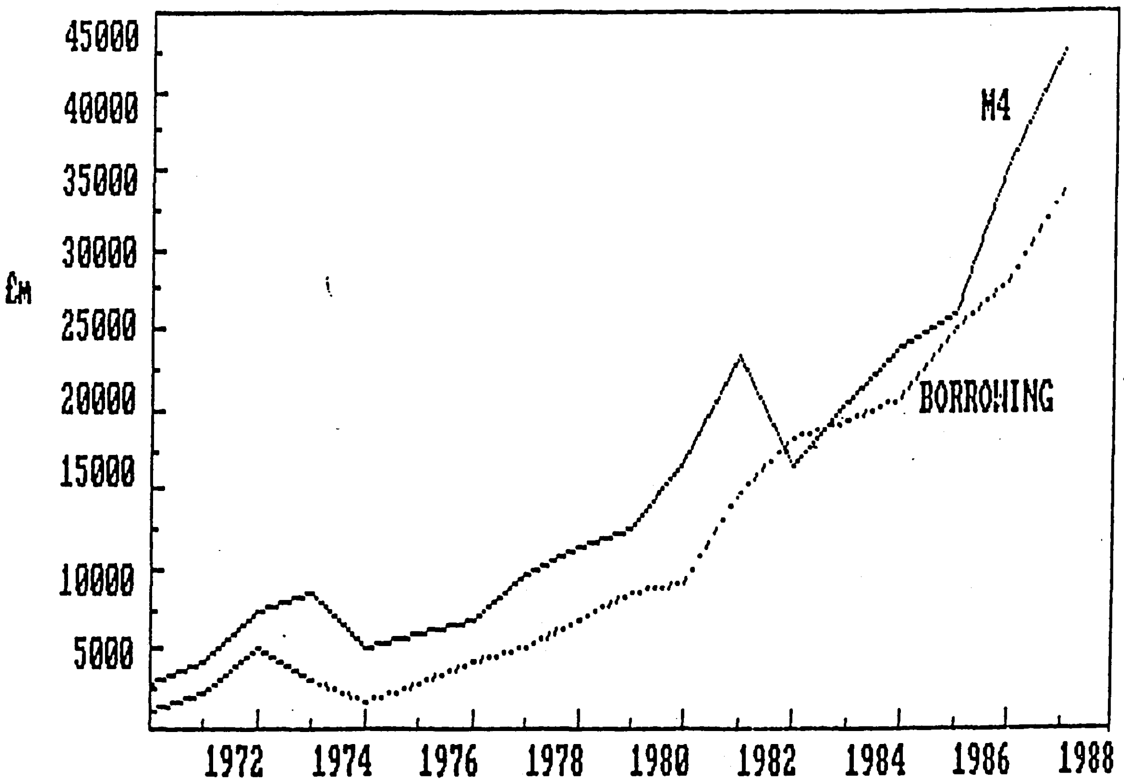
	Personal	OFI	ICC		Personal	OFI	ICC
1970	10.8	0.5	6.9	1981	74.8	10.1	31.9
1971	13.0	0.8	7.5	1982	93.0	12.0	33.0
1972	18.1	1.4	10.1	1983	112.5	15.4	35.6
1973	21.3	2.0	14.0	1984	133.2	18.9	39.5
1974	23.1	2.1	17.4	1985	158.4	25.1	43.1
1975	26.0	2.3	16.0	1986	186.2	37.5	51.6
1976	30.2	2.6	18.2	1987	220.0	48.0	67.2
1977	35.4	2.7	20.3				
1978	42.3	3.4	22.6				
1979	50.8	4.5	26.8				
1980	60.0	7.2	29.4				

Bank and Building Society Sterling lending to the NBPS (£billion)

Source: Financial Statistics, Various Issues, Table 14.4

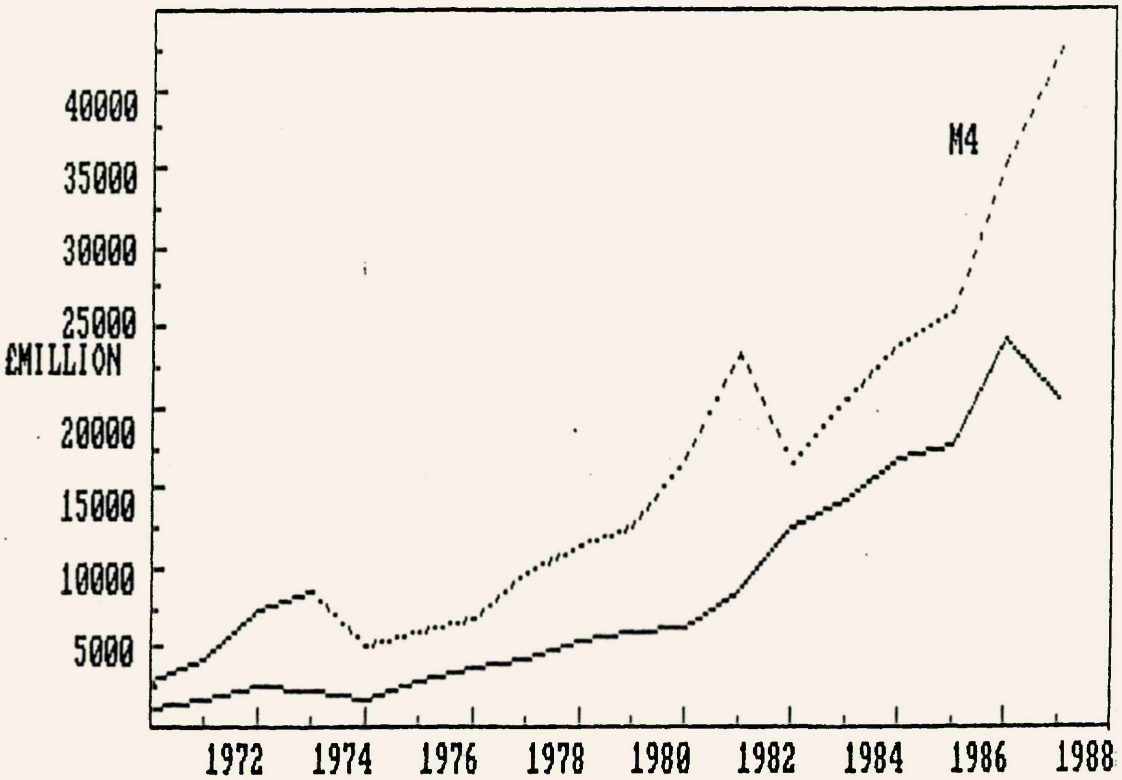
The importance of personal sector borrowing from building societies and banks to the growth in M4 can be seen in diagram 6.6. The degree to which the growth in M4 is determined by personal sector borrowing from banks and building societies is seen by the close trend of the two series. Of total bank and building society lending to the personal sector, mortgage lending cannot be overemphasized, as diagram 6.7 shows. Indeed, when analysing the broad monetary aggregates, official comment has centred upon the importance of lending for house purchase to the personal sector,

DIAGRAM 6.6



CHANGE IN M4 AND PERSONAL SECTOR BORROWING FROM BANKS AND BUILDING SOCIETIES(£ MILLION)

DIAGRAM 6.7



CHANGE IN M4 AND PERSONAL SECTOR MORTGAGE BORROWING

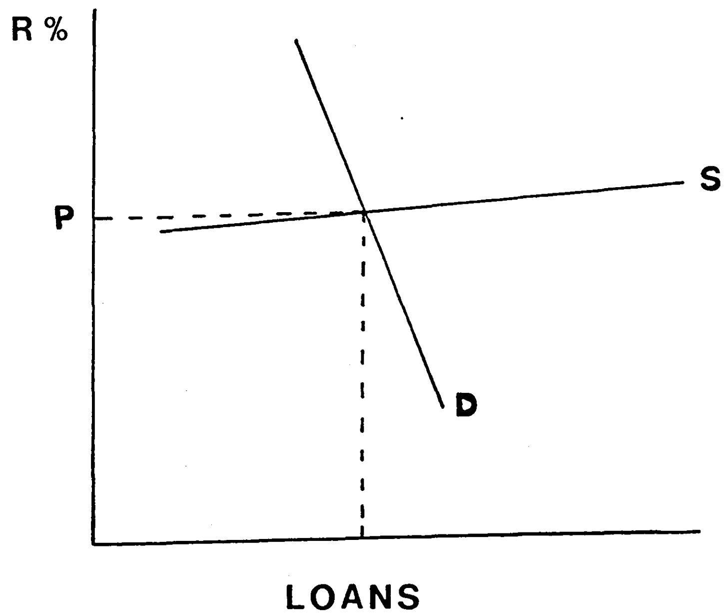
> "In the United Kingdom at present, monetary growth is being driven to a considerable extent by the strength of lending to the personal sector in general, and by mortgage lending in particular".
>
> BEQB December 1986 p531

That this upsurge in personal sector borrowing has occurred should not be surprising, however [1].

The increase in personal sector borrowing resulted from the stock adjustment of the increase in mortgages after the building societies' cartel and the removal of the corset on the banks. These changes entailed a greater supply of credit and a finite portfolio reallocation by the personal sector back towards its desired demand for credit function.

Wills (1982) argues that banks can be analysed as two-input, two-output firms. The two inputs are retail and wholesale deposits (liabilities) and the two outputs being retail and wholesale lending. If wholesale lending is for the moment ignored, this analysis can also be extended to building societies. Wills maintains that banks (and building societies) act as price setters and quantity takers in the retail deposit and loan markets, such that the supply curve for loans/credit would be relatively flat. In the diagram (6.8), as long as the market is competitive and unconstrained by restrictive monetary controls, at price banks and building societies will supply whatever credit is demanded (subject to the ability of the borrower to repay). At times in the period prior to 1980, however, banks and building societies could not operate in this manner. The banks' ability to operate as price-setters and quantity-takers was circumscribed by the various monetary controls

DIAGRAM 6·8



SUPPLY / DEMAND FOR LOANS

placed on them, as described in Chapter Three. Similarly, the building societies were constrained by the interest rate cartel agreement. For the majority of the 1970's building societies and banks effectively operated as price-takers and quantity- setters. The ending of direct monetary controls and the cartel meant that banks and building societies could return to being price setters and quantity takers as Wills suggests. This resulted in a considerable supply-side credit shock, with substantial reintermediation on the part of the personal sector, as evidenced by the rapid growth of the broad monetary aggregates.

The stock effect in terms of the re-allocation of personal sector credit portfolios would be expected to destabilise the demand for money and credit as the effects occurred, but which may in the long-term settle down to stable relationships.

The fast growth of the broad monetary aggregates, and in particular the rapid increase in building society and bank lending to the personal sector since 1980, would, under monetarist models, be expected to lead to an increase in the rate of growth of inflation. An increase in the level of lending would be expected to lead to an increase in the level of expenditure, ceteris paribus. An increase in expenditure would be expected to push up prices. As is well known, inflation did not increase 1980-1988. A comparison can be made with the "Barber boom" years of increased monetary growth, and its counterpart, bank lending. The introduction of Competition and Credit Control led to an upsurge in bank lending, and a subsequent upturn in inflation, with a lag of about two years. Given the fast rate of growth of building society and bank lending since 1980, why did the UK economy not experience any increase in the rate of inflation, as happened earlier? Dow and Saville (1988) have attempted to provide an explanation for this phenomenon. Their analysis is worth detailed examination, partly because as former members of the Bank of England's Economic Section their views will undoubtedly be widely respected, but largely because it is held by the author that their explanation, although in the right direction, is seriously flawed, and may lead to serious misconceptions of past events and of future policy conduct.

Dow and Saville use the example of an increase in bank (or it could be a building society - in their work they are treated as the same) lending to the private sector, in an attempt to show that increases in bank lending have resulted in portfolio shifts by the private sector, rather than increases in expenditure (p186), and hence has resulted in the decline in the velocity of broad money. They point out that if all the money lent by building societies and banks had been spent, then there should be a large effect on GDP. Table 6.2, which reproduces their data shows the annual changes in the real stock of loans to the private sector by building societies and banks, as a percentage of GDP. From this data, Dow and Saville point out that,

> "The fact that the changes in borrowing, although usually in the same direction, were altogether larger

	Increase in lending to persons more or less than in proportion to change in nominal GDP			Increase in real disposable income	Increase in real consumer spending[b]
	Non-mortgage lending	'Mortgage leak'[a]	Total		
1971	0.6	0.9	1.5	0.8	1.9
1972	12.4	1.5	13.9	5.5	3.5
1973	3.4	0.3	3.7	5.1	3.0
1974	−2.2	0.3	−1.9	−0.6	−0.8
1975	−5.8	0.5	−5.3	−0.1	−0.2
1976	−2.9	0.5	−2.4	−0.4	0.2
1977	−0.3	0.5	0.2	−0.7	−0.3
1978	0.5	0.5	1.0	4.4	3.1
1979	2.1	0.1	2.2	3.5	2.5
1980	1.8	−0.3	1.5	1.2	−0.2
1981	4.0	0.5	4.5	−1.5	−0.1
1982	6.3	1.6	7.9	0.2	0.6
1983	3.7	1.4	5.1	1.7	2.4
1984	3.0	1.3	4.3	1.6	1.3

[a] Mortgage lending by banks and building societies *less* owner-occupiers' expenditure on acquiring new or existing houses and on home improvements (as estimated by Drayson 1985).

[b] These, like the figures in other columns, are expressed as percentages of GDP and thus show the contributions of consumer spending to the change in real GDP.

Lending to and spending by persons, 1971–1984

(Percentages of GDP)

TABLE 6·3

	Total increase in real lending			Increase in lending more or less than in proportion to change in nominal GDP			
	By banks	By building societies	Total	By banks	By building societies	Total	Increase in real GDP
1971	3.0	4.0	7.0	0.8	1.9	2.7	1.5
1972	26.9	7.8	34.7	24.4	5.8	30.2	2.5
1973	31.4	6.4	37.8	21.7	0.04	21.7	7.3
1974	10.2	−2.9	7.3	11.3	−2.3	9.0	−1.7
1975	−26.6	−5.7	−32.3	−25.7	−5.2	−30.9	−1.1
1976	−6.4	−0.3	−6.7	−10.1	−3.0	−13.1	2.6
1977	0.2	2.5	2.7	−0.7	1.8	1.1	2.6
1978	3.7	5.0	8.7	0.2	2.4	2.6	3.0
1979	4.1	2.0	6.1	1.9	0.5	2.4	2.7
1980	3.9	−3.2	0.7	6.2	−1.7	4.5	−2.4
1981	9.3	1.7	11.0	10.6	2.6	13.2	−1.7
1982	29.9	5.1	35.0	28.0	4.1	32.1	2.1
1983	16.6	10.5	27.1	11.2	7.6	18.8	3.3
1984	22.9	13.3	36.2	19.3	11.3	30.6	2.6

[a] The table shows increases in lending in all currencies by banks and building societies to the UK private sector. The first three columns show the increase in the real stock of loans expressed as a percentage of real GDP, or $\Delta\left(\frac{L}{P}\right)\left(\frac{P}{GDP}\right)$, where L = the nominal stock of loans, P = the GDP deflator, and GDP = nominal GDP. The next three columns show the changes in the borrowing ratio, or, $\Delta\left(\frac{L}{GDP}\right)$. Since most of the changes in nominal GDP reflected a change in prices rather than a change in real GDP, the two series are of the same order: the first exceeds the second when GDP is rising. Changes in real GDP are (for comparability with the lending figures) changes in constant market prices, and are for changes between averages for calendar years. Changes in borrowing are on a similar basis and show changes between the average stock of debt in one calendar year (calculated from quarterly figures) and that in the previous year.

Increases in lending by banks and building societies, 1971–1984[a]

(Percentages of GDP)

DOW / SAVILLE 1989

than actual changes in GDP makes it impossible to believe that all - or even a considerable fraction - of the additional borrowing resulted in additional spending".

(Dow & Saville pp196-197)

Several criticisms may be made of this analysis, but are left until after a summary of Dow & Saville' explanation for the apparent discrepancy between fast growth in bank and building society lending and growth in GDP.

As the majority of the increase in building society and bank lending since 1980 has been to the personal sector, it is perhaps best to start with Dow and Saville's analysis of whether or not increased borrowing by this sector has led to increased expenditure. Again, table 6.3 reproduces Dow and Saville's data. Dow and Saville argue that the table shows,

"how greatly such 'disproportionate' increases in lending would have added to consumers expenditure if the whole of the additional lending to persons had been spent". (p200)

"If the hypothesis were accepted that such lending resulted in equivalent additional spending, it would be more than enough in many years to account for the observed fluctuations in consumer spending. That appears highly implausible". (p201)

Dow and Saville emphasise that the increase in the mortgage leak occurs because mortgage finance providers <u>relax</u> the stipulation that mortgages are granted for the purchase price of a house <u>minus</u> any proceeds from the sale of a previous dwelling. Thus new mortgage borrowing is in excess of expenditure on new and existing housing. They argue that the funds acquired through this mortgage 'leak' process (which amounts to some 3% of PDI), rather than being used to finance an increase in expenditure, has been used to build up financial assets. This they argue is a rational response by personal sector borrowers, as in some years the rate of interest on mortgages has been below that available on deposit accounts at building societies, and this effect is enhanced when account is taken of tax relief on interest payments on mortgage borrowing for house purchase or improvement. The incentive to use mortgage loans is largely a reflection of the pattern of relative interest rates that have developed. With building societies paying a high rate of interest on easy access deposits, there has been a reduction in the spread between the rate on mortgage loans and the rate on deposits of building societies. Indeed, since 1981 there has been several occasions, when the mortgage rate has been lower than the deposit rate, resulting in profitable arbitrate opportunities. In other words, if a person has, for example, £5000 cash from a house he/she has sold, and wishes to buy a house for £30,000, it is profitable in some periods to take a mortgage of £30,000 and maintain the £5000 cash in a high interest account. Of course, arbitrage opportunities are rare, but even when they are not present, it is still better to maintain portfolio allocation in this manner as mortgage rates are far cheaper than typical non-mortgage consumer credit rates.

As it appears to be a stock re-adjustment following the abolition of the cartel and portfolio monetary controls, it has led to some commentators to minimise its economic significance,

> "what we have seen is a change in the personal sectors financial behaviour, resulting from the freer availability of credit, which may be of less economic significance than would have been implied by earlier relationships between borrowing and spending".
> (BEQB February 88 p49)

It is argued here that relationships between borrowing and expenditure may have changed, but that Dow and Savilles' analysis of the importance of the 'mortgage leak' is both naive and flawed.

The effect of mortgage borrowers using their borrowings to add to liquid assets as in the moving owner-occupiers 'mortgage leak' is too small to explain the divergence between the growth of personal sector money balances and the growth of incomes. Certainly this practice has occurred, but it is not large enough to account for the discrepancy. Moreover, the figures for equity withdrawal by moving owner-occupiers used by Dow and Saville seriously over-estimate this type of equity withdrawal. The figures they use are those of Drayson (1985) which are reproduced here (Table 6.4). Drayson's figures are for <u>total</u> equity withdrawal rather than for just equity withdrawal by moving-owner-occupiers.

There is the theoretical possibility that bank and building society multiple deposit expansion through lending for mortgage may, in theory, have no effect whatsoever on

Table 6.4

YEAR	NET CASH WITHDRAWAL (£m)
1977	1420
1978	1840
1979	1540
1980	880
1981	2360
1982	5720
1983	5740
1984	7210

Estimate of net cash withdrawal from the private sector housing market

Source: Drayson (1985)

the real economy. If all funds received by last-time sellers are placed in a building society, there will only be a constant market in second-hand houses, with no expenditure multiplier involved. Building Society deposits and hence lending are increased, building societies lend more for house purchase, and receive all the funds of the next last time sellers, and so on. No expenditure is carried out by last time sellers and hence there can be no expenditure multiplier. Of course, this assumes a perfect redepository ratio for building societies, which will not occur. This theoretical case, however, may point to interesting possibilities and help to explain past monetary developments, as explained below.

The mortgage leak figures, have, in fact, been updated and amended by Holmans (1986). The true level of equity withdrawal by "moving-owner-occupiers" is considerably less than Draysons' figures that Dow and Saville base their analysis on. In 1984, for example, Holmans estimates this type of equity withdrawal at £3020m, compared with Draysons £7210m, less than half the amount (Table 6.5). Equity withdrawal only equals 18.2% of net new loans for house purchase, as opposed to 43.5% as claimed by Drayson and Dow and Saville. This considerably weakens their analysis. Whilst not denying that this type of mortgage leak does have an effect in reducing the expected level of expenditure and hence nominal incomes if it is used to purchase financial assets, it is argued here that the magnitude of such effects are not as strong as claimed by Dow and Saville.

Table 6.5

YEAR	EQUITY WITHDRAWL BY MOVING OWNER-OCCUPIERS
1977	1050
1978	1290
1979	1415
1980	1380
1981	1960
1982	4175
1983	3520
1984	3020

Source: Holmans (1986)

Estimate of Net Cash withdrawal from the

Private Sector Housing Market

6.2 House Purchase, last time sellers, and the money income relationship

The majority of building society mortgage loans are extended for the purchase of existing housing, rather than new housing. The Stow Report (1979) estimated that 85% of building societies' mortgage lending is for existing housing. Figures are not available for bank lending on mortgage, but it appears plausible to assume a similar proportion is for "second-hand" housing. In buying an existing house, the purchaser will exchange a building society loan for the house, and the vendor becomes the recipient of the sale price for the house. There may then be a chain of further transactions (the vendor may wish to buy another house, for example), but at the end of the chain, (if it involves existing housing stock) all of the funds lent for house purchase on the security of already existing housing stock must end up in the hands of those who are "last-time sellers" - ie. those who are selling a house but not buying another house, and therefore not requiring a further mortgage. There are several reasons why people become last-time sellers. Some may inherit the houses of their parents when they die, and subsequently sell the property. Some last time sellers may be elderly people leaving their own house to move into rented rest-home accommodation. Furthermore, some houses which may formerly have been rented may be sold.

Every mortgage loan will therefore necessarily end up, after a (perhaps long) chain of transactions, as a receipt of funds by a last-time seller.

Let us assume that the last-time seller saves <u>all</u> of the money received from selling a house. Further, let us assume all of the money is saved at a building society. (The money may, of course be used to acquire other financial assets, but here the case is limited to the funds being returned to a building society for reasons which should become clear). The building society will now have more funds which it will lend out by way of mortgage. Thus, it can be seen that building society lending may be in part self financing. The degree to which funds do actually return to building societies from mortgage lending depends upon a variety of factors which are examined below.

The importance of these funds for the operation and interpretation of monetary control depends on what the recipient does with the money. The recipient can decide either to spend the funds on real assets, or save the funds by way of a financial asset, or spend and save the funds in a desired proportion. The first case will lead to a greater level of expenditure and consumption, whilst the second will lead to greater saving. If the funds are spent on real assets, the extra expenditure will lead to an expenditure multiplier effect, whereby the receiver of the funds will spend some and save some, and so on, according to the marginal propensity to consume, "the _flow_ of loans granted and spent generates a significantly larger _flow_ of income. (Or, if you prefer, an increment of loans generates a multiple increment of income)".

(McLeod 1984 p191)

The amount of funds received by last-time sellers, and potentially available for re-lending, is large. The categories below are reproduced from the Stow Report (1979) "Mortgage Finance in the 1980's". As in the report, the total number of house sales is divided into two groups:

1. Sales where the funds realised are re-invested in housing or transferred overseas. This category can in turn by subdivided into four categories:

   (i) People moving where the proceeds are used as the deposit on the next house. Leakages are assumed to be used up in transactions costs.

   (ii) Council house sales where the proceeds are used by councils.

   (iii) New housing, where the proceeds cover the costs of labour, materials, profit and land.

   (iv) Houses sold on emigration.

2. Sales where the funds are not re-invested in housing or transferred abroad; ie. where they are retained for domestic investment or to finance consumption. These comprise:

(i) people moving out of owner-occupation and into other tenures. The proceeds are assumed to be equal to the average house price less the average mortgage redemptions multiplied by the number of sales.

(ii) Household dissolution. This group consists principally of elderly households with little or no mortgage and the proceeds are assumed to be equal to the number of sales multiplied by the average house price.

(iii) The sales of formerly rented houses - adjusted to allow for company-owned rented property sales. The proceeds are assumed to be equal to the adjusted number of sales multiplied by the average house price.

According to the Stow Report, an estimated £4500 million accrued to last-time sellers in 1979, the latest date of the reports calculations. Table 6.6 updates and recalculates the Stow data to show the amount of funds realised by last-time sellers (Holmans 1986). As can be seen, these estimates are somewhat higher than the Stow data, and represent a large proportion of funds lent on mortgage.

It can be seen that in most years moving owner-occupiers proportion of total equity withdrawal accounted to less than about 25%, whereas equity withdrawal by last-time sellers is almost half the total in most periods. This considerably weakens Dow and Saville's emphasis upon the importance of moving owner-occupiers affecting the income velocity of circulation of the broad money aggregates. The economic effects of these large holdings of money are dependent upon the proportion that is saved, and the proportion that is consumed. The greater is the tendency to consume additional income, the larger will be the expenditure multiplier. The larger is the propensity to save additional income, the greater is the magnitude with which banks and building societies institutions can expand deposits.

A change in policy of rationing mortgage supply towards meeting mortgage demand will necessarily involve financing a greater number of loans for house purchase (see Chapter Four). A behavioural change by building societies from rationing mortgages to providing an excess supply of mortgages would be expected to increase both the equity withdrawal by "owner-occupier movers" and the volume of money received by last time sellers. It would be expected everything else being equal, that such an increase in funds for "owner-occupier movers" and "last-time sellers" would lead to an increase in expenditure. Moreover, if the previously unsatisfied demand is met, it may lead to a rise in house prices. Home owners, with an appreciating asset, may adjust their expenditure plans in response to gains from house prices. If this is the case, personal sector expenditure may rise. This, in turn, may lead to a multiple expansion of incomes. If this scenario is correct, then increased building society lending for house purchase is likely to have similar multiplier effects as follows from an increase in bank lending for corporate investment. In fact this has not happened. Increased mortgage lending has not led to a proportionate increase in expenditure.

Table 6.6

YEAR	TOTAL EQUITY WITHDRAWAL	LAST-TIME SELLERS	MOVING OWNER OCCUPIERS
1977	4115	2255	1050
1978	3150	2765	1290
1979	6205	3395	1415
1980	7010	3715	1380
1981	8810	4390	1960
1982	13065	5230	4175
1983	12720	5830	3520
1984	13840	7360	3020

Total Equity withdrawal, and by last-time sellers and moving owner-occupiers(£m)

Source: Holmans (1986)

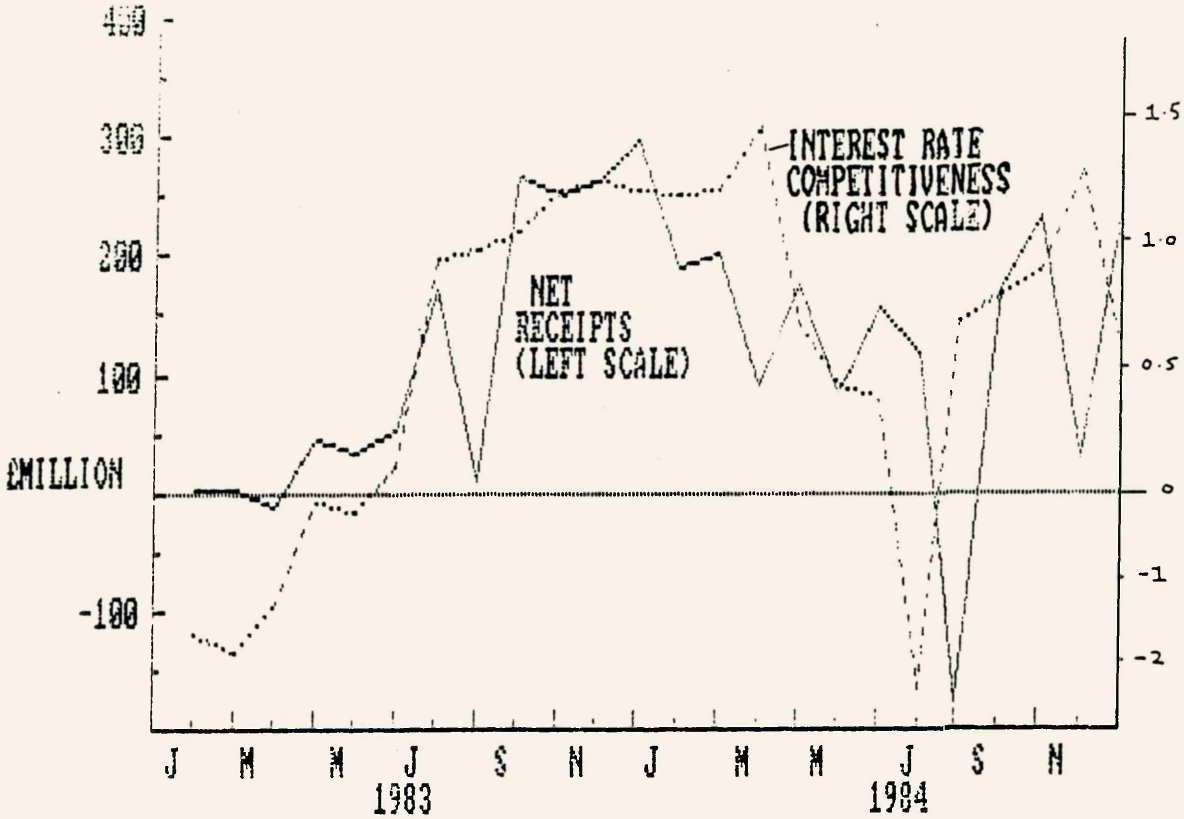
It has already been noted (see Chapter Four) that competition between banks and building societies and the abolition of the cartel has resulted in a higher average rate of interest paid on building society and bank deposits, coupled with enhanced liquidity. It would appear reasonable to suggest (although difficult to quantify) that high real rates of interest on liquid deposits may have attracted a large number of last-time sellers to deposit a significant proportion of their funds in either building societies or banks (in view of the analysis of Chapter Five, mostly at building societies) rather than use the money for expenditure purposes.

High real interest rates on instant-access accounts means that an exogenous shock - such as the increase in building society and bank mortgage lending, may not lead to holdings of 'unwanted' money.. Money, paying an attractive rate of interest (relative to other financial assets) may now be regarded as a portfolio investment asset, rather than merely as a transactions medium (see Chapter Five). Financial innovation thus seems to have reduced the income-generating effects of building society and bank lending. Financial innovation means that money may become long-term buffer stocks after an exogenous shock to the system, and as such may be treated as investments, rather than expenditure balances.. Thus income will not increase as much as might be expected. This may be part of the reason for the decline in the income velocity of the broad money aggregates since 1980. If a higher proportion of last-time sellers are being attracted to hold their funds as liquid balances at banks and building societies, the growth of the money stock will be distorted. The growth rate of the money supply would be expected to grow faster than the growth rate of nominal incomes, because of a reduction in the expenditure multiplier.

At the extreme, if all funds of last-time sellers are redeposited with building societies and banks, and all these funds are subsequently lent for house purchase of existing housing stock, there would be absolutely no effect on the rate of growth of nominal incomes. Thus, this could be part of the explanation of the fall in the income velocity of money. Furthermore, as noted before, even that proportion of funds spent by last time sellers may end up in banks and building societies, because of the desire of people to hold funds at these institutions after an unanticipated supply side credit shock. The influence of relative interest rates on the inflow of 'large' sums of money to building societies is shown below (diagram 6.9).It shows that there is a strong correlation between inflows of large sums of money and the interest rate differential.

Presumably the data for retail banks will exhibit a similar sensitivity of large balances to interest rate differentials (unfortunately similar figures are not available for the monetary sector). This data confirms the suggestion that the high rates of interest due to an increase in the average rate of interest paid on deposits may have attracted investors, (especially last time sellers) to deposit with building societies. Chapter Ten analyses

DIAGRAM 6.9



BUILDING SOCIETY INTEREST RATE COMPETITIVENESS AND NET RECEIPTS (£2001-£10000 SIZE BAND) this evidence further.

It is perhaps useful to recognise the effect that the increase in house prices may have on the expenditure multiplier. It is likely that the demand for funds for house purchase will increase in line with the rise in house prices. It can be seen, however, that a rise in house prices will also increase the volume of funds being received by last time sellers.

It would appear plausible to suggest that the larger the capital received by last time sellers, the greater the proportion that will be saved, rather than consumed. The rise in house prices which has occurred since 1983 (Table 6.7) and its corollary, a larger volume of capital being received by last time sellers, would seem to imply a greater proportion of funds being attracted into banks and building societies than before the dramatic rise in house prices, given the tendency to consume less and save more as income increases. The rise in house prices may therefore have increased the banks and building societies ability to create credit.

Table 6.7

YEAR	AVERAGE PRICE £	INCREASE %
1975	11880	7.1
1976	12679	6.7
1977	13589	7.2
1978	15447	13.7
1979	19886	28.7
1980	23085	16.1
1981	24040	3.5
1982	24149	0.5
1983	26662	10.4
1984	29112	9.2
1985	31299	7.5
1986	36238	15.8
1987	41724	15.1

Average House Prices (existing houses at Mortgage Completion Stage) 1975-1987

Source: B.S.A. Bulletin April 1989

6.3 Buffer Stock Model and Financial Innovation

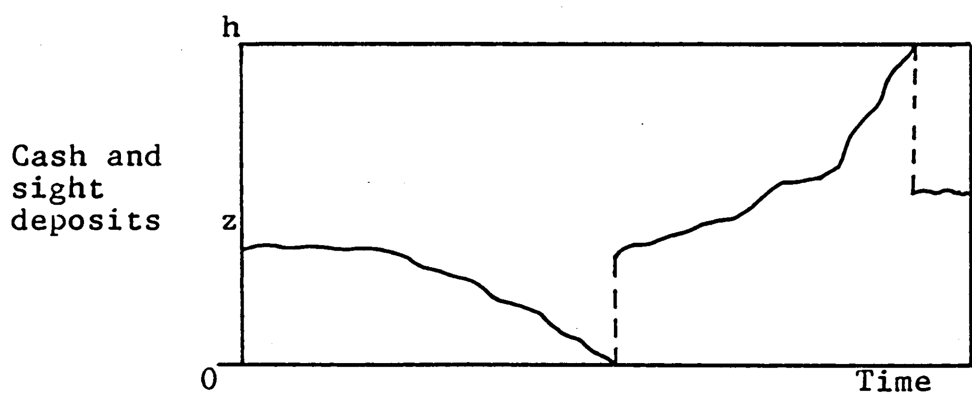
The 'buffer stock' or 'disequilibrium' model stems largely from the work of Artis and Lewis (1974,1976). Artis and Lewis take exception to conventional specifications of the demand for money that implicitly assume that the actual stock of money being held must be equal to the amount demanded, usually explained by the assumption that the money supply is demand determined and that the demand for bank lending is interest insensitive (Artis and Lewis 1976 p156-157). On the contrary, Artis and Lewis maintain that,

> "If the sources of new supply are augmenting the money stock fast enough it is plausible to suppose that individual transactors will find their money holdings are out of line with, and in excess of their expectations and desires. The dissipation of excess holdings of money through the rearrangement of portfolios, a generalised downward pressure on interest rates, and upward pressure on purchases, the level of prices and imports - a process which takes time - could therefore be overwhelmed by further unexpected increments in money holdings".
>
> (Artis and Lewis, 1974, p244)

Disequilibrium between money supply and money demand came about in the early 1970's, according to Artis and Lewis, due to specific unique supply-side events at that time, in particular, institutional change under competition and credit control, whereby controls were relaxed on bank advances, and,

> "Variations in reserve requirements and other institutional changes contributed initially to a disequilibrium between money supply and money demand. Further sources of new supply from government budget deficits and the Bank's abolition of controls upon bank advances perpetuated the cycle".
>
> (Artis and Lewis, 1981 p31 [2])

Models of buffer stock money are frequently analysed in terms of inventory theoretic models (Miller and Orr 1966). It is argued that money acts as a "buffer" between variations in receipts and expenditures. The individual has a desired level of cash or sight deposit (money) holdings. This desired level of money holdings is allowed to fluctuate within upper and lower bands, due to transactions costs of adjustment. When the upper or lower bands are reached the money balance is (instantaneously) returned to an intermediate level. The optimal rule (Miller and Orr 1966) is to have a lower band (0 in the diagram) and a constant upper band, (h). When these upper and lower limits are reached, money holdings are returned to the intermediate desired level, z.



The Miller & Orr model

The buffer stock model suggests that an unanticipated increase in net receipts due to a supply-side shock (for example, an increase in bank lending) will lead to an accumulation of holdings of buffer stock money (i.e. the recipients of the 'spent' bank credit will have an unexpected increase in their money holdings).

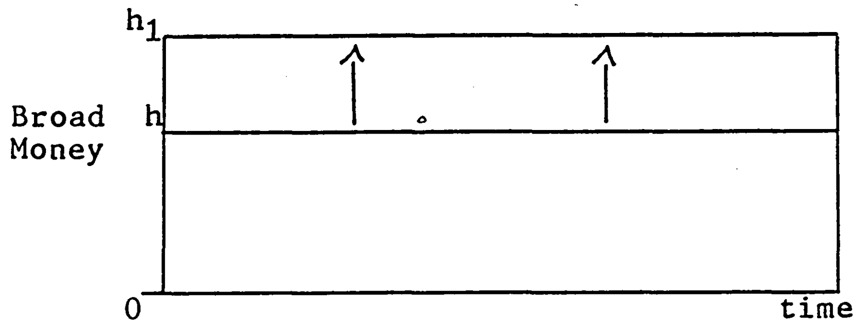
In terms of the Miller-Orr model, some money holders will reach their upper threshold (h) and hence instantaneously reduce their money balances to the desired level (z). Other money holders may not reach their upper threshold (despite having unanticipated increases in money balances) and hence will willingly hold the "buffer" money in the short-run.

The net effect of an unanticipated increase in receipts depends upon the initial allocation of money balances amongst money holders (Cuthbertson and Taylor 1987). Obviously, if all money holders reach their upper threshold, then in aggregate there will be no increase in "buffer money" , as it will be instantaneously transferred to time deposits or other assets. Buffer stock proponents however, argue that aggregate holdings of buffer money will be increased, especially if money holders do not frequently check their money balances (Cuthbertson and Taylor, p107). Buffer stock money will be willingly held in the short run, but holders of buffer stock money are assumed, however, to have been forced off their long-run desired function for money balances, because interest rates, the price level, and income adjust only slowly (Artis and Lewis, 1976, Laidler 1980, Goodhart 1984). This 'disequilibrium' notion, that the long-run demand for money is not always equal to the supply of money, has been widely quoted as the rationale for instability in econometric short-run money demand functions, which assume money holders are always on their desired short-run money demand functions (Laidler 1982, 1984, Goodhart, 1980).

Laidler (1984) and Milbourne (1986) provide recent surveys of the fast expanding literature on buffer stock money. Laidler (1982, 1984) in particular, argues that the buffer-stock hypothesis may provide an explanation of the problem of instability of the demand for money. Milbourne (1987) however, is sceptical of the (limited) empirical evidence so far produced on the buffer stock model,

> "the empirical evidence tends to strongly refute current single-equation versions of the hypotheses". (p41)

The Miller-Orr model analyses cash and sight deposits. This model can be extended to a situation whereby economic agents have an upper and lower target threshold for broader money balances other than cash or sight deposits [3]. Indeed, with recent financial innovation it is difficult to distinguish between pure transactions and investment balances. There is often little difference in liquidity or return characteristics between sight deposits and so-called 'time' deposits at banks and building societies. It is likely that, given the combination of increased return, increased liquidity, and high real interest rates, the upper threshold for holdings of broad money balances will have increased,(i.e. due to the increased attractiveness of money relative to other assets). The upper return point at which money balances would normally be reduced may therefore now exist at a higher level (h_1 in the diagram).



The Miller-Orr model with financial innovation

At first sight an increase in the upper threshold may appear to enhance the applicability of the buffer stock model. If the upper return threshold is increased less economic agents will reach the upper band after a given supply side shock. Hence more money will be held initially as a buffer stock, and slowly spent.

The evidence suggests, however, that this scenario has not occurred. It is argued that the recent fast growth of M3 and M4 (i.e. the fall in income velocity of the broad aggregates since 1980) is the result of a combination between supply-side shocks emanating from the abandonment of the corset and subsequent increased mortgage lending, and the attractiveness of market determined high real rates of interest at building societies and banks. It appears that 'excess' money balances in evidence since 1980 as a result of credit shocks have been willingly held as investment balances in wealth-holders portfolios. Not only have these balances been willingly held in the short-run, as the buffer stock model would suggest, but they appear also to have been held willingly in the long run, contrary to the buffer stock model. The upper threshold level may have increased to such an extent that most money holders have not reached their upper level, despite increased holdings of money. Moreover, there is no buffer stock effect, as those who have not reached the upper return level are willingly holding the increased money balances in the long term. This suggests that these money balances are not at present holdings of "buffer" money. Indeed, this appears to be the view of the authorities, (see Chapter Five) [4]

It is impossible to determine, however, when or if these money balances emanating from supply side shocks will be 'unwillingly' held and hence spent.

There is the possibility that financial innovation has made money such an attractive asset to hold that, as interest rates remain high, the extra spending will not come about.

It may be, however, that financial innovation has delayed the point at which money becomes a buffer stock. In this scenario supply-side shocks which create unanticipated receipts will be willingly held for long periods of time (extremely long periods, on evidence of the last eight years), but may become buffer stocks if there is a fall in the rate of interest.

The 'higher' upper threshold (h_1) may not be immutable over time. It is possible that if interest rates fall, the upper threshold may return to h. In this case, some money holders will find they are above their threshold levels, and will have unwanted money, which will be instantaneously transferred. Many balance-holders however, will still be below their threshold level, (depending on the initial distribution of money across economic agents), such that, in aggregate, there are excess money balances. Initially, these money balances will be willingly held, but in the long-run, they will be spent. It thus appears that money already willingly held as a result of a supply-side shock, may become a buffer stock some time after the original supply side shock.

Alternatively, and this may be a crucial point for the operation of monetary control, it is possible that when the monetary authorities attempt to control the money supply (for example the increase in interest rates in the second half of 1988), wealth-holders may run down their large holdings of buffer-stocks that have been amassed, rather than cut down on spending. There may thus be a substantial period of time before interest rates affect the rate of spending and hence the price level.

Chapter Five maintained that money may indeed be a <u>necessary</u> determinant of inflation but at certain times (eg. when financial innovation occurs) it is not a <u>sufficient</u> cause of inflation. Likewise with credit. It is possible that an increase in the growth rate of credit over and above the growth rate of income may not lead to an increase in inflation. Therefore credit may indeed be a necessary cause of inflation but not always a <u>sufficient</u> cause of inflation.

6.4 Credit Shocks and endogeneity

It must be recognized that post Keynesians have for a long time argued that it is the growth of credit that determines the growth rate of the money stock. Increases in the quantity of money are seen as the result of increases in the quantity of credit created, and it is credit that plays the dominant role in the economy (see inter alia, Kaldor, 1970, Tobin 1970, Blinder 1983, Blinder and Stiglitz 1983 , Davidson and Weintraub 1983, Godley and Cripps 1983, Lavoie 1984).

Dow (1987) points out that it has been a long held Keynesian belief that the fundamental cause of monetary growth is expenditure decisions which lead to a greater supply of credit being made available, such that monetary growth is only the proximate cause of inflation. Credit is the engine of monetary growth, stimulated by changes in demand. If money is demand led, then it is necessarily endogenous. This does not mean however, that the monetary authorities cannot control the money supply, nor that such a policy will be ineffective.

A credit-induced money stock is rationalised by post-Keynesians through reference to the actions of financial intermediaries in an unconstrained competitive system, and by the traditional role of the Bank of England. Returning to the microtheoretic model of banks and building societies as price setters and quantity takers, it should be noted that the use of liability management in the wholesale markets leads to 'liability-side liquidity'. Banks and building societies will lend whatever is demanded (within prudential limits and the ability of the borrower to repay) at a given rate of interest, such that according to post-Keynesians the volume of credit granted is demand-determined. The role of the Bank of England as lender of last resort is important in this respect,

> "the central rationale for the creation of central banks, and still by far their most important function, was to provide an elastic currency supply. To ensure the ultimate liquidity of financial assets and so the viability of the financial system, central banks must stand ready to perform the role of lender of last resort".
>
> (Moore 1983 p543)

In other words, the Bank of England appears to allow the money supply to increase to accommodate rises in the demand for credit, as a result of its role of supporting the banking system. Post-Keynesians argue that the money supply process should be examined as part of the interaction between financial institutions and firms in an income-generating process (Davidson 1972). An increase in wage rates which increases production costs, will require extra working capital. Extra working capital is gained by borrowing from the banking system. It appears that in the 1980's however, re-regulation and competition has been the dominant factor in influencing supply-side credit shocks, rather than increases in wages. With re-regulation and competition, it is plausible to assume that the money supply may be endogenous. Endogeneity, as opposed to Friedman's assertion of an exogenous money supply, appears to be strongly grounded in intuitively plausible real-world terms.

The analysis that the money supply is essentially demand-determined with the quantity demanded depending on a host of real-world factors at least has the distinction of providing an explanation of how/why excessive money growth may come about, rather than the Friedmanian helicopter that increases the money supply. Increases in the money supply have to originate somewhere,

> "in the real world, money is not created as the manna from heaven of a Patinesque world or dropped by helicopter as in Friedman's construction".
> (Davidson 1972 p107)

According to Cobham (1988) a "disequilibrium monetarist" school is emerging which agrees that the money supply appears at various times to exhibit both endogeneity and exogeneity, such that there is a convergence of opinion amongst monetarists and Keynesians. The above analysis would tend to concur with the suggestion that the money supply can be either endogenous or exogenous. An endogenous money stock is particularly likely in a competitive financial system, with banks and building societies operating as price setters and quantity takers, but not in a constrained system, as in the 1970's.

The origin of any supply-side credit shock is likely to have important repercussions for any subsequent link between the money supply and the price level. A wage induced credit shock is likely to involve an increase in the money supply and the price level, whereas a credit shock emanating from re-regulation and portfolio restructuring as has occurred in the 1980's may not necessarily lead to an increase in prices.

In terms of monetary control, the debate is to an extent superfluous. If the money supply is endogenous because credit is the prime motivator behind the monetary aggregates, as suggested by post-Keynesians, it does not mean that the aggregates cannot be controlled. If monetary growth is a necessary feature of inflation, and if credit which leads to monetary growth can be controlled, then there is still a place for monetary control.

The Bank of England may still be able to control the money supply if interest rates are a determinant of the demand for money and the demand for credit; the potency of control will depend on the interest elasticity of the demand for credit and the demand for money.

The emphasis of the monetary authorities in the supply side counterparts to the monetary aggregates exemplifies this control mechanism. Control of the credit counterparts implicitly presupposes endogeneity, but of course does not imply uncontrollability.

As has been seen, from the evidence of Chapter Five and this Chapter, the money supply appears to show signs of both endogeneity and exogeneity. It is emphasized in this thesis that the importance lies in the identification of money and credit shocks, and analysis of effects on nominal income. If shocks occur through financial innovation and change, they may have no effect on nominal income and inflation. Money may be a necessary cause of inflation but not the sufficient cause. The money supply may increase for endogenous reasons (ie. be demand determined) but at the same time may or may not have affects on inflation.

6.5 Conclusion

Monetarist theory has in the past largely neglected lending when examining monetary developments, and emphasised the liabilities side of financial institutions balance sheets, in contrast to the practical approach, which relies on the control of bank lending.

It was hypothesized in Chapter Four that financial innovation and financial change in the form of high interest easy access accounts and liberalization of the mortgage credit market have been major stock adjustment factors in altering the relationships between money and nominal income and credit and nominal income.

It has been noted that borrowing from Building societies and banks by the personal sector for the purpose of house purchase has grown far faster than the growth in personal incomes since 1980. This has led Dow and Saville (1988) to speculate that the owner-occupier 'mortgage leak' is in large part responsible for the fall in the income velocity of circulation of broad money. This proposition has been examined in section 6.1, and found to be unsatisfactory.

The Dow and Saville hypothesis did, however, emphasise the importance of examining the monetary aggregates in terms of both money holdings and the level of lending. Section 6.2 retained this outlook in an alternative hypothesis of the effect of personal sector borrowing on the growth of broad money.

It appears that the monetary aggregates can be both deposit driven (Chapter Five) and credit driven. Growth in the money supply is thus the outcome of the combination of deposit and credit side interaction.

The stock adjustment induced by the ending of the cartel and the corset and increased competition between building societies and banks may have resulted in 'unwanted' excess money balances held by last time sellers. If these balances are 'neutralised' by financial innovation and high real interest rates, there may be no concomitant increase in nominal incomes - the money may be held as long-term investment balances, rather than transactions balances. The greater the number of last time sellers who hold the proceeds of the sale of their house as investment money balances, the smaller will be the expenditure multiplier of any given level of building society and bank lending. The relationship between lending and nominal income is likely to change. Increased levels of lending may result in smaller increases in nominal income than previously. The fall in the income velocity of circulation of the broad money aggregates appears in large part to be explainable by the interaction of re-regulation, competition, increased mortgage lending, and financial innovation.

Section 6.3 analysed the implications of the combined effects of credit shocks and financial innovation upon the buffer stock model. It was argued that the buffer stock mechanism, whereby excess money balances are dissipated and eventually leads to an increase in prices may not be applicable in the face of financial innovation. Credit shocks in the 1980's have not led to a slow dissipation of balances but a willingness to hold money balances for their investment qualities. If money is held as a buffer stock, then it is held as an extremely long term buffer, the consequences of which may be vital for monetary control. If these balances are induced by high real interest rates, it is possible they may be spent when interest rates fall, with consequent inflationary effects. Conversely, at times of monetary restraint (eg. as in 1988 with the authorities trying to cut off the credit boom via high interest rates) balances that have been amassed for their investment characteristics may be used to sustain inflationary levels of spending.

The degree to which the stock adjustment of the personal sector has affected the demand for credit is tested econometrically in Chapter Ten.

The opposing views of the money supply being either endogenous or exogenous was examined in section 6.4. It was concluded that the money supply can at times be demand led from the credit side and hence can at times be endogenous. This endogeneity does not, however, suggest that there is no role for monetary policy, as argued by Keynesians. The money supply may not be a sufficient cause of inflation, but so long as it is a necessary cause (and many Keynesians accept this) and so long as the authorities are <u>able</u> to control the money supply, there may be a role for a policy of controlling the money supply. It is the ability of the authorities to control the money supply that Chapter Seven turns to.

Notes

[1] Two factors have particularly increased the demand for home ownership in the 1980's. Firstly, the government has actively encouraged home ownership through the sale of council houses. Secondly, demographic changes have played a part. The "baby boom" of the early 1960's had led to a large number of first-time buyers in the early 1980's.

[2] Hacche (1974), however, argues that there may have been a shift or successive shifts of the demand function because of events unique to 1971 and 1972, leading to a higher level of desired money balances than previous experience would have predicted.

In particular, it is possible that, as a result of changes introduced by competition and credit control (see Chapter Two), and the subsequent increase in banks' competitiveness, interest bearing 'money' may have increased in attractiveness relative to other financial assets. Following this particular hypothesis, Hacche (1974) argues that the demand for M3 may have been affected by the rate of interest on wholesale time deposits and certificates of deposit.

Hacche employed four different own-rate variables in order to ascertain whether or not they could explain the 'shift' towards interest bearing money. He found that including the C.D. rate provided equations which adequately fit the data to the end of 1972. He offered the explanation that, "the importance of the C.D. rate to the results may to a large extent be a reflection of the transition to the changed money-market environment, and in particular of adjustment to the growing market in C.D's." (p296)

Artis and Lewis allow for the growth of the C.D. market post 1971 by utilising definitions of money which do not include CD's ie, M1 and M3 minus CD's. They note that both these definitions produce results no better than those for M3 (conventionally defined) and therefore according to this evidence allowance for CD's cannot explain the forecasting error. More formally, Artis/Lewis use a variable which they claim will both measure interest rate competition before 1971 and also any greater competitiveness of bank interest rates after 1971. They split the money stock M3 into components of interest bearing deposits (see Appendix 4, 1974), a weighted average of the rates on these deposits then taken. Artis/Lewis conclude that the inclusion of this 'own' rate still results in an unstable demand for broad money.

It is possible also to criticise Hacches' measure of the own rate because of his assumption that there is no interest rate competition between banks, accepting houses, overseas and other banks prior to competition and credit control (Artis and Lewis 1976 p150). The consequence of employing an own rate of zero prior to 1971, and the CD rate post 1971 is analogous to utilising a dummy variable in the equations. This will therefore exaggerate the importance of the CD (own rate) after 1971).

[3] Milbourne cogently argues that the buffer stock model is unlikely to be applicable to a narrow definition of money such as M1 (the focus of much of the econometric research into buffer stocks) and suggests that if the buffer stock is applicable at all, it is relevant to a broader definition of money (see also Goodhart 1984, p267).

[4] As Milbourne notes, a crucial element of the buffer stock model is the exogeneity of supply-side shocks. This is essential since a central tenet of monetarism is the assumption that the money supply process is independent of the factors which determine the demand for money . There are reasons, however, for supposing that changes in bank lending (ie. supply side shocks) are largely demand determined, particularly in recent years. Re-intermediation following the abandonment of the supplementary special deposits scheme can only be rationalised as demand determined, particularly in view of the high interest rates charged on advances (Bank of England 1988). The implication of an endogenous money supply for the applicability of the buffer stock model will not be pursued here, however. The argument that financial innovation invalidates much of the buffer stock model applies whether or not the money supply is exogenous or endogenous.

CHAPTER SEVEN

FINANCIAL INNOVATION AND THE EFFECTIVENESS OF MONETARY CONTROL

7.0 Introduction

When monetary policy is aimed at maintaining a target rate of growth of the money supply in order to achieve a desired rate of growth of nominal income, it is necessary that the monetary authorities have the ability to influence the monetary aggregate(s) being targeted,

> "The first requirement [for monetary policy] is that the monetary authority should guide itself by magnitudes that it can control, not by ones that it cannot control".
>
> (Hester 1982 p42)

This Chapter examines the long-term continuing effects of building society developments on the effectiveness of monetary control. Specifically, the effects of the ending of the building societies' recommended rate system and subsequent increased flexibility and importance of the price of mortgages for the effectiveness of monetary control are analysed in terms of the interest elasticity of consumers' expenditure and the interest elasticity of the demand for money.

7.1 The Abandonment of Portfolio Controls

The original emphasis of CCC was the control of monetary growth through the manipulation of interest rates, and an abandonment of the previous distorting portfolio controls. The intention was to move towards a system which had free operation of the price mechanism and free competition in the financial system, with the level of credit to be determined by cost. The re-intermediation effect that occurred and the effect on the monetary aggregates has been documented in Chapters Three and Five. It was also noted that the major problem of this system was the aggressive liability management policies of the banks, for which the corset was devised, and which heralded the end of the monetary authorities policy of controlling the money supply through its price, and a move towards more direct portfolio controls.

The use of portfolio controls upon the banking system produced a number of distortions in the financial system. A major problem that occurred intermittently throughout the 1970's, was the phenomenon of 'round-tripping' or 'hard arbitrage'. Wholesale rates tended to be more fluid than bank based rates such that prime borrowers profited by taking up unused overdraft facilities at a base-related rate, and re-lending the funds at the wholesale deposit rate.

This practice tended to have a perverse effect on the rate of growth of the broad monetary aggregates as bank assets were cosmetically increased. The particular monetary controls in force - special deposits - acted to increase the tendency for round-tripping to occur. Calls for special deposits, rather than having the intended effect of a reduction in lending, resulted in the banking system competing even more fiercely for deposits. In effect, the banks were engaging in liability management rather than asset management, increasing the level of deposits in order to finance greater levels of reserve assets. This has the effect of reducing the yield on reserve assets relative to non-reserve asset yields.

The subsequent monetary control mechanism introduced, the supplementary special deposits scheme, was also undermined by the activities of the banking system. Widescale disintermediation occurred when the corset was in operation, particularly in the parallel money markets. Indeed, the very existence of these markets is in large part as a result of the frustration of credit-worthy corporate borrowers being unable to raise bank finance because of various monetary controls. When the banking system is restricted from lending by a control mechanism such as the corset, it is not surprising that companies should seek greater recourse to the money markets. Of special relevance in the 1970's was the use of acceptances by companies. Here, companies with surplus funds would lend to deficit companies, through the agency of a broker in the form of an acceptance, rather than funds being channelled through the banking system as in the traditional financial intermediation process. The banking system is involved, of course, in guaranteeing (ie. accepting) bills issued by corporate customers. These' bank bills' are effectively underwritten by the banks, and are therefore extremely low risk and marketable, and as such may be sold for fine prices. For the banking system, fees are earned, but the acceptances are only contingent liabilities, and hence are counted as off-balance-sheet items, and not included in the interest bearing eligible liabilities definition. It was thus possible for borrowing and lending to take place, but outside of the traditional financial intermediation channels.

The existence of disintermediation placed in doubt the effectiveness of portfolio monetary controls. Borrowing and spending was still able to occur, despite the strict operation of the supplementary special deposits scheme. Moreover, the increase in bank bills held as off-balance-sheet items (often called the 'bill leak') made it difficult to analyse monetary developments as they were not part of the M3 money supply definition. Thus, M3 was at this time a poor indicator of monetary conditions. To the extent that M3 was growing slower than if bank bills were included in the definition, the money supply figures would indicate relatively tigheter monetary restraint than in fact was the case. In practice the bill leak was widely known about (BEQB March 1982 p82) and figures for the bill leak were even included in the private sector liquidity series of the BEQB Statistical Annex. Recognition of disintermediation does not , of course, eliminate the problem of avoidance of direct monetary controls. With hindsight, the Bank of England points out that although direct controls are inefficient in terms of disintermediation activities, the bill leak was possibly a less problematical form of avoidance as it was directly measureable,

> "Without such a safety valve [the bill leak], less measurable forms of disintermediation might have grown more rapidly. The inter-company market might have expanded, by-passing the banking sector altogether, and large, credit-worthy companies might have issued trade bills of similar marketability and default risk as bank bills. The funds acquired by issuing trade bills could have been used to expand trade and other forms of credit to less well-placed suppliers and customers. Some large industrial and commercial companies might therefore have become quasi-banks".
>
> (BEQB March 1982 p82)

The use of portfolio controls really only attacked the symptoms of monetary growth, rather than the underlying root cause, and led to distortions in competitive neutrality, and ultimately to disintermediation, a problem which has become more acute with re-regulation and financial innovation,

> "Money is the most fungible of commodities and our experience over a long period is that the effect of direct controls is largely to direct financial flows, typically into less efficient channels, rather than to achieve any deeper purpose. These difficulties can only be greater now with the disappearance of traditional barriers between different financial functions and of distinctions between different financial activities, and with the merging of financial markets into a global whole. Controls in one area would either be ineffective or spread rapidly as further and further controls were introduced to head off successive leakages from those already in place".
>
> (BEQB August 1987 p366)

The previous use of portfolio controls could be rationalised because of the relative lack of alternative sources of finance. It is now possible for the NBPS to circumvent credit controls in a variety of ways given the number of credit channels now available, and policy has had to move towards the <u>price</u> of credit rather than its availability. Of course, with the abolition of exchange controls in 1979, direct controls on the banking system could be circumscribed by offshore disintermediation, and as such were abandoned in 1980 (Vaciago (1985), Bingham (1985)).

7.2 Financial Innovation and the Effectiveness of Monetary Control under the MTFS

A major tenet of the MTFS involved a strong relationship between the money supply, interest rates, and the public sector borrowing requirement (PSBR).

The MTFS paid particular attention to the consequences of a 'high' PSBR on the money supply and interest rates. Too high a PSBR would lead, it was argued, to either higher interest rates, or an increase in the rate of growth of the money supply, the former was based on the premise that if the monetary authorities attempted to restrict the growth of the money supply _without_ at the same time cutting the PSBR, interest rates would have to be maintained at a high level to sell Government debt and to cut the demand for bank borrowing. High interest rates, it was argued, would 'crowd out' private sector investment, (conversely, high rates on corporate debt instruments may in fact lead to companies borrowing _more_ from the banking system, with attendant inflationary consequences). The latter is based on the view that, again, if the money supply is cut _without_ reducing the PSBR, and if the PSBR is not being financed through selling Government debt to the NBPS, then the Government will have to borrow from the banking system, thus increasing the money supply.

Thus, if the monetary authorities wish to control the money supply without concurrently maintaining intgerest rates at an unacceptably high level, the PSBR would have to be reduced,

> "Too high a PSBR requires either that the Government borrows heavily from the banks - which adds directly to the money supply; or, failing this, that it borrows from individuals and institutions, but at ever-increasing rates of interest, which place an unacceptable squeeze on the private sector".
> (T.C.S.C. 1980, p2)

Thus, the role of fiscal policy was that of support for monetary policy, as evidenced at the outset of the MTFS,

> "The Government is ....planning on a substantial reduction over the medium term in the PSBR as a percentage of G.D.P. The consequence of the high level of public sector borrowing has been high nominal interest rates and even greater financing problems for the private sector. If interest rates are to be brought down to acceptable levels the PSBR must be substantially reduced as a proportion of GDP over the next few years".
> (Financial Statement and Budget Report 1980-81, Part II, para 4)

More recently the Chancellor has stressed the target for a balanced budget, a PSBR of zero (Financial Statement and Budget Report, 1988-89, para 2.13).

The target path of the PSBR has changed to a degree over the time of the MTFS. Originally it was expected that the PSBR would be reduced, unless it appeared likely that a future recession was possible, in which case the PSBR could be maintained at its previous level. Subsequently, the aim was to maintain the PSBR at 1% of GDP (Budget speech 17 March 1987) in the hope of achieving zero inflation and a stable debt/income ratio, a policy advocated by Budd and Dicks (1983).

Although Currie (1987) points out that under this type of policy, if GDP is rising quickly, and Government spending is set as a target of GDP, then it too can rise rapidly. Conversely, when in a downturn, a Government spending target as a proportion of GDP will require reduction in Government spending which may be difficult to implement.

PSBR targetting may, however, have bolstered the intention to reduce inflation by including an automatic contractionary response to inflation (Currie 1987, Begg 1987).

The evidence of the relationship between the PSBR, the money supply, and interest rates does not appear to be robust, however. Simulations by Kearney and MacDonald (1985) show that a tight fiscal policy which reduces the growth of the PSBR causes only some interest rates to rise, and others to fall (see Llewellyn and Kearney (1984) for further analysis).

Moreover, Artis (1988) points out that there can be large errors in PSBR forecasting, leading to the conclusion that PSBR targetting is not a viable policy in view of the mistakes that could be made.

Kaldor (1980) disputes the assertion that the PSBR and the growth of the money supply are closely linked. His figures show that the 'unfunded' PSBR (ie. that financed by bank credit rather than by the sales of Government securities to the non-bank private sector), could have contributed only a 'negligible' 2.1% to the increase in the money supply over the period 1977-1980. By contrast, the 'unfunded' element of the PSBR in the previous 3 years was 26 times as large, yet the increase in the money supply was only half as large. According to Kaldor, it is the growth of bank lending which is the main determinant of money supply growth.

This analysis of the modus operandi used by the monetary authorities is compared and contrasted with the traditional view as to the potency of monetary control under a monetary base system. Whilst monetary base control (MBC) has not been implemented in the U.K., the possible effects of financial innovation on such a system if it were in operation are examined in section 7.3, given the special emphasis placed upon MBC by most monetarists (see Chapter Two).

A useful distinction to make is that of controlling the monetary aggregates from either the demand side or the supply side (Lewis 1980(b), Artis and Lewis 1981, Davis and Lewis 1982). In the demand side approach, the authorities influence the general level of interest rates in order to influence the demand for bank liabilities. In terms of the demand side approach, two effects of financial innovation by building societies and banks may be isolated:

(a) The average rate of interest on building society and bank deposits has increased.

(b) The deposit rates of interest at these institutions have become less sticky, and now closely follow the general movement of interest rates.

The monetary authorities have a limited number of instruments with which to control the money supply. Indeed, it has been recognised by the Bank of England that it is ultimately constrained to using only one instrument,

> "When you come right down to it, the only effective instrument of monetary policy is the short-term interest rate itself".
>
> (BEQB August 1987 p366)

Given the emphasis upon control of the money supply through manipulating interest rates it is of some interest to examine in detail the effectiveness of the demand-side approach with respect to the above effects of financial innovation on bank and building society interest rates.

In the demand side approach, an increase in general rates of interest engineered by the monetary authorities is intended to induce money holders to switch into alternative interest bearing assets. However, when money balances at building societies and banks bear a high real rate of interest, a given policy-induced increase in the general level of interest rates is likely to have a reduced effect on the opportunity cost of holding money, in contrast to the traditional situation, where money does not bear interest,

> "when no explicit interest is paid on liquid deposits, the gulf between these and other accounts tends to be greater than when interest is paid, particularly if it is paid at a market-related rate. Although an indirect return may be provided in the form of "free" bank services, large networks of branch offices, etc., the adjustment of these terms is generally slower than that of interest rates so that substitutability tends to be lower - and responsiveness of monetary aggregates to changes in interest rates greater - than when interest is paid explicitly. As more and more items included in the concept of money come to bear market-linked rates of interest, the impact of a change in market rates on the money supply becomes smaller and smaller, making larger and larger changes in interest rates necessary to affect demand by a given amount".
>
> (Bingham 1985 p7)

The increase in the average rate paid on building society and bank deposits is of itself likely to reduce the opportunity cost of holding money when general interest rates rise, and hence restrict the ability of the authorities to induce a movement out of money holdings. Moreover, the second effect of the increased competition upon interest rates is likely to enhance this effect. Not only has competition increased the average rate of interest paid on bank and building society deposits, but it has also altered the speed with which these financial institutions alter their deposit rates in response to a policy induced rise in interest rates. In an extremely competitive market situation, as exists between building societies and banks for money deposits, movements in the general level of interest rates tend to be quickly parallelled by movements in the deposit rates offered by both sets of financial intermediaries. This is not to imply that deposit rates will be at the same numerical level as other rates, but that they may move in line with other rates, such that <u>interest rate differentials</u> between the financial intermediaries and that of other non-money assets may remain unchanged. In other words, as interest rates in general rise, so too do the rates on the assets within the broad monetary aggregates, such that there is little incentive to move out of money balances. Wnen operating from the demand side, it is unlikely that interest rate differentials will be substantially changed, and unlikely that the level of broad money holdings reduced (abstracting from supply-side considerations), when interest rates are raised.

Moreover,

> "Technological innovation is also likely to accelerate the tendency for the retail deposit market, including current accounts, to provide the combination of market-related interest rates and payment facilities that are already available in the wholesale deposit market. This is likely to have much the same consequences on the demand function for retail money as occurred earlier with wholesale money: namely, less responsiveness to changes in the general level of interest rates, since the market-related rates offered on such deposits will move in step; more responsiveness to shifts in relative interest rates and in other terms on competitive forms of retail liquid assets; and increasing instability in demand-for-money functions for such retail balances, at least for a transitional period as these innovations take place".
>
> (BEQB September 1983 p375)

It is hypothesized here, however, that as high market related rates of interest on building society and bank easy-access accounts move so closely in line with general rates of interest,that not often do interest differentials change, and the interest elasticity of the demand for money is likely to have fallen. If interest differentials between money and other assets change only rarely and for a short period of time, profitable portfolio switching opportunities are not likely to be frequent. Monitoring the rates between building society, bank accounts, and other assets is likely to be downgraded given the consistently high real rates of return on building society and abnk accounts in the 1980's and the lack of profitable portfolio switching chances. It is likely that there will be a stable pool of balances at banks and building societies that have become increasingly de-sensitized to interest rate differentials.

Some authors argue however that asset-holders may be becoming more sensitive to changes in interest rate relativities between different financial assets (Goodhart 1986, p84). The problem, in terms of monetary control, is that the monetary authorities can only influence the general level of market rates. When money bears explicit market-related rates of interest the authorities cannot exert any control over the interest rate relativities between different financial assets. This result tends to modify the monetarist contention (set out in Chapter two) that the greater is the interest inelasticity of the demand for money, the more potent will monetary policy be. The effect of the shift towards interest bearing balances is to raise the 'own' rate on the broad monetary aggregates.

In IS/LM terms, the LM curve will become progressively steeper. In theory, it could become completely vertical, and completely inelastic.

This effect, whereby increasing competition for deposits tends to offset the effects on the demand for money of changes in market rates of interest was foreseen by Laidler (1973). He argued that a reduced interest-elasticity of the demand for money would lead to a more effective monetary policy,

> "when a large proportion of the money stock represents the liabilities of commercial banks, it will, if the banking system is competitive, bear interest. The rate of interest paid on money will fluctuate with market

rates of interest as the banks compete for funds with other intermediaries, and in as much as it does so, this will offset the tendency for money to fluctuate with market interest rates. Only if a cartel operates in the commercial banking system and results in rigidity in the rate paid on bank deposits would we expect to see the demand for money varying much with market interest rates. So long as the monetary authorities have the power to police cartel arrangements for the fixing of interest rates, they also have the power to police the slope of the LM curve".

(p62)

On the face of it, the more responsive are the rates paid on building society and bank deposits to changes in market rates of interest, and the larger the proportion of deposits which attract such interest payments, the greater the force with which Laidlers' argument may be applied (also see Cagan (1979)). However, this neglects the question of how the money supply is influenced. When the method of control of the money supply is taken into account it can be shown that, due to a situation of financial innovation and competition, a relatively inelastic demand for money is not sufficient evidence as to the relative merit of a policy of controlling the money supply. Referring back to the IS/LM apparatus, it can be seen that increased interest inelasticity (i.e. a steeper LM curve) may lead to problems of monetary control,

"If the differential [between bank deposit rates and other assets] becomes a constant, the demand for deposits will be independent of the level of interest rates. A rise in market interest rates will not reduce the demand for deposits as it does in the old regime and in the standard model, because the rate paid on deposits will rise too. The old monetarist assumption of interest-inelastic money demand will apply, though for a reason quite different from its original motivation".

(Tobin 1983,p164)

Indeed, it may be the case that an attempt to reduce the growth rate of a broad monetary aggregate from the demand side may lead to an increase in the growth rates of the monetary aggregates. Looking at the demand for money balances, it has been noted that as far back as the period 1963-78 that,

> "The net effect of interest changes on a broad definition of the "money stock" was perverse - a rise in interest rates appears to have led to the "money stock" rising faster than money income, not lagging behind it".
>
> (Kaldor 1980, p289)

This effect is also corroborated by Lewis (1980) and Artis and Lewis (1981) who found that when the authorities attempted to reduce the growth of the monetary aggregates by raising short rates through the discount market in 1973, 1976 and 1979, the rate on time deposits increased relative to long term rates. Thus, an attempt to reduce the rate of growth of the money supply had the opposite effect of increasing the money supply, through the increased demand for time deposits. Of course, these perverse effects occurred before the onset of financial innovation in the early 1980's, which has raised the own rate on money . It is possible to hypothesize then, that the impact of financial innovation may have enhanced this perverse effect of movements in the monetary aggregates in response to changes in the general level of interest rates.

In the supply side approach, the authorities attempt to influence the general level of interest rates in order to influence the demand for building society and bank assets, i.e. the demand for loans. Of course, changes in the rate of interest may have effects upon <u>both</u> the demand for money and the demand for loans (credit); it is useful, however, to separate the effects for expository purposes.

The stated intention of the monetary authorities is to influence the growth of the broad monetary aggregates from the supply-side. The Green Paper on Monetary Control (1980) states that,

> "The principal means of controlling the growth of the money supply must be fiscal policy - both public expenditure and tax policy - and interest rates".
> (p17)

The main instrument is that of influencing interest rates, by the Bank of England's intervention at the short end of the bill market. In broad terms the aim is to maintain short-term interest rates within an unpublished band. Ultimately, the force of a supply-side policy rests on the effect of interest rates upon building society and bank lending. Early empirical studies show, however, a poor relationship between the level of bank lending and interest rates (Hotson 1979), and experience has shown that, in practice, the effectiveness of this instrument is open to question,

> "One mechanism that might have been expected to operate is an influence running from interest rates - the cost of borrowing - to the demand for credit. In practice an important part of our monetary policy difficulties, running back for most of the post-war period, has been the evident weakness of this influence. The growth of bank (and building society) lending to the private sector has for many years been well in excess of that of national income and has seemed impervious even to very large upward movements in nominal interest rates and even at times has reacted perversely"
> (BEQB August 1987 p368)

One possible avenue of monetary control is the link which may exist between mortgage interest rates and consumers' expenditure. The elasticity of personal sector spending with respect to mortgage interest rates is ultimately an empirical matter. If, however, there is a strong link between personal sector expenditure and mortgage interest rates, this relationship may be amenable to control.

Given the increased importance and flexibility of mortgage interest rates after the abolition of the cartel, then this avenue of monetary control would be expected to have become more powerful.

Forcing up fluid interest rates on mortgage loans may effectively choke off consumer spending as mortgage holders faced increased repayments and cut back on expenditure plans. If this is the case, then this could be a powerful if perhaps politically unpalateable method of monetary control,

> "The level of mortgage interest rates is very much under the control of the authorities. The Bank of England, via its money market operations, determines short-term interest rates, and, by implication, the broad structure of rates in the economy. The interest rate weapon is a potent macro-economic tool which allows the authorities to exert powerful leverage over movements in prices and output generally. The housing and mortgage credit markets are key items in the transmission processes".
>
> (Turnbull, 1984, p6)

The possible importance of this transmission mechanism has been pointed out by Artis (1978),

> "Simply by reason of its relative scale, consumption rather than investment may well be the component of expenditure through which monetary policy has its greatest impact on aggregate demand. General considerations suggest three main ways in which

monetary factors might bear upon consumers' demand. Firstly, in several popular forms of the consumption function wealth has an important role and short-run fluctuations in the value of measured wealth are usually dominated by changes in stock and bond prices; secondly, changes in the rate of interest may exercise a general influence apart from their wealth effects upon the decision to save or consume; finally, credit rationing by financial institutions and its formal reinforcement by official controls also affect consumer spending".

(p293)

If there is a strong link between mortgage interest rates and the propensity to consume, then it is likely that the effects of financial innovation and financial change may have <u>increased</u> the interest elasticity of the consumption function. The liberalization of the mortgage market and the rapid increase in house prices in the 1980's would tend to suggest that real mortgage repayments in the 1980's are far higher than in the 1970's. It would then seem that an increase in general interest rates would have a relatively harsher impact on mortgage holders.

Liberalization of the mortgage market has led to the personal sector using a far higher proportion of disposable income to service debt than previously (Chapter Six). This rise in the debt-income ratio is likely to mean a greater number of households being affected by increases in mortgage interest rates. An increase in interest rates may have substantial effects on consumer spending as higher interest repayments force mortgage holders to cut back on expenditures. Indeed, there has recently been official speculation that such effects may have occurred,

"Liberalization has led to a weakening of the liquidity constraints which previously restricted households' choice and, although this will have had the effect of permitting consumers to move closer to their desired (life-cycle) levels of expenditure (since they may now find it easier to borrow through periods when income is temporarily low so maintaining a smoother consumption profile over time), at the same time the proportion of households that are likely to react to changes in interest rates will have risen".

(Dicks 1988 p2)

It is thus possible that mortgage liberalization, which importantly, gave rise to market-clearing mortgage rates (see Chapter Four) and higher house prices, may have increased the interest elasticity of consumption. Market-clearing mortgage rates in the 1980's are likely to mean that mortgage holders are hit harder during periods of rising interest rates as mortgage rates are far more market related than in the 1970's. Combined with the increase in the mortgage debt to income ratio in the 1980's, it is plausible that there may have been considerable increases in interest sensitivity of consumption.

7.3 Financial Innovation and the Effectiveness of Monetary Base Control

MBC operates through the monetary authorities controlling the size of the monetary base in accordance with a monetary target, and leaving interest rates to move freely in order to mop up any excess supply or demand for base money that the banks require. The demand for base money is determined by the banks' need for reserves to back their total liabilities. Interest rates are thus the equilibriating mechanism (Llewellyn et al 1982) under MBC, rather than the instrument of money control. [The argument is that the link between the money supply and the monetary base is more stable than the link between interest rates and the money supply.]

If a fall in reserves is brought about by the Bank of England the banks may reduce lending, bid for deposits and exchange them for reserves, borrow from the Bank, reduce any excess reserves, or reduce non-reserve assets. In order to maintain lending banks may bid for reserves if the demand for credit is greater than the banks can supply with a given volume of base money. This will tend to bid up interest rates on deposits and loans until the demand for credit has fallen in line with what the banks can supply with the restricted level of base money.

The effectiveness of MBC thus rests on the interest elasticity of the demand for credit. Given that the interest sensitivity of credit has tended to be relatively weak (Hotson 1979) and that there is no reason to suggest that this will change with financial innovation, then it can be argued that the technical capacity of MBC is unlikely to be altered. Indeed one of the benefits of MBC, it has been argued by some proponents, is that it is not likely to be adversely affected by financial innovation and credit liberalization. The monetary base certainly would be subject to the stock effects of financial innovation noted in Chapters Five and Six.

It is possible that MBC has become more effective as a result of financial innovation. The banks' endowment effect has tended to be eroded by the increasing proportion of accounts that bear interest, and purely on a profitability basis, it will be less attractive to bid for retail deposits in the face of excess demand for credit at given volumes of base money.

With the large proportion of zero interest balances that the banks previously enjoyed it would have been more profitable to bid for deposits and exchange them for reserves to maintain lending than when more balances bear interest. The marginal cost of retail funds has risen, and may to some extent deter banks from competing for deposits. It may become more attractive to reduce lending or borrow from the central bank.

7.4 Conclusion

It is widely acknowledged that portfolio controls placed on the banking sector are inequitable and cause distortions in the financial system. Section 7.1 briefly outlined some of the problems of using portfolio monetary controls, particularly in the form of disintermediation, as a counterpoint to the recognition that the manipulation of interest rates is the only feasible method of monetary control recognized by the monetary authorities.

Chapter Seven has concentrated on what are expected to be the continuing effects of financial innovation, credit liberalization and the abolition of the cartel on the effectiveness of monetary control.

For expository purposes, the manner in which monetary control is expected to work was divided into the demand side and supply side approaches in Section 7.1, although it is acknowledged there are objections to such a classification. With respect to the demand side approach, it is argued that as a result of money bearing a market related rate of interest, there is likely to be a reduced effect on the opportunity cost of holding money when the monetary authorities increase interest rates. Quite simply, interest rate differentials between money and non-money assets may remain relatively unchanged. It is hypothesized that an increase in general rates of interest is therefore unlikely to greatly induce money holders to switch into alternative (non-money) interest bearing assets. It is unlikely that operating from the demand side will have huge effects on the growth rates of the broad monetary aggregates (abstracting for the moment from supply side considerations) when general interest rates are raised, and hence there may be a reduction in the potency of monetary control.

Conversely, the abolition of the cartel may have <u>increased</u> the potency of monetary control. The greater flexibility of mortgage interest rates, and the increased importance of the price of mortgages after the abolition of the cartel may have increased the interest elasticity of expenditure. A plausible monetary control mechanism is the link which may exist between mortgage interest rates and consumers' expenditure. If there is a strong link between mortgage interest rates and consumer spending, then this relationship may be a fulcrum of control. If the monetary authorities increase interest rates, and the cost of mortgage loans rises, there may be a dual effect of both a reduction in new mortgage loans demanded, and a decrease in consumer spending as mortgage holders facing increased repayments are forced to cut back on expenditures. If such a mechanism works, then the effect of liberalization of the mortgage market which has increased the level of personal sector mortgage debt and more market-related mortgage rates after the abolition of the cartel may have increased the ability of the monetary authorities to affect consumer spending through an increase in general interest rates. Mortgage liberalization and the increase in house prices means that the size of real mortgage repayments are far higher in the 1980's than in the 1970's, and consequently the debt burden of an increase in interest rates should be far more harsh.

It was suggested that developments in the building society industry would not alter the technical capacity of monetary base control, but may in fact improve the effectiveness of this mode of operation. MBC would still work in the same manner, but would possibly be more effective as a result of financial innovation.

Notes

[1] 'Monetary base' here refers to that group of liabilities of the central bank over which they are believed to have control. It is assumed here that this includes notes and coins held by the banks, and bankers balances held at the Bank of England. See Goodhart 1986 pp203-204, for the relative merits of inclusion of various central bank liabilities in the base money definition. (see Foot et al (1979) Congdon (1980) and Lewis (1980)(a) for general critiques of MBC).

[2] The MBC debate is traditionally centred on the monetary system. In view of the noted similarity between banks and building societies, and a presumed wish of the authorities to bring building societies under the aegis of an MBC policy, certain technical changes would need to be made.

[3] The confusion in the Green Paper (1980) over control of the money base and control over interest rates is well documented (Friedman 1980, Miller 1981).

CHAPTER EIGHT

FINANCIAL INNOVATION, THE DEMAND FOR MONEY, THE DEMAND FOR CREDIT, AND THE CONSUMPTION FUNCTION

8.0 Introduction

Given the above hypotheses as to the possible effects of building society and bank intermediation activities on the efficacy of monetary control, in terms of both stock and more continuing effects, it is desirable to analyse previously published empirical evidence in this area, to determine if research has provided answers to the above contentions. It is important to point out that the following critique of the econometric research is not intended to be an exhaustive examination of the vast literature on demand for money functions, demand for credit functions and consumption functions. Such a task is an enormous undertaking, which has been more than adequately covered elsewhere, (Laidler (1985), Cuthbertson (1987)). Rather, particular econometric studies which impinge upon the hypotheses raised above will be examined.

The number of econometric studies that have examined the effects of financial innovation on the demand for money, the demand for credit, or the consumption function is extremely limited. Those studies that directly or indirectly consider the effects of financial change when modelling demand for money and credit functions are considered in Section 8.1, with particular reference to the above hypotheses. There have been a number of other (partly inter-related) broad areas of research into the demand for money, mainly aimed at attempting to explain the problem of instability, which are briefly reviewed. There is recognition in section 8.2 of the fact that different sectors in the economy may have specific demand functions for assets (money and near money) such that a disaggregated sectoral approach may be appropriate. Section 8.3 examines the evidence as to the effects of financial innovation and financial change upon the consumption function.

8.1 Financial innovation and the demand for money function.

Instability of the demand for money function is well documented[1]. Grice and Bennett (1981) categorise the empirical work on the demand for money function as "the years of hope" (1966-71), the "years of despair" (1972-78), and the period of "Hendrification" (post 1978). To this classification Taylor (1987) has added a fourth period, "the years of uncertainty" (1980 to date)[2].

Most of the above models of the demand for money function do not take account, or attempt to take account of the effects of financial innovation, despite a growing consensus that financial innovation may have an important role to play,

> "It is clear that the real world is more complicated than the models in question, and that in fact money-holding agents treat a rather wide variety of assets as alternatives to money in their portfolios. There is nothing surprising about this; indeed it would be startling had things turned out otherwise. However, it does mean that as the menu of assets available to money holders changes over time, we might expect their behaviour vis a vis money holding also to change as a result. This is a potentially important point when recent stability problems with the demand for money function are analysed".
>
> (Laidler, 1985 p133)

Moreover, official publications have tended to emphasize the rapid changes that have taken place in the financial institutional framework when explaining the recent difficulties of implementation of monetary controls. The view that has been consistently propounded suggests that the impact of increased competition between building societies and banks, and financial innovation by these institutions, may be a major determinant of the observed change in the relationship between the various monetary aggregates and nominal incomes as shown by the fall in the velocity of broad money, since 1980, (BEQB (June 1982), Sept.1983(a)), (Sept.1983(b)), (Dec. 1984), (March 1985).

The importance of using the correct own rate variable, and taking account of financial innovation is exemplified in Budd and Holly (1986). Their equation is affected by an inadequate proxy for the rate of interest on money. In particular, their function appears to have been inadequately specified as a result of exclusion of the rate of interest on high interest accounts. They estimate an equation for M3 over the period 1878-1970[3]. The function appears to be stable (according to the rather few test statistics reported), although when it is estimated up to 1984 it exhibits instability, largely, according to Budd and Holly, due to the competition and credit control reforms. They re-estimate their equation up to 1984, and include a dummy variable for 1972-74, and claim the resultant formulation is stable. It is noticeable, of course, that stability is dependent upon the elimination of the CCC period by the inclusion of a dummy variable.

Their claim of stability is rather undermined, however, by the inability of their equation to predict M3 (they do not apply any specific forecast tests, such as the Hendry test). Actual growth in M3 in 1983 and 1984 is about two per cent <u>slower</u> than their model predicts, whilst actual monetary growth in 1985 and 1986 is about 2½ - 3½ per cent <u>faster</u> than predicted. They argue that the increase in <u>high interest</u>

accounts may be responsible for the inability of their equations to forecast accurately monetary growth. It is unclear how Budd and Holly can claim that they have identified a stable demand for money function whilst at the same time noting that their equation cannot explain monetary growth because of

> "changes in banking practice; such as the introduction of high interest accounts".
>
> (p18)

A rise in the average rate of interest paid on building society and bank retail deposits is a rise in the 'own' rate on money.

The affect on the demand for money equation of a higher own rate on money depends however on whether or not the own rate was previously included in the function. If it is included in the empirical demand function, a higher own rate may merely be represented as a change in the own rate parameter of the demand for money function and as such should not affect parameter constancy (Johnston 1984). This is dependent, of course, on applied researchers' recognising that the own rate has in fact increased and subsequently including the higher rates in the function (see Chapter Nine). If the own rate was not previously included, the demand function will appear to be unstable. The equation should then be respecified to take account of the (higher) own rate of the demand for money.

It is argued here that for a stable demand for money function to be identified, and for the purposes of gaining knowledge as to past monetary developments, such institutional behaviour should be explicitly modelled. A further factor affecting their equation is the changing competitive positions of building societies and banks. It is noticeable that when their equation over-predicts the demand for M3 in 1983 and 1984, the building societies were successful in attracting retail deposits relative to the retail banks. Thus PSL2 would have grown at the expense of M3 (see Chapter Five). On the other hand, over 1985-86, when the retail banks competed aggressively for deposits, the Budd-Holly model underpredicts. Budd-Holly's equation may have been unable to model this behaviour because of the inadequate variable used to measure the opportunity cost of money. The use of the differential between the rate on money and a long rate as the proxy for the opportunity cost of money may have understated the opportunity cost in 1983-84 whilst overstating it in 1985-86. It is reasonable to suggest that the relevant opportunity cost variable for M3 would be the differential between the return on (bank) money, and that on a near-money liquid asset, in this case the rate on building society shares and deposits, in view of the 'switching' that occurred during this period (see Chapter five). It is possible that if this opportunity cost variable was used, and allowance was made for high-interest accounts, a stable demand for M3 may be found.

Taylor (1987) estimates a demand function for M3 over the period 1964/2 to 1985/4, and attempts to model some of the affects of financial innovation. A proxy is used to model the specific innovation of high interest cheque accounts at banks. This is measured as the maximum of the seven day deposit rate and the rate available on high interest chequing accounts. Furthermore, the three-month Treasury Bill rate was used in an attempt to capture the effects of switching out of M3 assets into short-term negotiable assets. The final equation is stable, and the out of sample forecasts are good. Moreover, there is no evidence of a structural shift after the introduction of CCC. The own rate on money is significant, leading to the conclusion that the effects of financial innovation can be captured through the differential between high interest cheque accounts and the Treasury Bill rate.

Taylor emphasises the importance of the own rate variable and hence financial innovation by dropping the term from the equation and re-estimating the model over the same time period. The equation breaks down, showing, according to Taylor, the necessity of including financial innovation variables in the equation.

This test of the importance of financial innovation in an equation for the demand for money is not, however, particularly stringent. If <u>any</u> significant variable in an equation is omitted, it is likely that the equation will suffer in terms of insignificant parameters and test statistics. In the case of financial innovation, a more reliable test would be to replace the own rate which contains interest on the new, innovatory, high interest access accounts with a rate of interest that has been unaffected by such financial innovation. A useful test would be to substitute the own rate for the net rate on ordinary shares at building societies. This would provide a far more stringent test of the effect of financial innovation, on the demand for M3. Of course, it may be argued that the rate of interest paid on ordinary shares has, in general, been higher in the 1980's due to increased competition with the retail banks, and that liquidity of these accounts has increased, both of which represent a form of financial innovation. It is important to know, however, the extent to which the specific innovation of high interest instant access accounts is responsible for the rapid growth in M3.

Johnson (1985) attempts an interesting quantification of the effects of financial innovation on the personal sector's demand for liquidity aggregates (both money and credit). These liquidity aggregates do not correspond to any of the official monetary aggregates as sectoral holdings are not available, and hence it may be argued that this research is of limited value for direct policy purposes. It is, however, of use in terms of exploration of the effects of financial innovation on demand for money and credit functions. The author would argue, however, that knowledge of financial innovation upon official published money supply series is of greater relevance than the effects upon some 'hybrid' money supply data. However, Johnston's liquidity aggregates are defined as:-

z_1 = personal sector holdings of currency, bank deposits, building society deposits, all National Savings instruments, 'other' money market instruments and C.D's.

z_2 = z_1 less National Savings instruments and other money market instruments and C.D's.

Both financial wealth and income are included in the equation [4] on the grounds that the demand for liquid assets will be dependent upon the transactions and precautionary characteristics of liquid assets (see Chapter Two). Of course, if a narrow, non-interest bearing money aggregate were being estimated, only income is usually included, as a measure of transactions demand. The own rate on money is constructed as the average rate of return on the various assets included in the aggregate. The average rate on building society deposits was also tested as a measure of the own rate. Competing interest rates included are the three month inter-bank rate and the gross redemption yield on twenty year gilts.

The results for holdings of liquid assets are, however, disappointing. The equations pass the out-of-sample Hendry forecast test and Chow Test for stability over the period 1980/1 to 1982/4, but there is evidence of forecast instability when the forecast is extended to 1983. Johnston suggests that instability in the equations may be the result of factors not included in the function. He suggests that the rise in the stock market may be a factor, although including the FT all share index made no difference. There are a number of points which may be relevant to instability in Johnston's equations, given the arguments of Chapters Four and Five. In particular, Johnston does not explicitly allow for the effects of inflation on the demand for liquid assets. This may be the reason for the continuous underprediction in the out of sample dynamic simulation over the period 1980/1 - 1983/4. Furthermore, the introduction of high interest chequing accounts and high-interest easy access accounts, may have increased the demand for liquid assets, yet Johnston's equations do not contain a proxy for such innovative financial assets. Johnston does however provide an interesting dynamic simulation in an attempt to quantify the effects of what he terms "financial liberalization" (which may be taken to mean the increased competitive pressures in the market for retail deposits) over the period 1980-1983. The method of simulation is examined further in Chapters Nine and Ten. His results suggest that financial liberalization may have added about 6% to personal sector holdings of liquid assets over the period, about 1½% per annum . Johnston argues that the adjustment process due to liberalization may have come to an end by 1984.

Johnston also attempts to estimate a function for total debt of the personal sector, which includes bank lending, building society lending, other lending for house purchase, trade credit, hire-purchase and instalment debt[5]. The function is a reduced form model containing elements of the demand and supply of debt to the personal sector. It is found that total personal sector real debt is positively related to personal sector net real financial wealth, house prices, and the return on building society deposits, and negatively related to the mortgage rate, the general level of short interest rates, real personal disposable income and inflation. There is also a variable for excess mortgage demand, which has a significant negative impact on persons holdings of total debt. The equation appears to be relatively stable. The variable for excess mortgage demand (XSMD) is used to provide an estimate of financial liberalisation on the personal sector's holdings of total financial debt. The excess mortgage demand variable is from Meen (1983), which shows continuous excess mortgage demand up to and the emergence of excess mortgage supply after, the removal of the corset. Johnston makes the assumption that the shift in the supply of mortgages is the result of liberalisation in the personal sector financial market. Estimates are then made of the effect of removing the corset by running two simulations for 1980 Q3 - 1983 Q4 of the debt equation. One simulation has XSMD set at the level estimated by Meen, and one simulation with XSMD set at a pre-corset removal level which was taken to be the average level of excess mortgage demand estimated by Meen over the period 1978-1980.

The simulations suggest that financial liberalisation (or removal of the corset) may have added an extra twenty per cent to the stock of personal sector debt by the end of 1983. Given that the percentage difference between the simulations remains relatively stable after 1982 Q4 suggests to Johnston that the adjustment as a result of financial liberalisation may have finished by mid 1982. However, these results must be taken with extreme caution. Although much of Johnston's work in this paper is innovative and accurate, the conclusions he draws are in fact considerably weakened by the use of Meen's early estimate of excess mortgage demand. Meen has since (1985) amended and corrected his data series, which will considerably alter Johnston's results and conclusions, based as they are on an inadequate proxy or measure for mortgage rationing. The two data series, Meen (1983) and Meen (1985) are included in Appendix 8.A for comparison.

Although not aimed at investigating financial innovation, the work of Grice and Bennett (1981, 1984) is of interest given the hypothesis stated earlier that through financial innovation wealth has become an increasingly important variable in the demand for money function.

Grice and Bennett examine the possible importance of wealth in the demand for money function for M3[6]. They estimate an equation for the non-bank private sector over the period 1963-78, utilising gross financial wealth, a transactions variable, and an own rate on money consisting of the rate on money minus the return on gilts. Grice and Bennett find that wealth is a major determinant of money demand, more important than an income/transactions variable. Their estimated equation appears relatively stable, although concern over the lengths of the adjustment process leads to a Monte-Carlo test of the function[7]. In particular, Grice and Bennett conclude that the wealth data may have been collated with a certain degree of measurement error, possibly resulting in biased results[8]. Indeed, subsequent official data series have shown that Grice and Bennett's wealth data were in fact measured with a considerable degree of error (see Appendix 8.B where the two series are shown for comparison). The conclusion must be that the equation is not entirely satisfactory. Given this measurement error, and the pre-1980 period of estimate (1963-1978), further research is needed to establish whether or not wealth has become a more important variable in the demand for money function in the face of the breakdown in the money-income relationship, and the hypothesized greater use of money as an investment asset in the non-bank private sector's overall portfolio.

Hall et al (1989) use cointegration to estimate equations for the demand for M3 and M4. The M4 equation includes income, inflation, wealth, change in the F.T. ordinary share index, and a dummy for competition and credit control [9]. The F.T. ordinary share index was used to reflect changes in liquid asset holdings after the fall in the stock market index in the early 1970s.

Somewhat surprisingly, Hall et al find no interest rate effects in either the demand for M3 or M4. They suggest that this may be due to difficulties in accurately measuring interest rates when financial innovations are taking place. It should also be noted that both equations have an exceptionally low R^2 (0.3 for M4 and 0.32 for M3) which must cast some doubt on the specification.

8.2 The Sectoral Approach

The different rates of growth of holdings of M3 by other financial institutions (OFI's), industrial and commercial companies (ICC's) and the personal sector identified in Chapter Five emphasizes the fact that it is possible that demand for money equations may be unable to forecast accurately if they have to take into account diverse behaviour patterns by different agents in the economy. It is perhaps more useful to carry out research on sectoral demand for money equations.

The sectoral approach provides plausible long-run equations for Weale[10], who analyses the demand for a variety of assets by the personal sector over the period 1967/2 to 1981/3, in terms of the allocation of short-term assets among money and near money. Interestingly it is found that,

> "the results do not suggest a sharp distinction, in terms of substitution properties, between money and near money (building society and local authority deposits) this suggests that the usual emphasis on monetary aggregates may be unhelpful, and also indicates that an analysis of the demand for money which nets out the building societies by aggregating the non-bank private sector is unlikely to yield satisfactory results".
> (1986 p158)

Currie and Kennally (1985) model liquid assets and liabilities by disaggregating those that act as buffer stocks and those that do not on the assumption that some assets have a low cost of adjustment for some agents whilst a high cost of adjustment for others (i.e. the same assets may be more or less liquid to different holders)[11],

> "we believe that the difficulty in identifying a stable demand function for the U.K. is due to the problems of going from a particular monetary aggregate to the functional liquidity of a given agent. In particular

> aggregates that we would wish to include in a measure of liquidity are likely to vary from sector to sector and from time to time. For this reason a sectoral approach seems to us to be the correct one, not necessarily modelling the same aggregate in all sectors".
>
> (p19)

The estimated buffer stock consists of building society deposits and time and sight bank deposits of the personal sector over the period 1968/1 to 1983/1. They find that,

> "by including building society deposits in our liquid aggregate, we believe we have identified an aggregate which, although varying internally in its composition over time, gives a measure of liquidity for which stable aggregate behavioural parameters can be identified".
>
> (p19)

Of special relevance is the finding that the liquidity demand equation is stable across the period 1971-74 when most demand equations show instability. There are however, problems in the short-run dynamic behaviour of the equation (long-run elasticities exceed short-run elasticities) which tends to cast doubt upon the buffer stock nature of the model (a not entirely unexpected result, given the analysis of the buffer stock model with regard to financial innovation in Chapter Seven).

8.3 Interest elasticity of Expenditure

The perceived wisdom of the 1970's, according to a survey of the consumption function by Ferber (1973) was that interest rate effects on consumption were likely to be relatively weak. In the 1980's however, Cuthbertson (1980) and Davis (1984) have found significant interest rate effects on durables expenditure. The most recent research into the interest elasticity of consumer's expenditure is that of Dicks (1988). Dicks estimates a durables consumption function which consists of terms representing real household disposable income, the clearing banks base rate, the minimum deposit rate on durables, the flow of mortgage lending, and personal sector real liquid assets [12]. The model passes a variety of tests, and has a good forecast performance. The absolute interest elasticity of -0.84 1963 quarter three to 1985 quarter four was compared with two sub-periods derived from splitting the sample in 1974.

The interest rate is positive in the sample ending in the early 1970's, but negative later. The interest rate on durables has risen closer to zero over time, and that on real net liquid assets has fallen. Dicks interprets these findings as suggesting that interest rates have become a more important factor in determining when households buy durables.

Interestingly, Dicks found that splitting lending for house purchase between that used for housing investment, and that for net cash withdrawal, and using them as variables in the equation, did not lead to significant coefficients. Either equity withdrawal has not had a large effect on consumption (as suggested in Chapter Six) or the simple proxies used for equity withdrawal are not adequate for modelling how much lending is leaking into consumption.

Dicks also investigated the interest elasticity of non-durables consumption [13]. The final equation consists of terms representing the lagged dependent variable (real consumer's expenditure on non-durable goods and services), real household disposable income, real personal sector net financial wealth, and the clearing banks base rate.

Again, interest elasticity effects are examined by splitting the sample, this time at the end of 1974, and re-estimating the model for the sub-periods. In the first period, the interest rate term was small and insignificant. Conversely, the interest rate term in the second sub-period was significant and about as twice as large as that estimated for the sample as a whole. Dicks concludes that,

> "Clearly this result implies that further work is needed if we are to understand why interest rate effects appear to be becoming more important, particularly given that we found much the same story was true of durables expenditure. One possible reason, suggested in Dicks (1987), is that greater competition in the markets for personal sector saving and borrowing has resulted in reduction in liquidity constraints, which may be correlated with changes in interest rates".
>
> (Dicks 1988 p26)

Despite this, proxies for mortgage rationing, and net cash withdrawal were not found to be significant in Dick's work, nor were the house price earnings ratio, or the flow of real mortgage lending.

Dick's work suggests that the effect of monetary control through the interest elasticity of the consumption function has increased over time, with the interest-elasticity of consumption rising. It is by no means clear, however, whether this is the direct result of financial innovation, market-clearing mortgage rates, and increasing house prices. A further avenue of research not yet explored to the author's knowledge would be to analyse the interest elasticity of consumption according to the mortgage interest rate. As noted above, Dicks used the clearing banks base rate for interest rate effects, but this is not necessarily the same as utilising mortgage rates. Base rates change at different times to mortgage rates, particularly given the widespread practice of changing interest rates for existing mortgage borrowers only once or twice yearly.

If the interest-elasticity of consumption with respect to mortgage interest rates has also risen, there would be a greater case for maintaining that the ending of the cartel, market-clearing mortgage rates, and higher mortgage to income ratios have been responsible for greater interest-sensitivity of consumption, and hence more effective monetary control.

8.4 Conclusion

The problems noted by Johnston, Budd and Holly, and Grice and Bennett in terms of instability of the demand for broad money may be the result of taking inadequate account of the effects of financial innovation on the own rate on money, as Taylor's work shows. The hypothesis that wealth has become a more important variable in the demand for money as a result of money becoming an increasingly attractive form of holding wealth has not been fully corroborated by past research, although the work of Grice and Bennett may provide a useful base to build upon.

None of the published work on the demand for money or consumers' expenditure examines the interest-elasticity of these functions over time. Given the importance of these elasticities for the purposes of monetary control, and the hypothesized effects on these elasticities, this appears to be a fruitful area for research (see Chapters Nine and Ten).

Dicks has provided evidence as to the effects of financial innovation upon the interest-elasticity of consumers' expenditure, but does not examine whether the ending of the cartel and more fluid mortgage interest rates have increased the interest elasticity of expenditure.Given that this is likely to increase the ability of the monetary authorities to control the growth of the money supply, this again seems a useful avenue for further research (see Chapter Ten).

Notes

[1] See Artis and Lewis (1974, 1976), Hacche (1974), Hendry and Mizon (1978), Coghlan (1978), Hendry (1979), Grice and Bennett (1981, 1984), Judd and Scadding (1982), Laidler (1985), Cutherbertson (1987).

[2] See Boughton (1979, 1981(a)) for a survey of the econometric research into the demand for money in OECD countries.

[3] Budd and Holly's final equation takes the form:

$$\begin{aligned}\Delta\left(\frac{M}{p}\right)_t = & \underset{(1.49)}{-0.0162} + \underset{(2.81)}{0.1806}\ \Delta\left(\frac{M}{p}\right)_{t-1} \\ & - \underset{(5.30)}{0.1166}\left(\frac{M}{PY}\right)_{t-2} - \underset{(3.90)}{0.0212}\ (rs)_t \\ & - \underset{(4.34)}{0.0861}\ (rL - rL_{t-2}) + \underset{(1.59)}{0.0286}\ (rbd - rs)_t \\ & - \underset{(11.25)}{0.6181}\ \Delta(P)_t + \underset{(4.84)}{0.3123}\ \Delta(P_t)_{-1} \\ & + \text{dummies}\end{aligned}$$

$R^2 = 0.768$ see = 2.22% LM(3) = 1.67

M = sterling M3

P = Price level

y = Real income

rs = Short interest rate

rL = Long interest rate

rbd = rate of interest on bank deposits.

Dummy variables - four were included, two for the two world wars, one for a change in data source in 1967, and for the period 1921 to 1955, when according to Friedman and Schwartz there was a shift in liquidity preference (although this last dummy variable was dropped from the final equation).

The general-to specify methodology was used (see Chapter Nine).

LM(3) is a Lagrange Multiplier Test for autocorrelation of the residuals.

All of the variables are in logarithmic form (including the interest rates).

Figures in brackets at t statistics.

[4] Johnston's final equation for total personal sector holdings of liquid assets was:-

$$\left(\frac{Z1}{P}\right) = \underset{(4.18)}{-0.48} \underset{(3.31)}{-0.041}\left(\frac{Z1/P_{t-1}}{TW/P_{t-4}}\right) + \underset{(14.21)}{0.81}\left(\frac{WAQ}{P}\right)$$

$$+\underset{(4.36)}{0.079}\left(\frac{y}{P}\right) + \underset{(2.61)}{0.65}\left(r_{z1}\right)_{t-2} - \underset{(2.03)}{0.46}\left(r_{z1}\right)_{t-3}$$

$$-\underset{(2.32)}{0.22}\left(r_L+ECG\right)_{t-1} - \underset{(6.59)}{0.38} r_s\,(1-TAX)$$

$R^2 = 0.91$ DW $= 2.17$ SEE $= 0.49\%$

LM(1) = 0.5 LM(4) = 6.1

Hendry = 24.1 Chow = 4.8

Estimated period: 1967Q4 - 1982Q4.

where:

Z1 = as above

WAQ/P = Personal sector real gross acquisitions of financial wealth.

P = consumer expenditure deflator

y = Personal disposable income

ECG = estimate of expected capital gains.

r_{z1} = average return on the aggregate z_1

r_s = general measure of market interest rates, the three month inter-bank rate.

r_L = a long term interest rate, the gross redemption yield on 20 year gilts.

The general to specific methodology was used.

All variables (except interest rates) are in logarithmic form.

[5] Johnston's model of total debt of the personal sector takes the form:

$$\Delta\left(\frac{TD}{P}\right) = \underset{(1.73)}{0.78} - \underset{(3.92)}{0.27}\left(\frac{TD}{P}\right)_{t-1} - \underset{(1.89)}{0.22}\left(\frac{TD}{P}\right)_{t-3}$$

$$+ \underset{(5.28)}{0.33}\left(\frac{TD}{P}\right)_{t-4} + \underset{(2.26)}{0.01}\left(r_{bsa}\right)_{t-1} - 0.008\left(r_{bsa}\right)_{t-4}$$

$$- \underset{(2.28)}{0.005}\, r_{s(1-TAX)t-4} - \underset{(3.74)}{0.015}\, r_{m(1-TAX)}$$

$$- \underset{(5.72)}{0.48}\, \frac{Y}{P}_{t-2} - \underset{(2.28)}{0.48}\,\Delta(P)_{t-3} + \underset{(5.62)}{0.14}\,(Ph)_{t-1}$$

$$- \underset{(3.87)}{0.0013}\,(XSMD) - \underset{(3.95)}{0.0013}\,(XSMD)_{t-1} - \underset{(0.65)}{0.006}\,(DC1)$$

$$- \underset{(2.25)}{0.017}\,(DC2) - \underset{(0.12)}{0.001}\,(DC3) + \underset{(7.13)}{0.242}\left(\frac{NW}{P}\right)$$

$$+ \underset{(4.44)}{0.041}\,(DCCC)$$

R^2 = 0.82 DW = 1.82 SEE = 1.03%

LM(1) = 0.6 LM(4) = 18.1 Hendry = 8.5

The corset dummy variables are:-

DC1:- 1 1974Q1-1975Q1 and zero otherwise

DC2:- 1 1976Q4-1977Q3 and zero otherwise

DC3:- 1 1978Q3-1980Q2 and zero otherwise

DCCC is a dummy for competition and credit control taking the value 1 after 1971Q3.

TD = personal sector financial debt

P = consumer expenditure deflator

Y = Personal disposable income

Ph = Index of house -prices at completion stage.

XSMD= measure of excess mortgage demand

NW = net financial wealth

r_{bsa}= quarterly average building society deposit rate (net of basic rate tax)

r_s = quarterly average three month inter-bank rate.

All variables except interest rates are in logarithmic form.

[6] The wealth series is constructed from national balance sheet data (see Reid 1978 and Pettigrew 1980).

[7] Following Grether and Maddala (1973).

[8] G/B's final function is of the form:-

$$\begin{aligned}
\left(\frac{M}{P}\right) = & -1.2445 + \underset{(7.60)}{0.772}\Delta\left(\frac{GW}{P}\right) - \underset{(2.09)}{0.276}\left(\frac{GW}{P}\right)_{t-3} \\
& + \underset{(4.07)}{0.470}\left(\frac{GW}{P}\right)_{t-4} + \underset{(4.36)}{0.742}\left(1 + \frac{REV}{GW}\right)_{t-2} \\
& + \underset{(2.01)}{0.184}\left(1 + \frac{REV}{GW}\right)_{t-5} + \underset{(5.93)}{0.369}\left(\frac{TFE}{P}\right) \\
& - \underset{(3.49)}{0.181}\left(\frac{TFE}{P}\right)_{t-3} - \underset{(2.88)}{0.145}\left(\frac{TFE}{P}\right)_{t-5} \\
& - \underset{(2.87)}{0.00859}\ {}_2\,(RM) + \underset{(3.48)}{0.000734}\,(RMRGEG)
\end{aligned}$$

$$- \underset{(2.87)}{0.00859}\, \Delta_2 \,(RM) + \underset{(3.48)}{0.000734}\,(RMRGEG)$$

$$- \underset{(2.42)}{0.000406}\,(RMRGEG)_{t-1} + \underset{(1.93)}{0.000212}(RMRGEG)_{t-5}$$

$$+ \underset{(3.00)}{0.0183}(CCCDUM) + \underset{(5.45)}{0.0395}(CRISIS)$$

$$+ \sum_{i=1}^{3} D_{(i)} + \underset{(17.54)}{0.970}\left(\frac{M}{P}\right)_{t-1} + \underset{(4.10)}{0.493}\left(\frac{M}{P}\right)_{t-3}$$

$$- \underset{(5.82)}{0.929}\left(\frac{M}{P}\right)_{t-4} + \underset{(3.60)}{0.330}\left(\frac{M}{P}\right)_{t-5}$$

where:-

D_1 = -0.0458 (6.95)

D_2 = -0.0273 (5.26)

D_3 = -0.0250 (3.74)

R^2 = 0.9971 SEE = 0.598%

M = M3 (Non bank private sector)

GW = Non bank private sector gross financial wealth

REV = cumulated revaluations

TFE = Total final expenditure at current prices

P = Price index for TFE (1975 = 1.00)

RM = Post tax rate of return to M3

RMRGEG = Post tax rate of return to gilts including expected capital gains.

All variables except interest rates are in logarithmic form.

The general-to-specific methodology was used.

[9] Their cointegrating equations take the form:-

$$\left(\frac{M}{PY}\right) = -0.71\,\Delta^4 P + 0.72\left(\frac{W}{PY}\right) - 0.2\,SND + 0.1\,DCCC$$

where:-

P = log of the GDP deflator

Y = log of real GDP

W = log of total financial wealth of the personal sector

ND = min (Δ log of F.T. share index)

SND $\sum_{i=0}^{7}$ ND (t-i)

DCCC = 0 prior to 1971 Q4 and 1 thereafter

The final equation was:

$$\underset{}{\Delta(M4)} = \underset{(4.8)}{0.016} + \underset{(5.2)}{0.512}\,\Delta(M4)_{t-1} - \underset{(2.4)}{0.15}\,RES_{t-1}$$

RES = Residuals from the levels regression

[10] Weale's estimated equation is:-

$$S_{it} = \sum_{j=3}^{6} y_{ij} \log P_j + \beta_i \left(\log W_t/P_t^{*} - \log e_t\right)$$

$$+ \sum_{j=1}^{5} V_{ij}\, S_{jt-1} + X_{i1}\varepsilon 1 + X_{i2}\varepsilon 2 + X_{i3}\varepsilon 3 + \alpha i$$

where:-

S_{it} = share of asset i

S_{jt-1} = holding of asset j in previous period

W_t = total short-term asset holdings at end of period t

P_j = price of asset j

P_t^* = asset price index

e_t = expenditure in period t

$\varepsilon 1, \varepsilon 2, \varepsilon 3$ = seasonal dummies.

The equation is estimated by 3SLS for the period 1967 Q2 - 1981 Q3.

The assets tested are:- Notes and coin, bank sight deposits, bank time deposits, savings bank deposits, building society deposits, and local authority deposits.

[11] Currie and Kennally's final equation takes the form:-

$$\begin{aligned}
\triangle(QD) = & \underset{(5.7)}{-2.62} + \underset{(11.1)}{0.917}\,\triangle(QW)_t - \underset{(3.3)}{0.774}\,\triangle(QW)_{t-1} \\
& \underset{(3.6)}{-0.893}\,\triangle(RPI)_{t-1} + \underset{(2.9)}{0.121}\,\triangle(QCE)_{t-1} \\
& \underset{(5.6)}{+0.250}\,\triangle(QCE)_{t-2} + \underset{(4.6)}{0.226}\,\triangle(QCE)_{t-3} \\
& \underset{(1.1)}{+0.486}\,(ROWN)_{t-2} - \underset{(4.0)}{0.152}\,(QD)_{t-2} \\
& \underset{(4.8)}{+0.159}\,(QW)_{t-4} + \underset{(4.1)}{0.236}\,(QCE)_{t-4} \underset{(6.0)}{-0.029}(SD1) \\
& \underset{(3.0)}{+0.001}\,(TIM)
\end{aligned}$$

$R^2 = 0.95$

SEE = 0.59% LM(4) = 5.3

XSQ = 16.2

All variables except interest rates are in logarithms.

The general-to-specific methodology was used where:-

QD = sum of building society deposits and sight and time bank deposits of the personal sector, dividend by the consumers expenditure deflator.

QW = Permanent wealth of the personal sector (by consumers expenditure deflator).

QCE = a measure of transactions expenditure (by consumers expenditure deflator).

ROWN = weighted average own rate of interest on liquid assets minus the rate of return on a competing non-liquid financial asset (2½% consols).

SD1 = seasonal dummy variable.

RPI = Inflation.

TIM = A time trend variable.

LM(4)= Lagrange Multiplier test for serial correlation.

XSQ = Eight period forecast test

[12] Dicks durables consumption function takes the form:

$$
\begin{aligned}
(CD) = \; & \underset{(6.8)}{1.074}\,(YDLH) - \underset{(5.0)}{0.656}\,(RR) \\
& - \underset{(5.3)}{0.005}\,(RMD)_{t-1} + \underset{(3.7)}{0.125}\left(\frac{ML}{PC}\right)_{t-1} \\
& + \underset{(2.4)}{0.206}\left(\frac{NLAJ}{PC}\right)_{t-1} - \text{constant} \\
& + \text{dummies}
\end{aligned}
$$

$R^2 = 0.988$

Numbers in brackets are t values. All variables are in logs. Estimation Period 1963 Q3
-1985 Q4

YDLH = Real Household Disposable Income 1980 prices.

RR = (1 + Clearing banks base rate) Minus (PC_{t-1} - PC_{t-5})

PC = Consumers expenditure deflator 1980 = 1

RMD = Effective minimum deposit rate on durables.

ML = Flow of mortgage loans (nominal)

NLAJ = Personal Sector net liquid assets (nominal)

[13] Dicks non-durables - consumption function takes the form:

$$
\begin{aligned}
(CND) = {} & \underset{(6.7)}{0.534}\,(CND)_{t-1} + \underset{(4.7)}{0.340}\,(CND)_{t-2} \\
& + \underset{(3.0)}{0.116}\,\Delta(YDLH) + \underset{(6.4)}{0.196}\,\Delta(YDLH)_{t-1} \\
& + \underset{(-)}{0.119}\,(YDLH) + \underset{(2.8)}{0.008}\left(\frac{RNFWJ}{YDLH}\right)_{t-1} \\
& - \underset{(2.7)}{0.0614}\,(RR)_{t-1} + \text{constant} \\
& + \text{dummies}
\end{aligned}
$$

Estimation Period 1967 Q4
-1985 Q2

$R^2 = 0.997$

where:-

CND = Real consumers expenditure on goods and services.

RNFWJ = $\frac{NFWJ}{PC}$

NFWJ = Personal sector net financial wealth (nominal).

PC = Consumers expenditure deflator. 1980 = 1.

APPENDIX 8A.

1967	1	34.56	1974	1	30.05	1981	1	-5.1
	2	27.89		2	33.15		2	-9.95
	3	30.51		3	27.28		3	-0.91
	4	24.18		4	26.66		4	-5.62
1968	1	20.56	1975	1	21.79	1982	1	5.55
	2	25.33		3	15.52		2	-5.82
	3	33.69		3	8.91		3	-1.04
	4	39.40		4	6.46		4	0.52
19569	1	37.97	1976	1	5.880	1983	1	0.51
	2	29.79		2	2.160		2	-0.62
	3	34.30		3	5.40		3	2.09
	4	36.40		4	3.12		4	2.90
1970	1	32.950	1977	1	10.01	1984	1	
	2	26.350		2	9.16			
	3	28.790		3	4.60			
	4	27.790		4	12.86			
1971	1	23.04	1978	1	13.28			
	2	16.65		2	10.48			
	3	21.89		3	18.12			
	4	23.39		4	24.49			
1972	1	20.50	1979	1	10.84			
	2	20.57		2	17.01			
	3	28.31		3	14.41			
	4	33.03		4	18.79			
1973	1	28.12	1980	1	8.16			
	2	19.26		2	3.76			
	3	32.03		3	2.72			
	4	26.73		4	-7.18			

Mortgage Rationing (MRAT) Meen 1983

APPENDIX 8A (cont'd)

1963	1	4.76	1970	1	3.37	1977	1	0.98
	2	3.75		2	2.71		2	0.90
	3	4.05		3	2.81		3	0.47
	4	3.45		4	2.69		4	1.28
1964	1	3.52	1971	1	2.28	1978	1	1.40
	2	3.16		2	1.68		2	1.18
	3	3.84		3	2.15		3	1.78
	4	4.19		4	2.29		4	2.40
1965	1	3.82	1972	1	2.22	1979	1	1.21
	2	4.83		2	2.24		2	0.82
	3	5.09		3	2.81		3	1.61
	4	3.84		4	3.24		4	3.03
1966	1	3.71	1973	1	2.85	1980	1	0.93
	2	2.23		2	2.11		2	0.49
	3	2.49		3	3.19		3	0.22
	4	4.14		4	2.50		4	-0.78
1967	1	3.46	1974	1	2.85	1981	1	-0.43
	2	2.79		2	3.24		2	-0.90
	3	3.03		3	2.68		3	-0.17
	4	2.40		4	2.18		4	-0.76
1968	1	2.05	1975	1	2.21	1982	1	0.28
	2	2.55		2	1.93		2	-0.75
	3	3.35		3	0.91		3	-0.50
	4	3.87		4	0.58		4	-0.67
1969	1	3.82	1976	1	0.46	1983	1	-0.40
	2	3.02		2	0.22		2	-0.10
	3	3.40		3	0.53		3	0.16
	4	3.67		4	0.30		4	0.35
						1984	1	-0.61
							2	-0.89

MORTGAGE RATIONING (MRAT) (%) Meen 1985

APPENDIX 8B

1967	4	48163	1974	1	79315
1968	1	48455		2	81199
	2	49032		3	82653
	3	50138		4	83554
	4	50880	1975	1	86281
1969	1	50161		2	88422
	2	50111		3	91111
	3	50481		4	93946
	4	51744	1976	1	97468
1970	1	52059		2	101406
	2	52621		3	105703
	3	53473		4	109596
	4	54296	1977	1	114405
1971	1	55897		2	116482
	2	56916		3	122133
	3	58756		4	126083
	4	61387	1978	1	128731
1972	1	62766		2	132521
	2	66506		3	137045
	3	68032		4	141576
	4	71133			
1973	1	72439			
	2	74909			
	3	76665			
	4	79565			

GRICE AND BENNETT'S GROSS FINANCIAL WEALTH FIGURES

1967	4	53142	1974	1	87665
1968	1	53385		2	89967
	2	53903		3	91449
	3	54884		4	92824
	4	56161	1975	1	98004
1969	1	55989		2	100301
	2	56144		3	104749
	3	56527		4	109480
	4	57590	1976	1	114390
1970	1	57166		2	118504
	2	58006		3	121095
	3	58578		4	126859
	4	59727	1977	1	130267
1971	1	61636		2	133494
	2	63098		3	142356
	3	65897		4	146732
	4	68845	1978	1	146678
1972	1	70827		2	151322
	2	74017		3	155921
	3	76270		4	159877
	4	79775			
1973	1	79833			
	2	82504			
	3	84446			
	4	87469			

UPDATED GROSS FINANCIAL WEALTH
(FINANCIAL STATISTICS, VARIOUS ISSUES, TABLE 14.4)

CHAPTER NINE

ECONOMETRIC EVALUATION

9.0 Introduction

Few studies of the demand for money function have taken into account, or attempted to take into account the effects of financial innovation, as the scarcity of empirical work surveyed in Chapter Eight showed, despite the growing consensus that financial innovation may have an important role to play,

> "It is clear that the real world is more complicated than the models in question, and that in fact money-holding agents treat a rather wide variety of assets as alternatives to money in their portfolios. There is nothing surprising about this; indeed it would be starting had things turned out otherwise. However, it does mean that as the menu of assets available to money holders changes over time, we might expect their behaviour vis-a-vis money holding also to change as a result. This is a potentially important point when recent stability problems with the demand for money function are analysed".
>
> (Laidler 1985 p133)

Moreover, to the author's knowledge, no published study has examined the effects of financial innovation on monetary control within a framework of analysis of the specification and estimation of a demand for money function.

Attempts are made in this Chapter to econometrically evaluate the hypotheses as set out earlier.

Given the analysis of Chapter Five as to the changing definition of money as a result of building society innovations, the monetary authorities own comments as to the increasing convergence of the deposit liabilities of banks and building societies, and the problems of money holders switching their balances between building societies and banks and hence distorting the growth rate of M3, the broad monetary aggregate M4 is used when estimating the demand for money function.

Sections 9.1 to 9.4 analyse the broad econometric modelling strategies and methodologies in the empirical literature and provide critiques of the main functions estimated under these strategies: the partial adjustment mechanism, the error-correction model, and cointegration.

A theoretical model of the demand for broad money is specified in section 9.5 with due regard to the likely relevant variables as outlined in Chapter Eight. This theoretical model is used as the basis for the econometric specification of the demand for broad money. The final equation is then used to evaluate the various hypotheses as set out in earlier chapters. Specifically, Section 9.5 attempts to specify a stable demand for money function by taking account of interest on building society accounts, and investigates the interest elasticity of the demand for money over time. The final section concludes with an overview of the econometric results and their implications.

9.1 Econometric Methodology.

The breakdown of an econometric model may occur for a variety of reasons, functional form mis-specification, inadequate econometric modelling techniques, or exogenous 'structural breaks' to the system under study. The latter phenomenon has been widely blamed for instability in demand for money equations (Hendry, 1979, 1985).

The existence of external shocks, such as competition and credit control, or the abandonment of the corset, necessitates, it is argued, a revision of econometric equations to take into account the altered system. It is far from obvious however, *when* a structural break, in previously stable relationships, has occurred, or even if it has occurred. The very breakdown of an econometric model is often used as evidence that a structural break must have happened, because of the sudden breakdown of the model; it is by no means clear, however, whether the model was correctly specified at the outset. A change in exogenous variables which forces a model to break down may be evidence of mis-specification of that model, rather than evidence of a structural break. Indeed, a correctly specified equation may have been able to model a change in the behaviour of exogenous variables, and hence not exhibit any signs of instability or structural breaks. This is summed up by Hendry (1979),

> "while a *genuine* structural break in a relationship may be sufficient to induce predictive failure in that equation, it is *not necessary* in the following sense: if all the *true* structural equations in a system remain unaltered but the behaviour of some exogenous *variables* changes, then all *mis-specified* econometric

approximations to the equations of that system could manifest 'shifts' (i.e. apparent structural breaks)".
p219 (Hendry's Italics).

For example, the fast rate of growth of inflation in the 1970's, which represented a change in the behaviour of an exogenous variable, may have appeared to produce structural breaks or shifts in those estimated models that did not include an inflation variable, if the underlying true economic relationship did indeed depend upon the behaviour of the inflation variable (see Hendry p220). Thus, it is extremely difficult to ascertain as to whether model breakdown or a reduction in model forecast accuracy is a result of a structural break in the system or because of model mis-specification.

The econometric methodology undertaken when estimating any economic relationship can be of vital importance to the stability and robustness of the model. Moreover, it can be argued that if an inappropriate methodology is pursued, it is likely that at some point in time the equation may suffer from instability, merely as a result of an inadequate modelling strategy, rather than due to any change in the economic relationship under observation. If an equation becomes unstable during a period when there are changes in the economic system, for example during a policy regime change (e.g. CCC), it may appear that the change in the economic system has forced the equation to break down, whereas in fact it may be that the inadequate modelling methodology could not emulate the regime change, whilst a more robust modelling strategy may have been able to cope with such a situation without exhibiting signs of instability.

It is thus difficult to distinguish between a 'true' structural break that even a correctly specified equation using sound econometric modelling methodology would break down under, and a change in exogenous variables that appears to be a structural break when using a mis-specified model based on inappropriate or inadequate modelling strategy. The choice of econometric methodology is therefore of paramount importance. The adoption of a particular methodology is, as might be expected, a contentious issue.

Certain commentators have argued that econometric models have been constructed according to ad hoc procedures (Blaug 1980 p257). Some would argue that the standard textbook approach has led to a situation where research is concerned with confirming theories rather than evaluating alternative theories (Pagan 1984). With different techniques leading to different conclusions, there are often no methods for deciding which theories command the most credible support, resulting in contradictory hypotheses being maintained side by side for many years. Whilst there are opposing and sometimes rather extreme views, it is clear that there is a certain amount of dissatisfaction with standard methods. This has resulted in attempts to re-evaluate econometric methodology, leading to a variety of alternative routes for the applied researcher.[1]

The well-known policy critique of Lucas (1976) argues that model breakdown occurs as a result of ignoring the role of expectations in modelling, such that structural instability may be unknowingly built into empirical models. The Lucas critique is theory orientated and has led to rational expectations playing a major role in this approach to the modelling of time-series data (Lucas and Sargent 1981), although little work has been carried out on rational expectations and the demand for money, (see Cuthbertson and Taylor (1987) for a rare exception, but note the reservations of Hendry (1988)).

For purposes of illustration it is possible to distinguish between two broad categories of empirical econometric modelling methods: the "specific-to-general" and the "general-to-specific". The former has been branded by Hendry (1979 p222) as,

> "excessive presimplification with inadequate diagnostic checking".

It is worth repeating here in full Hendry's caricature of "specific-to-general" modelling, whereby researchers (Also see Hendry and Mizon 1978, Hendry and Ericsson 1983 and Hendry and Richard 1982, 1983):-

1. Commence from theories that are drastic abstractions of reality (usually of a long-run steady-state world subject to stringent ceteris paribus assumptions concerning all but a very small number of variables);
2. Formulate highly parsimonious relationships to represent their theories;

3. Estimate their equations from the available data using techniques which are 'optimal' only on the assumptions that the highly restricted model is correctly specified;
4. Test a few of the assumptions explicitly or implicitly underlying the exercise;
5. Revise the specification in the light of the evidence acquired; and
6. Re-estimate accordingly.

The dangers of starting with a model that is too restrictive are examined in Hendry and Mizon (1978) and Hendry (1979).

The general-to-specific methodology on the other hand is characterised by,

> "intended over-parameterization with data based simplification".
>
> (Hendry 1979 p228)

There are however, severe critics of the general-to-specific approach. In particular, it has been argued that the method relies too heavily on a statical basis rather than on economic theory per se (Lawson 1983, Laidler 1986). The general-to-specific approach maintains that economic theory cannot be used to model long run demand for money functions as the data generation process (DGP) is essentially a disequilibrium phenomenon (Hendry 1985). Lags on the dependent or independent variables in the long-run relationship are therefore used to model the adjustment process. Thus, the general-to-specific method is open to the criticism of 'ad hoc' modelling.

Moreover, it is argued that the search for stable functions in the general-to-specific methodology precludes the researcher from admitting that the function is unstable: it just has not yet been found. Some would go so far as to say that the general-to-specific approach finds stability when none is evident, largely due to the assumption that stability is there to be found,

> "If the economic phenomenon under consideration has actually experienced a structural break, but the investigator seeks a relationship which is wholly stable, then it is not beyond the wit of econometricians to model the phenomenon in autoregressive distributed lag form as if it were stable".
>
> Darnell (1987 p4) quoted in Lynne-Evans (1989).

Given the emphasis placed on the rigorous testing of econometric models in the general-to-specific approach this is probably an over-harsh characterization, although the problem should be acknowledged by applied researchers.

The general-to-specific research programme argues that the temporal structure of the data should be allowed to play a more important role in model specification (Sargan 1964). This has been extended by Hendry and Anderson (1977) and Davidson et al (1978). This methodology combines a constructionist approach along with a destructive strategy. In other words, if the worst models are eliminated the less bad ones are left (Hendry 1979).

One of the main prerequisites for accepting a model is its ability to explain previous models, including the reason for their breakdown. Use of this "encompassing principle" (Mizon 1984) provides a progressive sequence of models which at worst are summaries of previous research, but at best are robust and stable characterisations of economic phenomena (Hendry and Richard 1983). Of course, a general model will always be able to explain models that are special cases of it, and would lead to the adoption of an over-general model. A further requirement, therefore, is that parsimony is upheld. This is characterised as a "general-to-specific" modelling strategy, where the researcher starts from a general dynamic specification and test downwards for a more parsimonious and theoretically meaningful relationship (Gilbert 1986).

A vital aspect of this approach is the rigorous testing of models both against the data and against each other. This accords with a Popperian methodology (Popper 1972) where a falsificationist approach is adopted in place of the positivist methodology. Thus, model tests are <u>necessary</u> conditions for models not to be invalid. Philosophically, there are no <u>sufficient</u> conditions under which models can be validated. Failure to reject one of the <u>necessary</u> conditions does not establish that the model is valid, only that the model is not demonstrably invalid (Hendry 1985). This destructive approach can be defended on the grounds that it is better to recognise uncertainties in models through vigorous testing than to use invalid models as a basis for policy decisions. This general to specific methodology argues that much of the traditional econometric analysis suffers from excessive presimplification and inadequate diagnostic checking (Hendry 1985). General to specific, on the other hand, is characterised by intended over-parameterization with data-based simplification. Starting from the most general model which it seems reasonable to specify, sequential testing procedures are used to select a data coherent specification.

It is worth emphasizing that exponents of this form of modelling do in fact recognise that it does have its limitations. Again, it is worth repeating Hendry in full:

1. The chosen (ostensibly general) model could actually comprise a very special case of the data generation process, so that diagnostic testing remains important;
2. data limitations - sample size or the information content of the data may be inadequate;
3. there is no uniquely 'best' sequence for simplifying the model - different approximations which have similar sample likelihoods may forecast very differently.

Exponents of the general-to-specific approach maintain that these problems are outweighed by the uncertainty of lag responses in any relationship under consideration, and hence the desirability of starting from a general unrestricted maximum lag length (constrained by degrees of freedom limitations). Moreover, this methodology appears to have produced more robust (but by no means problem free) models, which can be used as a useful starting point for applied researchers (Hendry and Mizon (1978), Hendry (1979), Grice and Bennett (1981, 1984), Johnston (1984, 1985), Taylor (1987).

9.2 Partial Adjustment Model

Many demand for money models pre 1975 were based on partial adjustment principles. These models have been heavily criticized (Hendry and Mizon, 1978, Courakis, 1978) for their ad hoc nature and over-restrictive assumptions. It is argued by some (e.g. Hendry 1979) that it is not surprising that such models exhibit instability, given their underlying theoretical basis and the method in which they are developed. Although the emphasis of this thesis remains the effects of building society developments on monetary control, it is obviously of importance to examine alternative econometric techniques to evaluate their appropriateness for the econometric work to follow.

The long-run demand for money function is typically derived thus:-

$$\left(\frac{M^*}{P}\right) = f(X) \qquad (1)$$

Desired real money balance $\frac{M^*}{P}$ are a function of a set of explanatory variables(X)

In the long run, it is assumed that <u>observed</u> real money balances, $\frac{M}{P}$, equal <u>desired</u> real money balances $\frac{M^*}{P}$.

$$\left(\frac{M}{P}\right) = \left(\frac{M^*}{P}\right) \qquad (2)$$

This is rationalized on the grounds that the demand for money is for a target level of money balances that holders attempt to meet on average over time. In the long-run, it is therefore a useful approximation that observed balances equal desired money balances. The long-run demand for money can then be represented by:-

$$\left(\frac{M}{p}\right) = f(X) \tag{3}$$

However, it is unlikely that observed money holdings will be at their desired level in the short-run, because of costs of adjustment in achieving long-run desired levels of money balances. Therefore:-

$$\left(\frac{M}{p}\right) \neq \left(\frac{M^*}{p}\right) \text{ in the short-run.} \tag{4}$$

It is assumed that money holders take a two stage decision process. Firstly, the long-run desired level of money balances is decided and secondly, the optimum speed of adjustment towards some desired level is calculated.

The speed of adjustment however, is affected by adjustment costs, of which there are assumed to be two forms:-

(a) Costs of being out of long-run desired equilibrium of money holding. For example the opportunity cost of interest income on alternative assets, or an inability to buy goods when needed, represented by:-

$$a\left[\left(\frac{M}{p}\right) - \left(\frac{M^*}{p}\right)\right]^2 \tag{5}$$

where a = cost of being out of equilibrium.

(b). Costs of changing the observed level of assets in order to move towards the long-run desired equilibrium level of money holding. For example, the 'shoe-leather' costs of inconvenience and opportunity cost of time, represented by:-

$$b\left[\left(\frac{M}{P}\right) - \left(\frac{M}{P}\right)_{t-1}\right] \quad (6)$$

where b = cost of changing towards equilibrium.

Costs of adjustment are represented by the first-order partial adjustment mechanism which is derived thus: (Cuthbertson 1985-p64).

Money-holders choose actual balances, M, to minimize costs, C:-

$$\min C = a\left[\left(\frac{M}{P}\right) - \left(\frac{M^*}{P}\right)\right]^2 + b\left[\left(\frac{M}{P}\right) - \left(\frac{M}{P}\right)_{t-1}\right]^2 \quad (7)$$

$$\frac{\partial C}{\partial M} = 2a\left[\left(\frac{M}{P}\right) - \left(\frac{M^*}{P}\right)\right] + 2b\left[\left(\frac{M}{P}\right) - \left(\frac{M}{P}\right)_{t-1}\right] = 0 \quad (8)$$

$$\left(\frac{M}{P}\right) = \left(\frac{a}{a+b}\right)\left(\frac{M^*}{P}\right) + \left(\frac{b}{a+b}\right)\left(\frac{M}{P}\right)_{t-1} \quad (9)$$

$$\left(\frac{M}{P}\right) = \left(\frac{M^*}{P}\right) + (1-\lambda)\left(\frac{M}{P}\right)_{t-1}$$ (the partial adjustment model). (10)

where $\lambda = \frac{a}{a+b}$

If costs of adjustment are zero, $b = 0$, $\alpha = 1$ and $\left(\frac{M}{P}\right) = \left(\frac{M^*}{P}\right)$

If costs of being out of equilibrium are zero, $a = 0$, $b = 0$ and $\left(\frac{M}{P}\right) = \left(\frac{M^*}{P}\right)_{t-1}$

The partial adjustment mechanism is thus used to link observed values of money balances with desired levels.

Combining (1) and (10) gives the short-run estimating equation:-

$$\left(\frac{M}{P}\right) = f(X) + (1-\lambda)\left(\frac{M}{P}\right)_{t-1} \qquad (11)$$

where (X) = a set of explanatory variables.

Partial adjustment assumes that short-run desired money holdings are a weighted average of desired long-run money holdings and lagged values of money holdings. The parameters of interest from the short-run function can be used to obtain those of the long-run function by dividing the short-run by one minus the coefficient of the lagged dependent variable.

The lagged dependent variables represent the slow adjustment of observed money holdings to desired levels and hence the lags in price adjustment.

Partial adjustment models that performed well in the 1960's (Paish 1958, Dow 1958, Kavanagh and Walters 1966, Laidler and Parkin 1970, and Laidler 1971) were found to be unstable in the 1970's (Hacche 1974, Artis and Lewis 1974, 1976).

Criticism of these partial adjustment models of the demand for money function has tended to emphasize the constraints involved in the short-run dynamics of adjustment. Detailed critiques are put forward in Courakis (1978) and Hendry and Mizon (1978). Of vital importance is the method of modelling lags in the adjustment process in the partial adjustment model. The coefficient λ is used to model the lag response in the short-run demand for money function (equation (11)). This means that the dependent variable (observed real money balances) will adjust to changes in any one of the independent variables (X) with the same parameter (λ). So, the partial adjustment model constrains the lag length to be the same, despite the fact that the initial disturbance may derive from either income or interest rates. A priori, it would be expected that the lag length of adjustment would be different according to where the disturbance arose. Early partial adjustment models were thus extremely restrictive in their specified portfolio adjustment mechanisms, in the manner in which lag lengths of variables determining the demand for money were assumed to be the same.

Further criticisms of the partial adjustment model also relate to the restrictiveness of some of the assumptions. Many partial adjustment models have employed the assumption that:

(1) The true errors of the model were often assumed to be correlated.

(2) The price elasticity of the demand for money was often assumed to be unity and

(3) Equations were estimated in first difference form.

It is not obvious a priori that these assumptions hold true, and a crucial part of the general-to-specific methodology is that these restrictions should be <u>tested</u>. Of particular criticism was the practice of imposing non-linear restrictions on the equation due to the assumption of autocorrelation, usually through employing the Cochrane-Orcutt (1949) transformation (e.g. Hacche 1974). Sargan (1980) and Hendry and Mizon (1978) show that autoregressive errors entail a variety of restrictions on the general dynamic model which should be tested for. Residual autocorrelation is normally a symptom of model mis-specification rather than autoregressive errors (Baba et al 1987, Mizon and Hendry 1980, McAleer et al 1985).

Having examined the underlying assumptions of the partial adjustment model of the demand for money function, it is recognized that numerous authors have argued that instability in these models may have arisen as a result of inadequately specified relationships. In particular, mis-specification may have arisen from inappropriate restrictions on the econometric model. If so, a structural change such as financial innovation may appear as a break-down in the relationships under study, whereas it may be that the model cannot adequately take account of such changes due to mis-specification and omission of relevant variables. Perhaps a model which allows for more flexible lags in the adjustment process is more appropriate to the money demand function. Flexible lags can be allowed for in the general-to-specific modelling strategy, examined in the next section. Use of the encompassing principle (see earlier), that acceptance of a model is dependent on its ability to explain previous models, and the reason for their breakdown, provides a stringent test of the general-to-specific strategy.

9.3 ECM/ADL Models

In the general-to-specific modelling strategy, the temporal structure of the data is allowed to play a much more important role than in previous partial adjustment models (Davidson et al 1973, Hendry and Richard, 1982, 1983, 1987) although as mentioned earlier, there is still the criticism that the lags are still represented in a rather ad hoc manner. The general-to-specific methodology takes the stand-point that much of the 'traditional' econometric analysis suffers from excessive pre-simplification and inadequate diagnostic checking (Hendry 1985). General-to-specific on the other hand, is characterised by intended initial over-parameterization combined with subsequent data-based simplification. Starting from the most general model which it seems reasonable to specify, sequential testing procedures are used to select a data coherent specification.

This approach is flexible in the manner in which lag responses adjust to changes in different independent variables. Typically, a general unrestricted, autoregressive distributed lag model (ADL) is initially specified. This set of models may be written in general terms as:

$$\left(\frac{M}{P}\right) = a(L)\ X_t + b(L)\left(\frac{M}{P}\right)_{t-1} \qquad (12)$$

where a(L) is an arbitrary lag polynomial, $L^n X_t = X_{t-n}$ and X = a set of explanatory variables.

Nested within this general ADL model is the error-correction mechanism (ECM), which modifies the partial adjustment model by allowing the adjustment process to be modelled by a dynamic reaction function, rather than restricting the lag structure at the outset. In the ECM money holders adjust balances in response to deviations between current and target money holdings. The ECM is of the form:-

$$\left(\frac{M}{P}\right) = a(L)e_t \tag{13}$$

where a(L) is an arbitrary polynomial in the lag operator L and e_t is the error between current and target money holdings (Salmon 1982 p3).

e represents:

$$e_t = \frac{M}{P} - \frac{M}{P}^* \tag{14}$$

The ECM-ADL equation thus allows for an unrestricted flexible lag pattern at the outset of the modelling process. The initial general unrestricted equation is simplified by eliminating insignificant variables, and by introducing restrictions into the equation such as differencing and common factor restrictions. The restrictions placed on the parameters are tested at each stage such that a parsimonious data-coherent model is estimated (Spanos 1986).

Engle and Granger (1987) have shown that error-correction mechanisms generate cointegrated series and vice versa. Moreover, a cointegrated error correction representation is not susceptible to problems of spurious regression (Granger and Newbold 1977). The basic approach is to use a two-step estimator by first carrying out a static levels regression, and using the residuals from this in a dynamic model. The estimator is shown to be consistent and convergence on the true parameter values tends to be faster than normal OLS.

It is necessary to find the order of integration of the separate time series under investigation i.e. how often the individual time series need to be differenced in order to become I(0). A time series that has a finite non-zero spectrum is said to be I(0) - integrated of order zero. If a time series has to be differenced once, it is integrated of order one. More generally, differencing a time series d times to induce I(0) reflects integration of order I(d).

If two time series X_t and Y_t are integrated of order I(1) then X_t and Y_t will be cointegrated through a linear combination:

$$Z_t = (Y_t - \lambda X_t) = I(0)$$

An estimation of λ can be found through the regression of Y_t on X_t, and the error-correction mechanism is:

$$Z_t = (Y_t - \hat{\lambda} X_t)$$

The error-correction mechanism can then be used in a dynamic model as all variables are I(0).

9.4 Theoretical and Empirical considerations of the Demand for M4

The demand for money function may be written as:-

$$M = f(W, Y, P, r) \qquad (15)$$

where

W = Gross financial wealth

Y = Income

P = Price level

r = a vector of own and competing interest rates.

M = M4

Full definitions of variables and data sources are provided in Appendix A.

It is expected a priori that the demand for a broad aggregate such as M4 is likely to be influenced by transactions, precautionary and speculative considerations for liquid balances.

Some researchers have used income as a measure of transactions. Grice and Bennett (1981, 1984) note, however, that other studies utilize permanent income as an explanatory variable on the grounds that it is a proxy for wealth. There is thus some ambiguity as to the role of the income variable. A preferable method is to include an explicit wealth measure combined with income as a transactions variable. This provides plausible results for Grice/Bennett. Speculative motives may be allowed for by including expected capital gains to gilts in the equation (Spencer, 1981.[2])

The general model was specified in terms of the real demand for money,

$$\Delta\left(\frac{M}{P}\right) = a + \sum_{i=o}^{4} (GFW)_{-i} + \sum_{i=o}^{4} \left(\frac{M}{PY}\right)_{-i}$$

$$+ \sum_{i=1}^{4} \Delta\left(\frac{M}{P}\right)_{-i} + \sum_{1=o}^{4} (RT_{-1} - RS)_{-i}$$

$$+ \sum_{i=o}^{4} \Delta (P)_{-1} + \sum_{i=o}^{4} (Y)_{-i}$$

$$+ \sum_{i=o}^{4} (RG)_{-i} + \text{seasonals} \qquad (16)$$

where:-

M = M4, unadjusted

GFW = Gross Financial Wealth of the non-bank private sector.

Y = Real gross domestic product at factor cost.

P = Implicit GDP deflator.

RT = Rate of interest on three month Treasury Bills.

RG = Rate of interest on twenty year gilts.

RS = Rate of interest (net) on building society high interest instant access accounts.

Initially the model was estimated by Ordinary Least Squares (OLS) with four lags on each variable in accordance with previous demand for money studies (Hendry, 1979, Spanos, 1986). In view of the strictures of Wallis (1974) on the use of seasonally adjusted data, unadjusted data is here used throughout. The general model was reparameterized according to a sequential testing down procedure (see Cuthbertson 1985). This involves removing insignificant variables, differencing variables, and setting parameters equal to each other when data permissible. These restrictions are tested at each stage against the general model for data acceptability using F-tests.[3]

Proceeding in this manner, the following model was derived:-

$$\begin{aligned}
\Delta\left(\frac{M}{P}\right) = \; & \underset{(.021)}{.048} + \underset{(.035)}{.123}\,(GFW)_t - \underset{(.036)}{.126}\,(GFW)_{t-3} \\
& + \underset{(.06)}{.133}\,\Delta\left(\frac{M}{P}\right)_{t-2} - \underset{(.048)}{.254}\left(\frac{M}{PY}\right)_{t-1} \\
& - \underset{(.08)}{.204}\,(RT_1 - RS)_t - \underset{(.09)}{.622}\,\Delta(P)_t \\
& + \text{seasonals.}
\end{aligned} \qquad (17)$$

$R^2 = 0.85$ SER = 0.01

AR F[4,64] = 1.40 NORMALITY [2] = 3.43

RESET F[2,66] = 0.22 ARCH F[4,60] = 0.47

HETEROSKEDASTICITY [15,52] = 0.98

where:-

AR is the Lagrange Multiplier test for 4^{th} order residual autocorrelation.

ARCH is the LM test for autocorrelated squared residuals (Autoregressive conditional heteroskedasticity - Engle (1982)).

NORMALITY is the Jarque and Bera (1980) statistic for normality.

HETEROSKEDASTICITY is Whites (1984) test for heteroskedasticity.

RESET is the Ramsey (1969) test for omitted variables (for adding two other basic variables).

SER is the standard error of the regression.

represents the first-difference operator.

Single figures e.g. Normality[2] are degrees of freedom for an asymptotic chi-square distribution, double figures, e.g. AR, F[4,64] are degrees of freedom for F-statistics (Kiviet 1983). Figures in brackets under the coefficient estimates are standard errors. All variables except interest rates are in log form.

The equation consists of variables representing wealth, interest rates, inflation, and a lagged dependent variable. Although income is not explicitly included in the function, it is present in the form of the error correction term, $\left(\frac{M}{PY}\right)$ (see Hendry 1979, Salmon 1982 and Chapter Eight).

The 'own' interest rate term $(RT_{-1} - RS)_{-i}$ is after Taylor (1987). The rate on competing assets (RT_t) is entered lagged one period to reflect information costs or perception lags (Taylor points out that it is easier for a wealth-holder to monitor the return on his/her money than it is to monitor the returns on alternative assets).

The term $(RT_{-1} - RS)$ thus represents the differential between holding money and a short term asset.

All of the estimated coefficients are significant and the R^2 is reasonably high (0.85, against 0.76 for Taylor's equation). The equation passes a wide variety of tests. The model tracks well (Diagram 9.1) and when the model is estimated up to 1981/4, the out-of-sample forecast is reasonable (Diagram 9.2). Although the equation has a tendency to over-predict, in only two quarters are the forecasts insignificant at a 5% level (1982 quarter two, and 1983, quarter two). The actual and fitted values of quarterly growth in real M4 are shown in Diagram 9.3. The equation passes a Chow Test for parameter constancy over the period 1982/1 - 1986/4.

Incidentally, the equation also passes a test for residual autocorrelation, and so avoids Gordons (1984) criticism that demand for money equations suffer excessively from this problem.

Numerous authors have voiced scepticism as to the relevance of the finding of 'stable' demand for money functions,

DIAGRAM 9.1

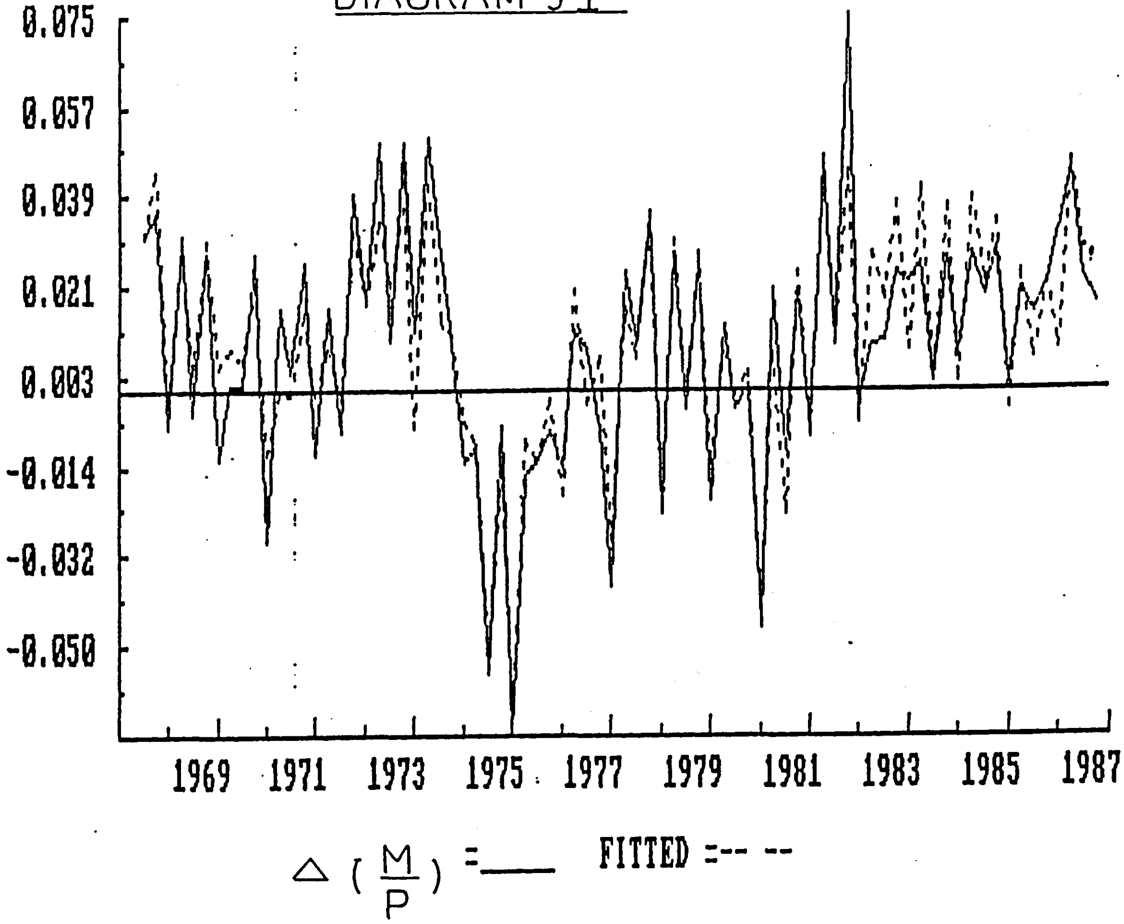
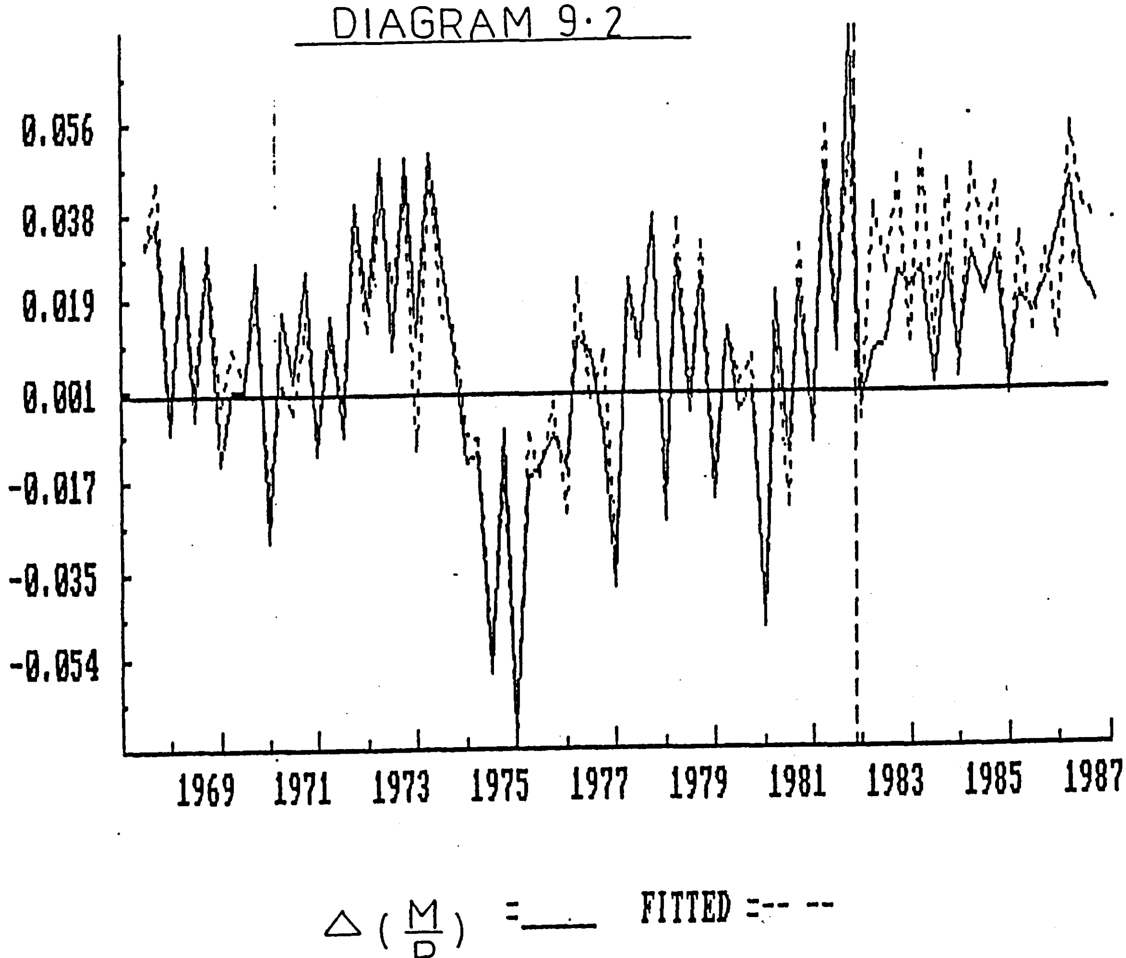
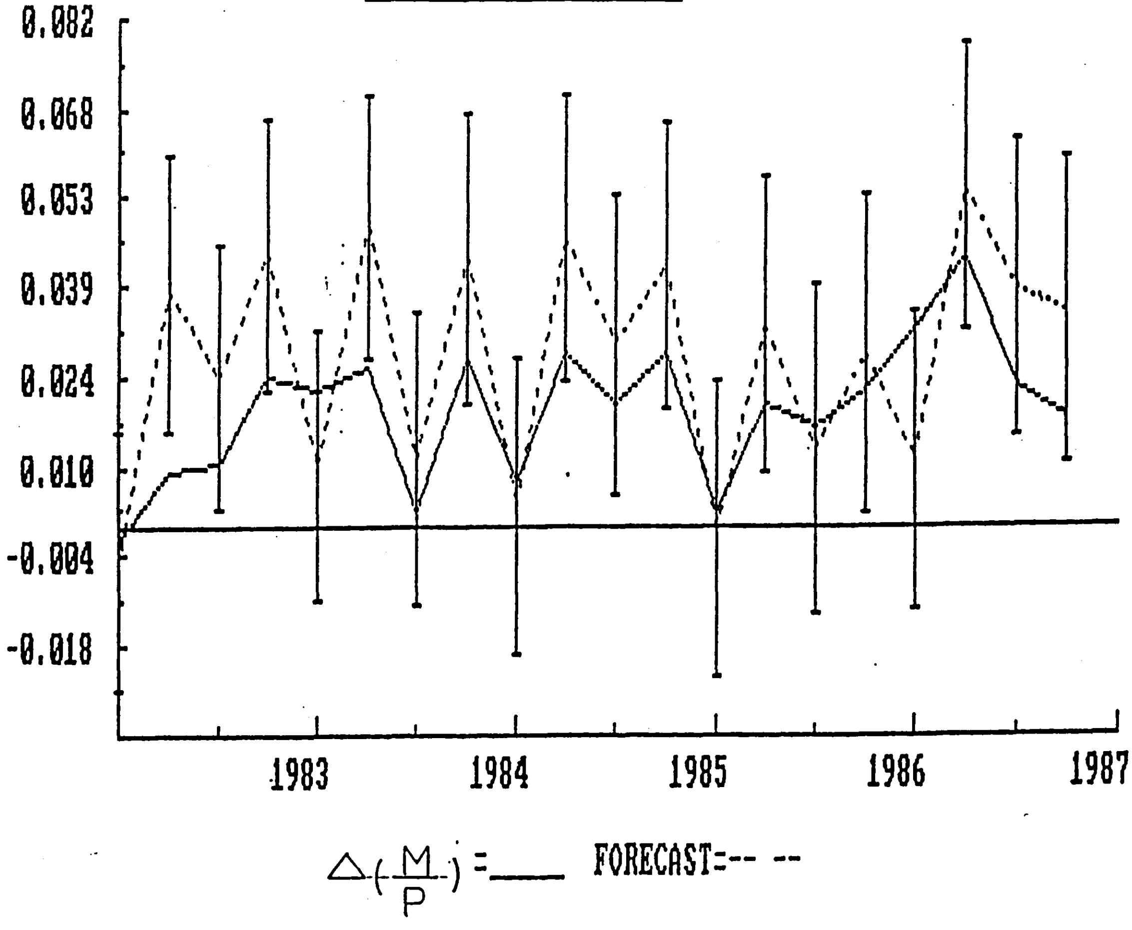

0.075
0.057
0.039
0.021
0.003
-0.014
-0.032
-0.050
1969
1971
1973
1975
1977
1979
1981
1983
1985
1987
$\Delta \left(\frac{M}{P}\right)$ =____ FITTED =-- --

DIAGRAM 9·2



0.056
0.038
0.019
0.001
-0.017
-0.035
-0.054
1969
1971
1973
1975
1977
1979
1981
1983
1985
1987
$\Delta\left(\frac{M}{P}\right)$ =____ FITTED =-- --

DIAGRAM 9·3


0.082
0.068
0.053
0.039
0.024
0.010
-0.004
-0.018
1983
1984
1985
1986
1987
$\Delta(\frac{M}{P})$ =____ FORECAST=-- --

"Frequently, after a certain amount of experimentation with different specifications and lag distributions, one can find satisfactory or stable estimates based on an ex post analysis of data, but those estimates may or may not tell us much about the ex ante behaviour. From a policy perspective, the usefulness of money demand estimates lies not so much in their <u>in-sample stability</u> as in their out-of-sample predictive powers. Judged in this latter sense virtually all money demand functions have exhibited a poor performance in recent years, and any case for their recent stability seems to be overstated".

(Akhtar 1983 p36)

Given these doubts, it is interesting to note the close fit of the <u>out-of-sample forecast</u> of the demand for M4.

It is immediately noticeable that there is no explicit income variable in the final equation, consistent with the view that some balances are being used for investment purposes rather than as transactions balances. As such, wealth is becoming more relevant in the demand for money function as a result of financial innovation, which reflects the view that,

"money is also used as a store of wealth, and an increasing proportion of it, although perhaps slightly less liquid, carries its own real rate of interest. This suggests that gross financial wealth may have an increasingly important role to play in determining the demand for money, since money is becoming a more attractive form of holding wealth".

(BEQB May 1987 p230)

Thus, although the money-income relationship has not totally broken down, the lack of an explicit income variable may reflect the reduced importance of the income variable relative to wealth.

The increasing importance of wealth in the demand for money function as a result of financial innovation has also been emphasized by Thygesen (1986), "Because of the rise in the share of monetary assets. even within a narrow definition of money, yielding a market-related return, the transactions and investment purposes for holding money have become less easily separable. This has a consequence not unfamiliar to economists from Cambridge: whatever measure of the money stock chosen, from M1 to private sector liquidity in a broad sense, the role of wealth has increased relative to that of income as a determinant of money demand". (p23)

The coefficients on the 'own' rate on money and on the inflation term are significant, implying that the effects of financial innovation and inflation are significant determinants of the demand for money (M4). The negative terms on the differential interest rate term and on the inflation variable suggest that, ceteris paribus, an increase in the differential between interest bearing non-money assets and money will reduce the demand for money, as will an increase in inflation. These results appear to confirm Taylor's observation that financial innovation is an important factor in demand for money equations. Taylor emphasizes the importance of the own rate variable and hence financial innovation by dropping the term from the equation and re-estimating the model over the same time period. The equation breaks down, showing, according to Taylor, the necessity of including financial innovation variables in the equation.

Dropping the interest rate term from the equation above also has significant detrimental effects. The R^2 drops to 0.7 and the error correction term becomes barely significant.

This test of the importance of financial innovation in an equation for the demand for money is not, however, particularly stringent. If any significant variable in an equation is omitted it is likely that the equation will suffer in terms of insignificant parameters and test statistics. In the case of financial innovation, a more reliable test would be to replace the own rate $(RT_1 - RS)_t$ which contains interest on the new, innovatory, high interest access accounts with a rate of interest that has been unaffected by such financial innovation. A useful test would be to substitute the own rate used for the net rate on ordinary shares at building societies. This would provide a far more stringent test of the effect of financial innovation on the demand for M4. Of course, it may be argued that the rate of interest paid on ordinary shares has, in general, been higher in the 1980's due to increased competition with the retail banks, and that liquidity of these accounts has increased, both of which represent a form of financial innovation. It is important to know, however, the extent to which the specific innovation of high interest access accounts is responsible for the rapid growth in M4.

The previous model is used again, merely substituting $(RT_1 - RS)$ for $(RT_1 - ORD)$ which is the differential between Treasury bills lagged one period and the net rate on ordinary accounts at building societies.
This model yielded the following:-

$$\triangle\left(\frac{M}{P}\right) = \underset{(.024)}{.026} + \underset{(.035)}{.118}\ (GFW)_t - \underset{(.036)}{.119}(GFW)_{t-3}$$

$$+ \underset{(.067)}{.131}\triangle\left(\frac{M}{P}\right)_{t-2} - \underset{(.045)}{.248}\left(\frac{M}{PY}\right)_{t-1}$$

$$- \underset{(.083)}{.233}\ (RT_1 - ORD) - \underset{(.09)}{.643}\ \triangle(P)_t$$

$$+ \text{ seasonals.} \tag{18}$$

$R^2 = 0.85$ SER $= 0.01$

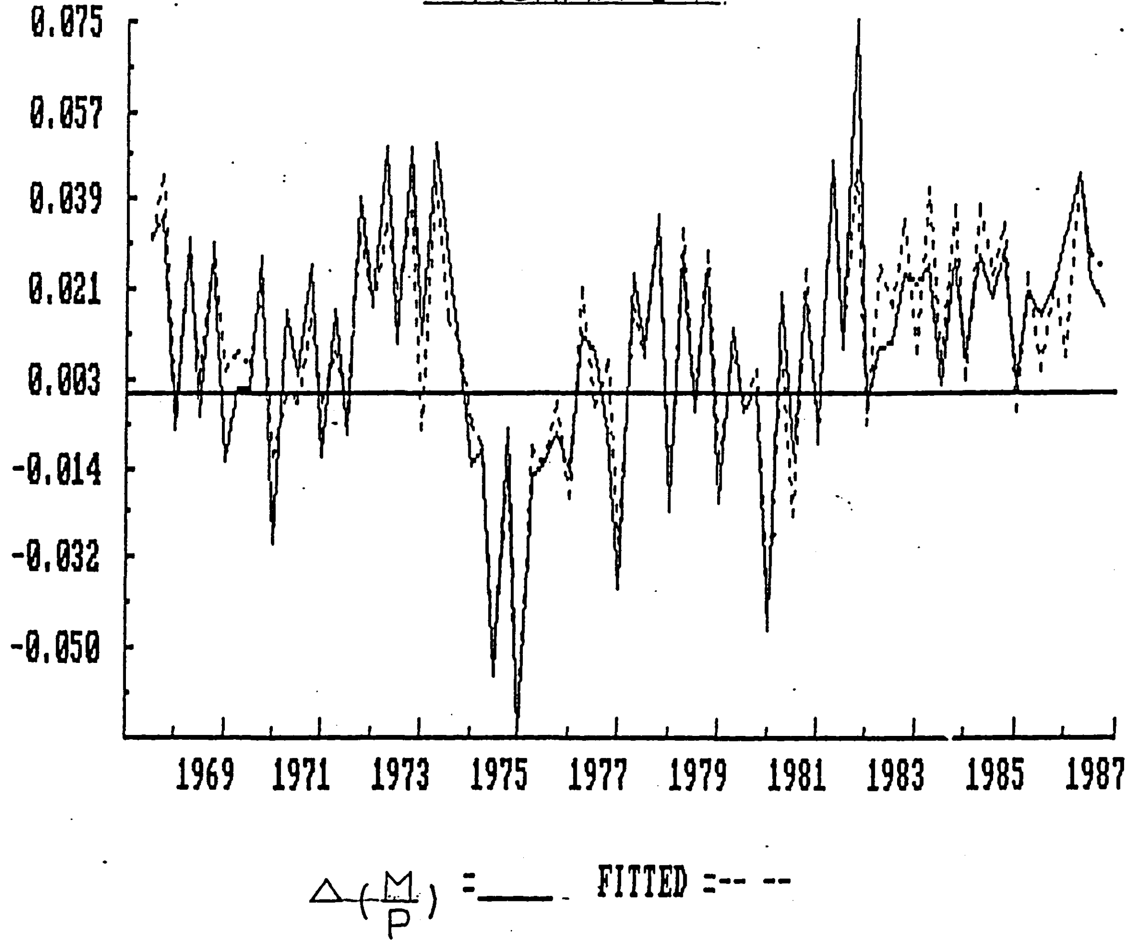
AR F[4,64] = 1.34 NORMALITY[2] = 4.88

RESET F[2,66] = 0.20 ARCH F[4,60] = 0.42

HETEROSKEDASTICITY[15,52] = 0.91

As can be seen, there is almost no change in the parameters of the equation when the differential between high-interest instant access accounts and Treasury bills is substituted for the interest differential between the net rate on ordinary shares and Treasury Bills. There is also no change in the test statistics. The tracking performance (Diagram 9.4) is almost identical. Moreover, the equation is stable when used for a twenty-period out-of-sample forecast. Interestingly, the equation still over-predicts the growth rate of M4 (see Diagrams 9.5 and 9.6). This suggests that it is not necessarily the specific financial innovation of high interest instant access accounts which has been responsible for the fast rate of growth of M4 (relative to nominal

DIAGRAM 9·4


0.075
0.057
0.039
0.021
0.003
-0.014
-0.032
-0.050
1969
1971
1973
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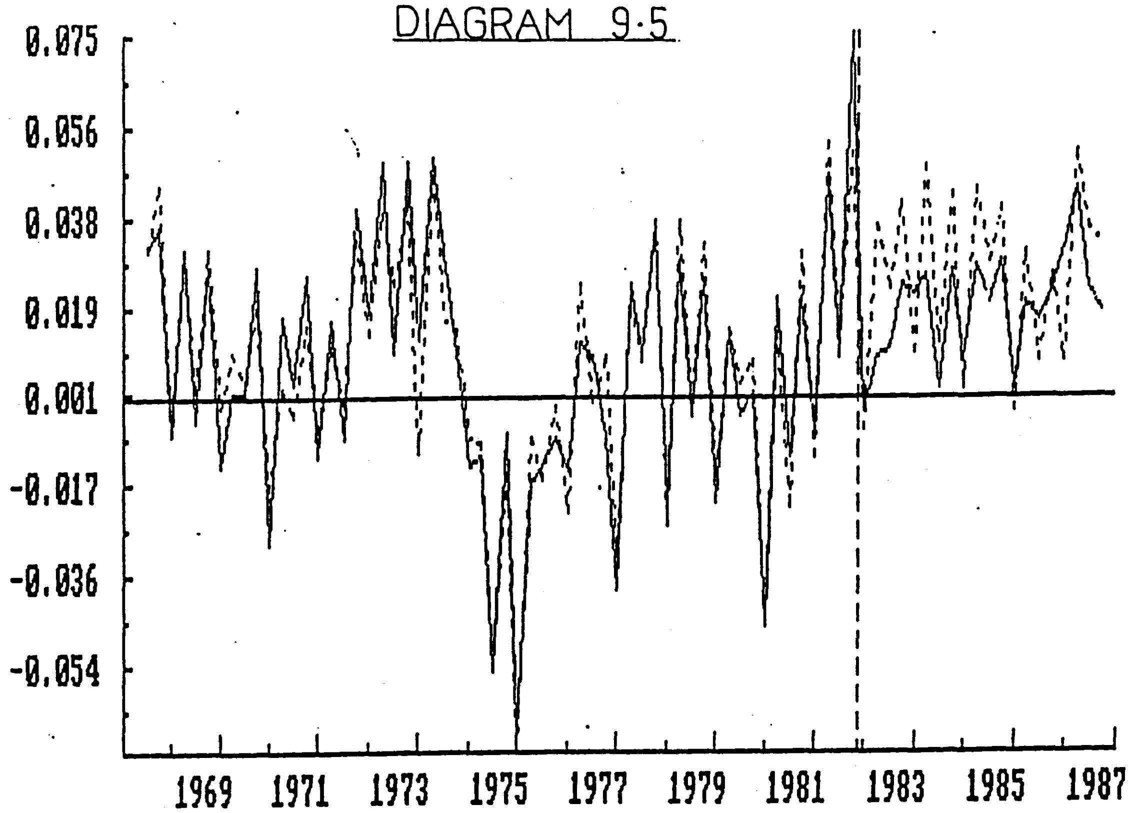
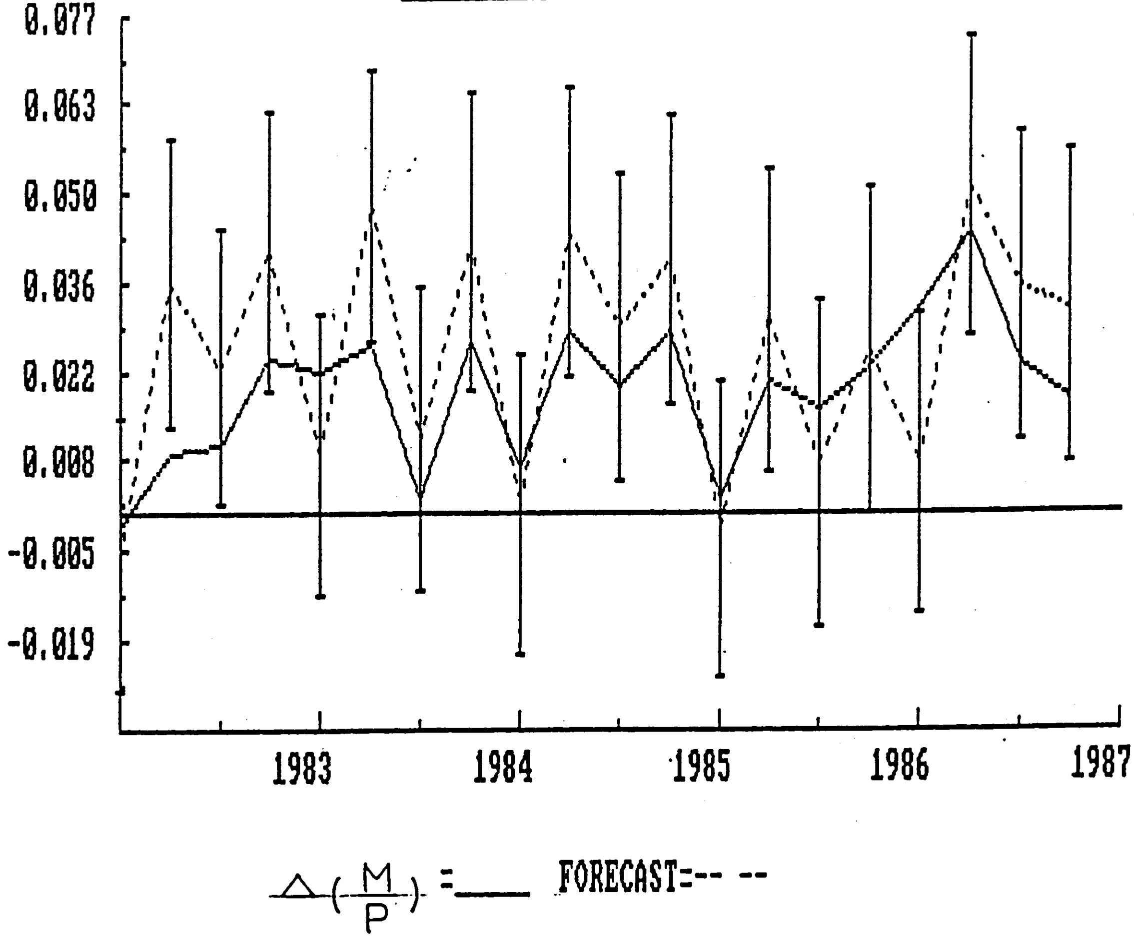
1981
1983
1985
1987
$\Delta(\frac{M}{P})$ =_____ FITTED =-- --

DIAGRAM 9·5



$\Delta\left(\frac{M}{P}\right)$ = ——— FITTED =-- --

DIAGRAM 9·6


0.077
0.063
0.050
0.036
0.022
0.008
-0.005
-0.019
1983
1984
1985
1986
1987
$\Delta(\frac{M}{P})$ =____ FORECAST=-- --

income), as the net rate of interest on ordinary shares can also be used to explain the demand for M4. As mentioned earlier, ordinary shares have in fact become increasingly liquid and have paid on average, a higher rate of interest in the 1980's than in the 1970's, but are still much less attractive than high-interest access accounts, upon which most of the informed comment has placed the blame for the relatively fast growth of M4 (see Chapter Five).

An equation which included the differential between Treasury Bills and the maximum rate at banks was not significant, however,

$$\Delta\left(\frac{M}{P}\right) = \underset{(.024)}{.066} + \underset{(.041)}{.151}\,(GFW)_t - \underset{(.036)}{.155}\,(GFW)_{t-3}$$

$$+ \underset{(.083)}{.110}\,\Delta\left(\frac{M}{P}\right)_{t-2} - \underset{(.053)}{.249}\,\left(\frac{M}{PY}\right)_{t-1}$$

$$- \underset{(.07)}{.170}\,(RT_1 - R_B) - \underset{(.09)}{.640}\,\Delta(P) \qquad (19)$$

$R^2 = 0.82$ $\qquad R_B =$ Maximum rate on high interest accounts at banks.

AR $F[4,64] = 1.46$ $\qquad$ NORMALITY$[2] = 2.46$

RESET$[2,66] = 0.33$ $\qquad$ ARCH $F[4,60] = 0.56$

HETEROSKEDASTICITY $F[15,52] = 0.81$

Although the test statistics change little, it can be seen that the lagged dependent variable $\left(\frac{M}{P}\right)_{t-2}$ has become insignificant, and the own rate term (RT_1 - RB), is only just significant. It would thus appear that the differential between Treasury bills and building society instant access accounts is a better measure of the own rate of the demand for M4 than is the differential between Treasury bills and the maximum rate on instant access accounts at banks. It may be that this is caused by the fact that building society interest rates have in general been above those of the retail banks in the 1980's, and hence more accurately reflect the return on broad money and hence the demand for broad money as measured by M4.

9.5 Financial innovation and the interest elasticity of the demand for money

It has been suggested by some commentators (e.g. Goodhart (1984)) that with the impact of financial innovation and high real rates of return, it is the interest differential between 'money' and competing assets which is relevant for the demand for money function, rather than the general level of interest rates. Indeed, this is the reasoning behind using the differential between the own rate on money and that on treasury bills in the models above,

> "with the availability of market-related interest rates on deposits, and low spreads, the volume of deposits will increasingly prove an elastic function of *relative* interest rates, i.e. the spread between market rates and deposit rates and the spread between loan and deposit rates"
>
> Goodhart (1986) p92, (Goodhart's italics).

If the hypothesis that the demand for money has become insensitive to the general rate of interest is to be fully tested, it will be necessary to take into account not only the rate of return on gilts, but also any expected capital gains on gilts. Grice and Bennett (1981) suggest four methods of estimating capital gains on gilt holdings:

1. Direct information - survey information as to expected interest rates and capital gains could be transformed into time series data for econometric usage. In practice, this would be likely to produce inaccurate information and be extremely time consuming.

2. Indirect information - the differential between the rate of inflation and the nominal interest rate may provide a forecast for future changes in interest rates. For example, if the rate of inflation is relatively high compared with nominal interest rates, capital losses on gilts would be expected. On the other hand, if the ex post real rate of interest is relatively high, capital gains may be made on gilts as the nominal interest rate falls. In practice, however, the equilibrium real rate of interest will tend to be determined by the rate of inflation, and may fluctuate in the short term.

3. It may be possible to include the ex post capital gains to gilts as a proxy for ex ante expectations of capital gains. This is attempted below, using the change in the Financial Times index of gilt prices, although reservations as to the applicability of this proxy indicated in point (4) below should be taken into consideration.

4. Grice and Bennett (1981) point out that the approach in (3) above cannot be vindicated as ex post capital gains will only equal ex ante capital gains if investors have perfect foresight. As they do not have this capacity, ex post capital gains are equivalent to the correct variable measured with error. The traditional solution to such a problem is to search for instrumental variables that are correlated with the variables that exhibit measurement error, although not correlated with

the measurement error or the time disturbances. Grice and Bennett follow Durbin's (1954) proposal of using the rank of the badly measured variable as the instrument.

5. Alternatively, it may be possible to use economic theory to choose the instrument of the badly measured variable (McCallum (1976)). This approach is also tried by Grice and Bennett, and by Spencer (1981) and Johnston (1985) with some degree of success. The basic rationale is that expected capital gains will be formed by investors in terms of the expected value of an equation explaining ex post capital gains. Data for expected capital gains can therefore legitimately be obtained as the estimated values from the equation explaining ex post capital gains. This approach is also attempted below.

Including the rate of return on 20 year gilts in the equation (but not the capital gains to gilts) produced the following equation:-

$$
\begin{aligned}
\Delta\left(\frac{M}{P}\right) = \underset{(.034)}{0.049} &+ \underset{(.037)}{0.131}\,(GFW)_t \\
- \underset{(.038)}{0.134}\,(GFW)_{t-3} &+ \underset{(0.07)}{0.143}\,\Delta\left(\frac{M}{P}\right)_{t-2} \\
- \underset{(0.048)}{0.258}\left(\frac{M}{PY}\right)_{t-1} &- \underset{(0.15)}{0.017}\,(R\overline{L}_{t-1} - RS)_t \\
- \underset{(0.088)}{0.043}\,(RG)_{-1} &+ \text{seasonals} \qquad (21)
\end{aligned}
$$

$R^2 = 0.84$ SER $= 0.12$

AR $F[4,63] = 1.36$ NORMALITY$[2] = 4.4$

RESET $F[2,65] = 0.22$ ARCH $F[4,59] = 0.32$

HETEROSKEDASTICITY$[15,51] = 2.41$

The gilts term is clearly insignificant, as is the differential return from Treasury bills and building society accounts, and there is evidence of heteroskedasticity. Using the differential between gilts and building society accounts also proved insignificant.

Given that this simple attempt at modelling the effect of long-term interest rates in the form of the rate on gilts (<u>not</u>) including capital gains failed to find any significant interest rate effects, option (5) above was attempted.

Using approach (5) above, the initial general specification of the gilts equation was of the form:-

$$(G + CG + r) = a + \sum_{i=o}^{4} (ED)_{-i} + \sum_{i=o}^{4} (P)_{-i} + \sum_{i=o}^{4} \left(\frac{TFE}{P}\right)_{-i} + \sum_{i=o}^{4} \left(\frac{NFW}{P}\right)_{-i} + \sum_{i=o}^{4} (R)_{-i} + \sum_{i=o}^{4} (r)_{-i} \quad (22)$$

where:

ED	=	Interest rate on 3 month Eurodollars
TFE	=	Total Final Expenditure
NFW	=	Net Financial Wealth of the non-bank private sector
P	=	Implicit consumers deflator
R	=	Yield on 2½% Consols
CG	=	Capital Gains on gilts
r	=	short rate

The idea is to attempt to specify a model that explains ex post capital gains to gilts. Data from this model can then be used as expected capital gains on gilts in the demand for money equation. This is dependent of course, on the assumption that expected capital gains are formed by investors in terms of the expected value of this equation which explains ex post capital gains.

The variables were chosen largely as a result of the work of Spencer (1981) on the demand for gilts.

The final equation was of the form:-

$$
\begin{aligned}
(R + CG + r) = & \underset{(0.21)}{-\,0.9\,(ED)_{-1}} + \\
& \underset{(0.073)}{0.43\,(ED)_{-4}} \; \underset{(0.3)}{-\,0.62\,(P)_{-1}} + \underset{(0.02)}{0.14\,(P)_{-2}} \\
& - \underset{(0.2)}{0.66\left(\frac{TFE}{P}\right)} + \underset{(0.37)}{0.92\left(\frac{NFW}{P}\right)} + \text{constant} + \text{seasonals}
\end{aligned}
$$

$R^2 = 0.55$ (23)

Surprisingly, utilising the total return to gilts (i.e. interest yield and capital gains) in the form of the data provided by the expected capital gains equation also proved to be insignificant in the demand for broad money equation:-

$$\Delta\left(\frac{M}{P}\right) = \underset{(0.18)}{-0.14} + \underset{(0.052)}{0.055}\,(GFW)_t - \underset{(0.052)}{0.042}\,(GFW)_{t-3}$$

$$+ \underset{(0.12)}{0.005}\,\Delta\left(\frac{M}{P}\right)_{t-2} - \underset{(0.1)}{0.59}\left(\frac{M}{PY}\right)_{t-1}$$

$$+ \underset{(0.24)}{0.2}\,(RT_{-1} - RS)_t + \underset{(0.51)}{0.47}\,(CG)_{t-1}$$

$$R^2 = 0.89 \qquad (24)$$

AR F[4,63] 1.22 NORMALITY[2] 3.6

RESET F[2,65] = 0.35 ARCH F[4,59] = 0.31

HETEROSKEDASTICITY[15,51] = 2.55

The differential return between gilts and building society interest rates $(CG_{t-1} - RS)_t$ was also insignificant.

This result is surprising as it contradicts that of Grice and Bennett (1981), Spencer and Johnston (1985), all of whom find the total return on gilts to be an important factor in the demand for money. It is feasible of course, that financial innovation has made the demand for money completely inelastic with respect to a long rate of interest, both in terms of a differential return, and the general level of return on gilts.

Alternatively, there may be mis-specification in the above equation explaining the expected capital gains to gilts. Concern must be expressed as to the nature of this equation, particularly in view of the possibility of omitted variables.

Spencer (1981) and Johnston (1985) include in their capital gains equations a measure of the structural balance of payments consisting of the current account, and non-market clearing capital flows. The data used was from Treasury estimates, which are unfortunately not available.

The capital gains equation may suffer from omitted variables, which seems possible given the low R^2. The evidence as to the hypothesis that the demand for money has become less sensitive to the general rate of long interest rates is therefore inconclusive, although does not appear to support the strong assertions of Akhtar,

> "Over the past few years, the demand for money, especially at the broader level, has become less sensitive to the general level of interest rates. The share of financial instruments with market-related rates in monetary aggregates has risen over time, and the trend is continuing. The yield or return on those instruments tends to rise or fall with the rise or fall in market rates, leaving the differential unchanged. Consequently, there is no incentive to shift into or out of instruments the return on which moves in line with the general level of interest rates. This view is fairly broadly accepted, <u>although at this stage there is very little evidence on the quantitative significance of the shift in interest elasticity of money demand</u>".
>
> (Akhtar p37 (underlining added)1983)

It is also of interest to test the effect of <u>levels</u> of interest rates on the demand for money function, to ascertain the relative importance of interest differentials vis-a-vis interest rate levels. Separating the differential term $(RT_{-1} - RS)_t$ from equation (1) to see if the levels of interest rates are significant yielded similar results as earlier:-

$$\Delta\left(\frac{M}{P}\right) = \underset{(.075)}{.038} + \underset{(.048)}{.143}\,(GFW)_t - \underset{(.051)}{.145}\,(GFW)_{t-3}$$

$$+ \underset{(.069)}{.197}\,\Delta\left(\frac{M}{P}\right)_{t-2} + \underset{(.055)}{.247}\left(\frac{M}{PY}\right)_{t-1}$$

$$- \underset{(.099)}{.261}\,(RT)_{t-1} + \underset{(.215)}{.455}\,(RS)_t - \underset{(.104)}{.646}\,\Delta(P)_t$$

$$+ \text{ seasonals} \qquad (25)$$

AR F[4,63] = 1.06 NORMALITY[2] = 4.0

RESET F[2,65] = 0.21 ARCH F[4.59] = 0.51

HETEROSKEDASTICITY F[18,48] = 0.87

R^2 = 0.85 SER = 0.01

It is interesting to note however, what happens when this equation is used for a twenty-period out-of-sample forecast.

The equation yielded the following:-

$$\Delta\left(\frac{M}{P}\right) = \underset{(.075)}{.038} + \underset{(.048)}{.143}\,(GFW)_t - \underset{(.051)}{.145}\,(GFW)_{t-3}$$

$$+ \underset{(.069)}{.197}\,\Delta\left(\frac{M}{P}\right)_{t-2} - \underset{(.055)}{.247}\left(\frac{M}{PY}\right)_{t-1}$$

$$- \underset{(.13)}{.261}\,(RT)_{t-1} + \underset{(.34)}{.381}\,(RS)_t - \underset{(.1)}{.626}\,\Delta(P)_t$$

$$+ \text{ seasonals} \qquad (26)$$

R^2 = 0.898 SER = 0.009

AR F[4,43] = 0.60 NORMALITY[2] = 2.48

ARCH F[4,39] = 0.63

HETEROSKEDASTICITY F[18.28] = 0.43

It is immediately noticeable that the own 'level' rate of interest is insignificant when used for a twenty- period out-of-sample forecast. Furthermore the competing rate of interest (RT_1) is barely significant. This may be interpreted as an indication of the reduced importance of 'levels' of interest rates as compared to that of differentials.

Chapter Seven delineated the hypothesis that financial innovation has led to a decrease in the interest elasticity of the differential between the own rate on money and competing rates in the demand for broad money function. This hypothesis was tested by successively re-estimating equation (17) above over different sub-sample periods, from 1967 quarter three to 1977 quarter four, and then adding on an extra year each estimation up to 1986 quarter four. The equations and test statistics are shown in Table [1] and the long run interest elasticities of the differential in Table [2].

An examination of the coefficients on the interest differentials $(RT_{-1} - RS)_t$ shows that it has halved from 1977 quarter 4 to 1986 quarter 4. It would thus appear that the interest differential between an interest bearing asset (Treasury bills) and interest bearing money (building society high interest accounts) has become a <u>less</u> important

Table 1

	Constant	$(GFW)_t$	$(GFW)_{t-3}$	$\Delta\left(\frac{M}{P}\right)_{t-2}$	$\left(\frac{M}{PY}\right)_{t-1}$	$(RT_{-1}-RS)_t$	$\Delta(P)_t$
1967/3 to 1986/4	+ .048 (.021)	+ .123 (.035)	- .126 (.036)	+ .133 (.067)	+ .248 .045	- .204 (.08)	- .622 (.09)
1967/3 to 1985/4	+ .054 (.023)	+ .132 (.035)	- .135 (.036)	+ .145 (.067)	+ .233 (.046)	- .199 (.08)	- .622 (.092)
1967/3 to 1984/4	+ .071 (.029)	+ .153 (.041)	- .158 (.043)	+ .142 (.069)	+ .236 (.047)	- .177 (.084)	- .626 (.094)
1967/3 to 198 /4	+ .070 (.036)	+ .152 (.045)	- .156 (.048)	+ .145 (.071)	+ .241 (.050)	- .183 (.093)	- .622 (.098)
1967/3 to 1982/4	+ .047 (.043)	+ .121 (.049)	- .123 (.052)	+ .141 (.071)	+ .262 (.052)	- .180 (.097)	- .621 (.098)
1967/3 to 1981/4	+ .014 (.043)	+ .141 (.047)	- .140 (.049)	+ .196 (.074)	+ .249 (.051)	- .212 (.094)	- .618 (.100)
1967/3 to 1980/4	+ .036 (.047)	+ .150 (.044)	- .151 (.047)	+ .162 (.071)	+ .230 (.051)	- .255 (.09)	- .599 (.10)
1967/3 to 1978/4	+ .049 (.055)	+ .154 (.053)	- .157 (.055)	+ .175 (.076)	+ .202 (.062)	- .327 (.110)	- .608 (.12)
1967/3 to 1977/4	+ .036 (.096)	+ .105 (.071)	- .099 (.077)	+ .188 (.081)	+ .197 (.064)	- .419 (.150)	- .630 (.118)

NOTES: 1. The R^2 ranged from 0.8 to 0.85

Demand for M4 Equations

determinant of the demand for money over time. Within these figures however, it should be noted that the size of the coefficient reached a low in 1982/4 of -0.180, and grew marginally in each year from 1982/4 to 1986/4 to reach -0.204.

The interest elasticity Table [2] fell from -2.13 for the period 1967/3 to 1977/4 to a low of-0.71 for the period 1967/3 to 1983/4. The interest elasticity then appears to have levelled off and, indeed, to rise marginally. Clearly this does support the hypothesis that the interest elasticity of the differential has become less elastic over time. A possible explanation of this finding is that as the interest differential has tended to fall steadily over time (see Chapter Four), the attractions of shifting out of money into interest earning assets has consequently become less attractive. In other words, the interest rate on money has closely followed other general rates of interest (as shown in Chapter Four), such that the interest differential is both small and changes only infrequently.

The opportunity cost of holding money balances when general interest rates rise is thus likely to be minimal, and the (largely unchanged) differential will have little effect on the demand for money. Given that money has tended to become increasingly market-related over time, there has been a reduction of the interest-sensitivity of the demand for money with respect to interest differentials.

In monetary control terms, this appears to show that the ability of the monetary authorities to control the money

Table 2

Sub-Period			Interest Elasticity
1967/3	to	1986/4	-0.82
1967/3	to	1985/4	-0.85
1967/3	to	1984/4	-0.75
1967/3	to	1983/4	-0.71
1967/3	to	1982/4	-0.68
1967/3	to	1981/4	-0.85
1967/3	to	1980/4	-1.11
1967/3	to	1979/4	-1.63
1967/3	to	1978/4	-1.62
1967/3	to	1977/4	-2.13

Interest Elasticity of the Demand for M4.

supply by inducing money holders to switch into alternative interest bearing assets has become weaker. Increasing short term interest rates will have less effect in the 1980's on the interest differential between money and short rates than in the 1970's, largely, it is argued, due to the influence of high interest instant access accounts.

The warnings of Cooley and LeRoy should perhaps be stated here,

> "The data are such that a modestly energetic specification search will give back almost whatever interest elasticity one wishes to extract, particularly if more than one interest rate is included and if specification search involves extensive tinkering with dynamic effects,...The preponderance of empirical studies of the demand for money which show significant negative interest elasticities reflect the acknowledged prior beliefs of the researcher and not the information content of the data".
>
> (1981, p836)

Given that the original model was specified with due regard to stability and robust testing, and that the initial focus was on the importance of financial innovation to the demand for money, estimating the (unchanged) model over successive time periods appears justified. No 'experiments' have been made with different model formulations to bring out any particular elasticity that may accord with prior beliefs.

Although significant interest rate effects have been found in the standard ECM model above it is recognised that for an error-correction mechanism to exist the variables in the model must cointegrate (Granger and Weiss 1983, Engle and Granger 1987). Conversely, if the variables in an equation are cointegrated then there is always an ECM formulation of that model. Table 3 below shows the number of

Table 3

Testing the individual time series for integration

	LEVELS I(0)		FIRST DIFFERENCE I(1)		SECOND DIFFERENCE I(2)	
	DF	ADF	DF	ADF	DF	ADF
RS	-1.806	-1.809	-7.747	-3.843		
Y	-8.108	-3.079	-15.0	-7.989		
P	-1.352	-1.628	-2.369	-1.143	-16.271	-4.091
ORD	-1.829	-1.929	-6.496	-4.155		
G	-2.019	-1.953	-7.168	-4.215		
RT	-2.131	-2.251	-7.365	-4.385		
M4	0.754	-0.374	-2.816	0.1673	-19.755	-5.66
GFW	3.414	1.649	-2.674	-0.480	-13.353	-6.173

All variables except interest rates are in log form. The DF and ADF tests are t-tests for integration that require a significant and negative finding (Dickey and Fuller 1979).

times the individual time series need differencing in order to induce stationarity, and hence the order of integration.

It appears that the interest rate terms and income are all I(1), and M4, prices and gross financial wealth are all I(2). This accords closely with the results of Hall et al (1989), who also note that money and prices are I(2) and combine to be I(1) so that real money will cointegrate with the other variables.

An OLS regression of the demand for M4 was run on the levels of each variable in order to find a stationary linear combination of the individual time series (see Hall et al 1989):

$$\left(\frac{M}{PY}\right) = -\ 0.153\ RS - 0.0082\ P + 0.88\ \left(\frac{GFW}{PY}\right) + 0.094\ DCCC$$

DF = -5.96

ADF = -2.64

R^2 = 0.98

DCCC = 0 prior to 1971 Q4 and 1 thereafter.

The above variables clearly do not provide a cointegrating vector as the ADF statistic is below the critical value at a five per cent level. Similar problems occurred when using the maximum retail rate at banks. Dropping the interest rate term yielded the following:

$$\left(\frac{M}{PY}\right) = -0.02\ P + 0.87\left(\frac{GFW}{PY}\right) + 0.064\ \text{DCCC}$$

DF = -6.668

ADF = -3.224

R^2 = 0.975

Dropping the interest rate terms has thus provided a plausible cointegrating equation. This is a somewhat surprising result as earlier researchers have found significant interest rate effects. It does, however, corroborate the work of Hall et al (1989) who also found that interest rates were not significant in a cointegrating model of M4. To see if interest rates were perhaps important over earlier periods the equation was estimated over sub-periods 1969 Q1 to 1980 Q4 and 1969 Q1 to 1975 Q4, but interest rates were still not found to be significant variables.

The residuals from the above equation were included as the ECM in a final dynamic cointegrating regression which was derived using the general-to-specific modelling strategy:

$$\Delta\left(\frac{M}{P}\right) = \text{constant} \underset{(.086)}{+ 0.244}\,\Delta\left(\frac{M}{P}\right)_{t-2} \underset{(0.13)}{- 0.99}\,\Delta(P)$$

$$\underset{(0.021)}{+ 0.043}\,(Z)_{t-1}$$

R^2 = 0.633

SER = 0.015

ARCH 1 = 0.983

LM (8) = 11.93

LM (4) = 10.69

LM (2) = 0.99

LM(4) is a test for fourth order serial correlation that is valid with a lagged dependent variable.

ARCH(1) tests for autoregressive conditional heteroskedasticity.

RESET is Ramsey's (1974) test for omitted variables.

$(Z)_t$ = Residuals

The effects of interest rates at this dynamic stage were again tested, but still found to be insignificant. The results of this cointegration model thus tend to conflict with the standard ECM model estimated earlier. There is therefore considerable doubt as to the validity of the interest elasticities of the demand for M4 equation reported earlier, and may reflect problems of measuring interest elasticities during a period of financial innovation.

9.6 Conclusion

The aim of this Chapter has been an attempt to evaluate the effect of the abolition of the building societies' recommended rate system and financial innovation on the demand for money function for M4. Sections 9.1 to 9.4 analysed the main econometric modelling strategies employed in previous research and provided a critique of the underlying methodologies adopted. Having examined the main strategies, both an error-correction autoregressive distributed lag model and a cointegrating equation were chosen to compliment the theoretical specification of the demand for broad money which was established with regard to the likely relevant variables in Chapter Eight. A sequential testing-down procedure was used as in the general-to-specific modelling process to arrive at a data coherent stable final equation, which was then used to explore earlier stated hypotheses.

The final reduced form error correction equation contains wealth, interest rate, inflation and income variables. Financial innovation is captured through the use of employing interest rates on high interest easy access accounts at building societies. The equation passes a number of tests, including the Chow test for parameter stability, and forecasts well in an out-of-sample test.

The fact that income is only included in the form of the error correction term rather than as a distinct single variable may be interpreted as the reduced importance of income relative to wealth in the non-bank private sectors' demand for money. This may be rationalised as the result of money increasingly bearing interest, and increasingly being used as a store of wealth.

The importance of high interest easy access accounts to the overall stability of the equation is important (when this variable is dropped the equation appears unstable), but similar results can be obtained by switching this variable with the rate on ordinary shares at building societies. This may also be a reflection of financial innovation, with ordinary shares becoming increasingly liquid and paying a higher real rate of interest in the 1980's. Despite the evidence of earlier research, the total return on gilts (ie. including expected capital gains) was insignificant in the equation, both on its own and as a differential to building society rates. This may be explained by financial innovation making the demand for money completely inelastic with respect to long rates of interest, both in terms of the general level of return on gilts and a differential return, although mis-specification of the gilts equation cannot be ruled out.

The equation was also unsatisfactory when the interest differential between Treasury bills and building society high interest easy access accounts was swapped for the levels of these terms, in the form of insignificant variables when used for forecasting. This may be an indication that 'levels' of interest rates have reduced in importance in the demand for money function as compared to interest rate differentials.

An examination of the effects of financial innovation upon the interest elasticity of the differential between the own rate on money and competing rates found that the demand for money has become less sensitive over time to changes in the differential. This contradicts the assertions of some commentators, but may be explained by the fall in the average size of the interest differential over time, hence reducing the incentive of shifting out of (interest earning) money into other interest earning assets. Thus, the monetary authorities' ability to induce a switch out of money balances into alternative interest bearing assets appears to have been reduced. Increasing short-term interest rates will have little effect on the interest differential between money and other assets. Thus, the error correction model suggests that controlling the money supply from the demand side (see Chapter Seven) is unlikely to be effective. When operating from the demand side, it is unlikely that interest rate differentials will be substantially changed, and unlikely that the level of broad money holdings will be reduced (again abstracting from supply-side considerations), when a rise in interest rates is engineered by the monetary authorities. The error-correction model implies that financial innovation has led to a relatively stable pool of balances at banks and building societies that have become increasingly de-sensitized to interest differentials. In IS-LM terms, the LM curve has become progressively steeper, with reduced interest elasticity of money demand.

Given the results of the cointegrating demand for money equation however, the above conclusions cannot be held. Interest rates were not found to be significant variables in the equation over the period 1969 quarter one to 1986 quarter four, or in any sub-periods. A tentative rationale is that the effects of interest rates (if any) on the demand for money may be difficult to measure during a period of financial liberalization and innovation.

NOTES

[1] For general critiques of the econometricians approach to the estimation of the demand for money see Leamer (1978, 1983), Sims (1980), Cooley and LeRoy (1981), Leamer and Leonard (1983), McAcleer et al (1985).

[2] That capital gains or losses may occur can be explained by the activities of the Bank of England in the gilts market (Fisher 1973). Gilts markets are not efficient, it is argued, because of the authorities control of short rates, and because of the policy of 'leaning into the wind' (Grice and Bennett (1984)). It is possible therefore, that prices may at times not fully reflect expected capital gains or losses to gilts as the prices may not be those which an unhindered market would normally establish.

[3] Mizon suggests a test to evaluate whether or not the equation can be accepted as a specialization of its corresponding general form:-

$$F\,[r,\ T\text{-}K] = \left(\frac{SSE^R - SSt^u}{SSt^u}\right)\cdot\left(\frac{T-K}{r}\right)$$

where:-

SSE^R = residual sums of squares in the restricted equation.

SSt^u = residual sums of squares in the unrestricted equation.

T = Number of observations

r = Number of restrictions

K = Number of explanatory variables in the unrestricted case.

CHAPTER TEN

ECONOMETRIC EVALUATION - THE CONSUMERS' EXPENDITURE FUNCTION AND THE DEMAND FOR CREDIT

10.0 Introduction

The emphasis of Chapter Ten is on the evaluation of earlier stated hypotheses with regard to the consumers' expenditure function and the demand for credit. In Section 10.1 error correction and cointegrating models of consumers' expenditure are developed and estimated in order to test the hypothesis that the ending of the cartel and a greater importance of the 'price' of mortgages as opposed to mortgage rationing has increased the interest elasticity of expenditure. An increase in the interest elasticity of expenditure is likely to increase the ability of the monetary authorities to control the growth of the money supply, other things being equal.

In Section 10.2 a model of the demand for mortgages is estimated and used to create a proxy for mortgage rationing. This is then used as a variable in an error correction model of total debt of the personal sector which is developed and estimated in Section 10.3. This model is used to evaluate and quantify the hypothesis that the abolition of the building societies' cartel produced substantial stock effects on personal sector demand for credit. If this is so, then it is likely that the implementation of monetary control may have been problematic for a finite period of time.

10.1 The Interest Elasticity of Consumers' Expenditure

It was recognised in Chapter Seven that the transmission mechanism of monetary control may work through the effects of interest rates on consumers' expenditure. Specifically, the effects of increased interest rates on mortgage holders' expenditure may be a strong form of monetary control,

> "Future changes in the rate of credit growth will be closely related to the cost of funds, ie. the mortgage interest rate. If the rate increase the demand for, and growth of, mortgage funds will decline and consumer spending will be dampened. Similarly, a fall in rates will boost loan demand, lead to more rapid growth in credit and stimulate expenditure".
>
> (Turnbull, 1984 p6)

The hypothesis to be tested in this section is that the greater influence and fluidity of the price of mortgages after the abolition of the cartel and increased mortgage debt of the personal sector as a result of credit liberalization has increased the interest elasticity of consumers' expenditure. In other words, greater personal sector gearing is likely to have increased the sensitivity of consumers' spending with respect to flexible mortgage interest rates. A rise in the interest elasticity of consumers' expenditure would represent an increase in the efficacy of monetary control, all other things equal.

Given the earlier conjectures as to the importance of the mortgage market to consumers' expenditure, it has been decided to model consumers' expenditure on durable goods rather than non-durables. Previous researchers into durables expenditure (see, inter alia, Davidson et al (1978), Hendry (1983), Davis (1984), Patterson et al (1987) and Dicks

(1988)) typically estimate durables functions as:-

$$(CD) = f(Y, ML, NLA, RMD) + \text{dummy variables.}$$

where:-

CD = Consumers' Expenditure on Durables (real)

Y = Real Personal Disposable Income OR Real Household Disposable Income.

ML = Flow of Mortgage Lending.

NLA = Real Net Liquid Assets of the Personal Sector.

RMD = Minimum Deposit Rate on Durables.

Additionally, Dicks (1988) and Cuthbertson (1980), are, to the author's knowledge, the only published models of durables expenditure which include an interest rate term (clearing banks' base rate minus the annual inflation rate of consumer prices).

The general model estimated here was of the form:-

$$\begin{aligned}(CD) = {} & \text{constant} + \sum_{i=o}^{4} (CD)_{-i} + \sum_{i=o}^{4} (RPDI)_{-i} \\ & + \sum_{i=o}^{4} (ML)_{-i} + \sum_{i=o}^{4} (NLA)_{-i} + \sum_{i=o}^{4} (RM\ )_{-i} \\ & + \sum_{i=o}^{4} (MRAT) + (D731) + (D732) + (D764) \\ & + (D792) + (D793)\end{aligned}$$

Note that there are a number of innovations in this equation compared with previous researchers' models of consumers' durables expenditure.

Specifically, the interest rate on building society mortgages (RM) is included, in the expectation that the cost of mortgages is likely to be a significant determinant of consumers' expenditure. Similarly, the (MRAT) term which is Meens' (1985) measure of mortgage rationing is included on the grounds that the liberalization of the mortgage market may have affected consumers' spending on durable goods. The dummy variables are for the budgets of 1973 and 1979 which affected expenditure through indirect tax changes (ie. some expenditure was brought forward to avoid tax changes - Dicks (1988)) and are standard in models of consumers' expenditure (Full data definitions and sources are provided in Appendix A).

Testing down from the initial general specification however, it was found that neither (RM) nor (MRAT) were significant in the durables equation. As an alternative interest rate variable, the base rate of clearing banks was included (RCB):-

$$
\begin{aligned}
(CD) = \underset{(1.4)}{-2.6} &+ \underset{(0.1)}{0.45}\ (CD)_{t-2} + \underset{(0.48)}{1.04}\ (RPDI)_{t-1} \\
&- \underset{(0.06)}{0.11}\ (ML) + \underset{(0.18)}{0.68}\ (NLA) - \underset{(0.05)}{0.33}\ (RCB) \\
&+ \underset{(0.08)}{0.09}(D731) + \underset{(0.09)}{0.05}(D732) + \underset{(0.08)}{0.068}(D764) \\
&+ \underset{(0.08)}{0.35}(D792) - \underset{(0.08)}{0.07}(D793)
\end{aligned}
$$

R^2 = 0.92 SER = 0.08

AR F [4,44] = 4.45 NORMALITY [2] = 9.74

RESET [1,47] = 0.54 ARCH F [4,40] = 0.13

HETEROSKEDASTICITY [15,32] = 0.83

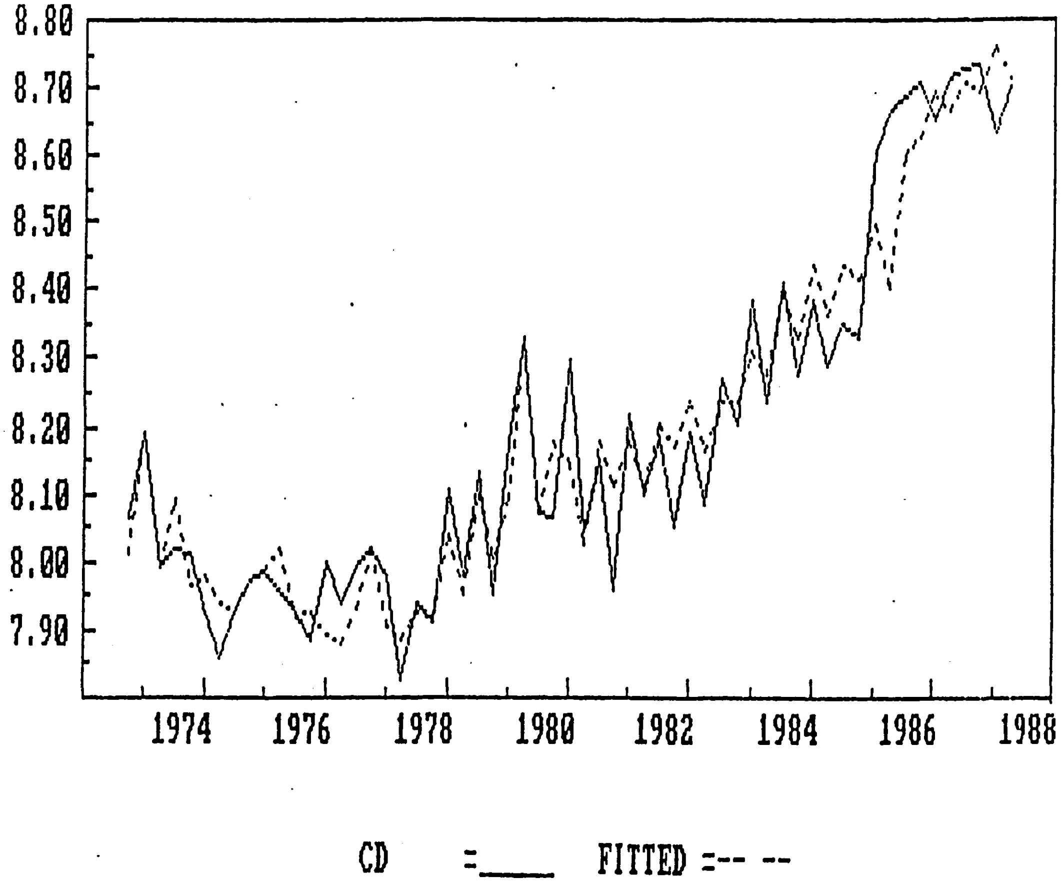
All variables are in logarithms.

All of the variables apart from some of the dummies are significant. The model does not track well (Diagram 10.1) and there are some problems of Normality and Autocorrelation (Dicks (1988) also found this to be the case).

The interest elasticity of consumers' expenditure on durables has risen from -0.45 in 1977 quarter four to -0.51 in 1987 quarter two. It is also noticeable that the interest rate term is insignificant prior to 1980, suggesting that interest rates have recently become an important determinant of consumers' expenditure (Tables 10.1 and 10.2). This would tend to suggest that the effects of interest rates on expenditure have become marginally more powerful over time. It is noticeable, however, that these elasticities are relatively 'low' and do not imply an especially strong transmission mechanism of monetary policy.

To test the applicability of the consumers' expenditure model derived above a cointegrating equation was developed using the Engle-Granger two step procedure. Table 10.3 below shows the order of integration of the individual time series. Consumers' expenditure, interest rates and income are all I(1), and prices, net liquid assets and the flow of mortgage lending are also I(1) (although they are very close to the critical values for I(2)).

DIAGRAM 10·1



8.80
8.70
8.60
8.50
8.40
8.30
8.20
8.10
8.00
7.90
1974
1976
1978
1980
1982
1984
1986
1988
CD =____ FITTED =-- --

DIAGRAM 10·2

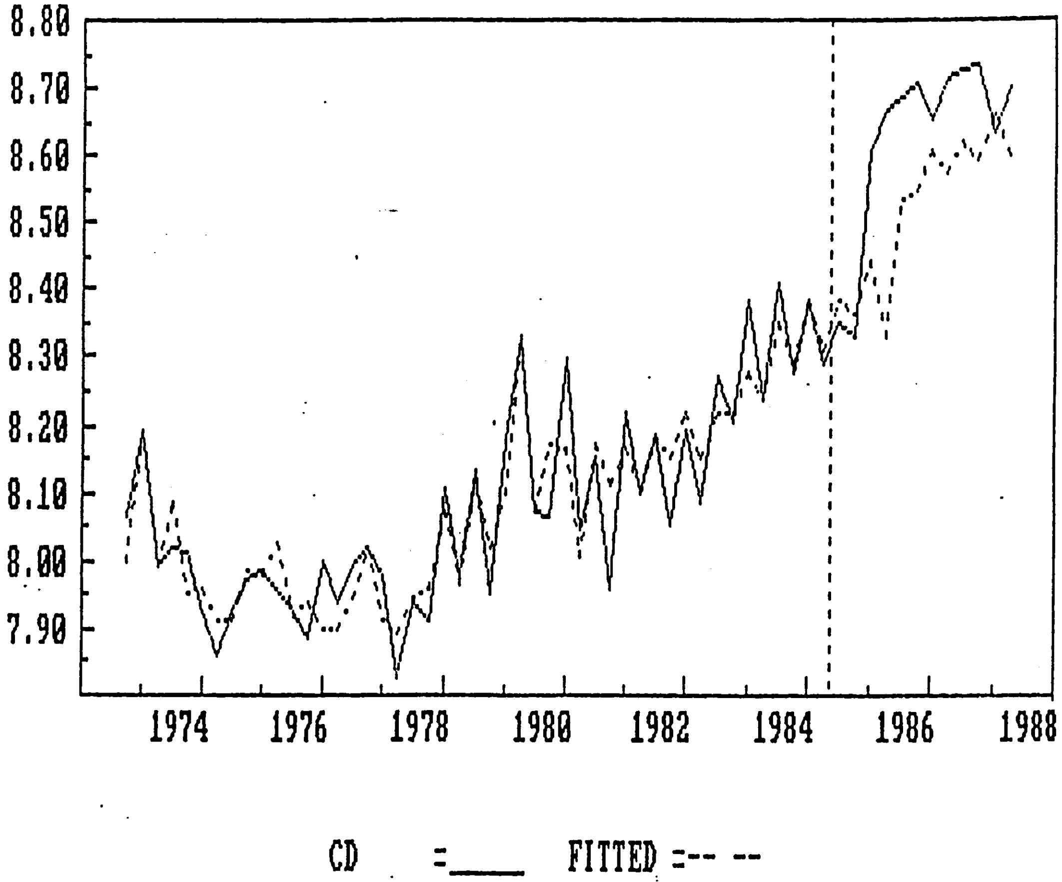

8.80
8.70
8.60
8.50
8.40
8.30
8.20
8.10
8.00
7.90
1974
1976
1978
1980
1982
1984
1986
1988
CD =____ FITTED =-- --

DIAGRAM 10·3

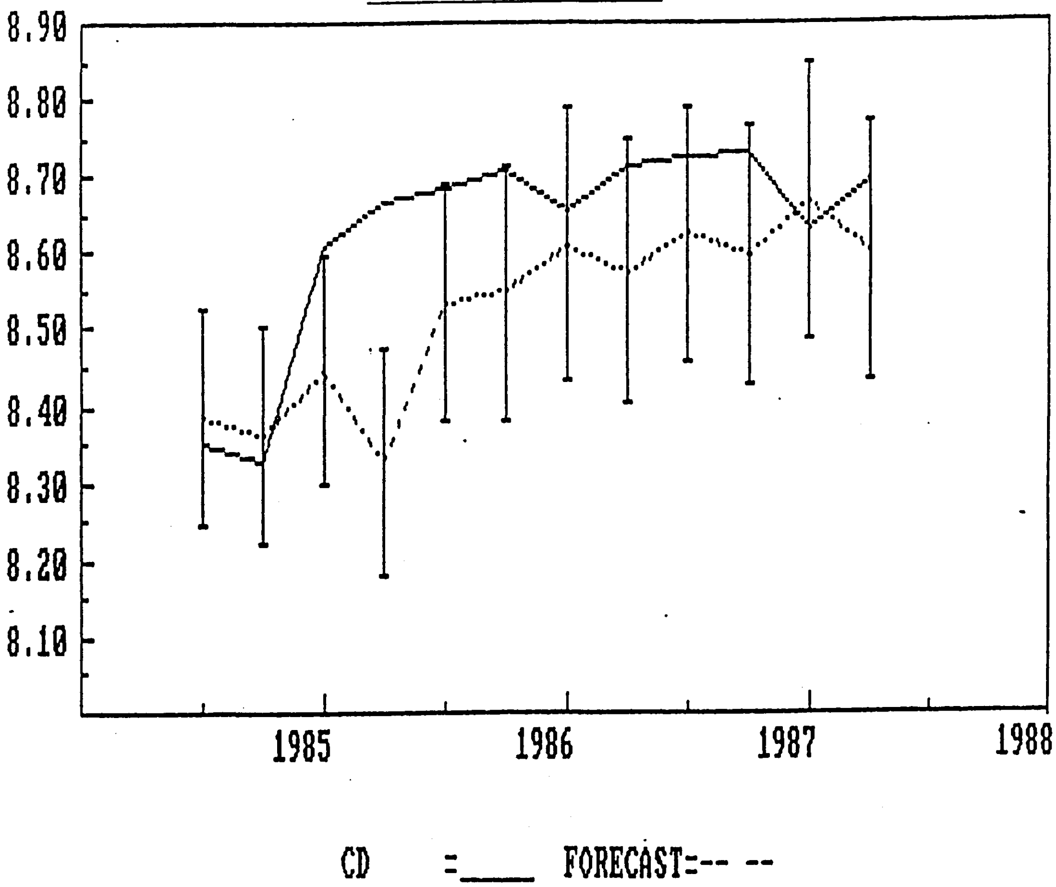

8.90
8.80
8.70
8.60
8.50
8.40
8.30
8.20
8.10
1985
1986
1987
1988
CD =____ FORECAST=-- --

Table 10.1

		Constant	$(CD)_{t-2}$	$(RPDI)_{t-1}$	(ML)	(NLA)	RCB	R^2
1972/ 1987/2	to	-2.56 (1.44)	0.45 (0.1)	1.04 (0.43)	-0.11 (0.06)	0.68 (0.18)	-0.3 (0.05)	0.93
1972/4 1986/4	to	-3.35 (1.5)	0.48 (0.1)	1.10 (0.48)	-0.13 (0.07)	0.75 (0.18)	-0.28 (0.05)	0.92
1972/4 1985.4	to	-3.59 (1.78)	0.49 (0.12)	1.03 (0.51)	-0.15 (0.08)	0.77 (0.19)	-0.28 (0.06)	0.88
1972/4 1984/4	to	-0.02 (1.61)	0.4 (0.11)	1.33 (0.42)	-0.12 (0.06)	0.5 (0.16)	-0.27 (0.05)	0.87
1972.4 1983/4	to	-0.57 (1.9)	0.41 (0.12)	1.32 (0.44)	-0.12 (0.07)	0.55 (0.18)	-0.28 (0.05)	0.83
1972/4 1982/4	to	0.55 (2.0)	0.36 (0.12)	1.29 (0.45)	-0.13 (0.07)	0.49 (0.19)	-0.26 (0.05)	0.78
1972/4 1981/4	to	0.88 (2.23)	0.34 (0.14)	0.31 (0.47)	-0.13 (0.08)	0.47 (0.21)	-0.26) (0.07)	0.74
1978/4 1980/4	to	0.88 (2.83)	0.29 (0.16)	1.35 (0.49)	-0.11 (0.08)	0.5 (0.28)	-0.28 (0.1)	0.74
1972/4 1979/4	to	0.1 (3.1)	0.24 (0.15)	1.0 (0.5)	-0.11 (0.07)	0.6 (0.3)	-0.33 (0.17)	0.80
1972/4 1978/4	to	0.2 (3.5)	0.32 (0.18)	0.94 (0.47)	-0.12 (0.07)	0.56 (0.3)	-0.31 (0.18)	0.69
1972/4 1977/4	to	-0.2 (4.9)	0.2 (0.21)	0.79 (0.57)	-0.07 (0.08)	0.62 (0.42)	-0.35 (0.03)	0.65

Consumer Durables Expenditure Equations

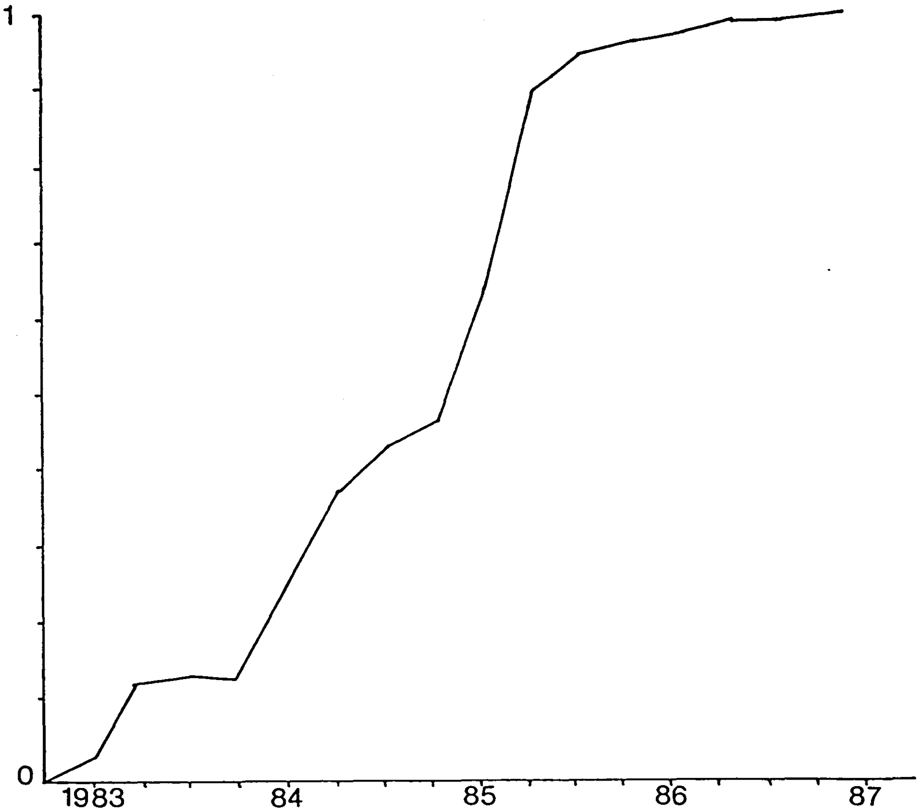
Table 10.2

1987/2	-0.51
1986/4	-0.53
1985/4	-0.54
1984/4	-0.54
1983/4	-0.47
1982/4	-0.41
1981/4	-0.39
1980/4	-0.39
1979/4	-0.44
1978/4	-0.45
1977/4	-0.45

Interest Elasticity of Consumers Expenditure(1)

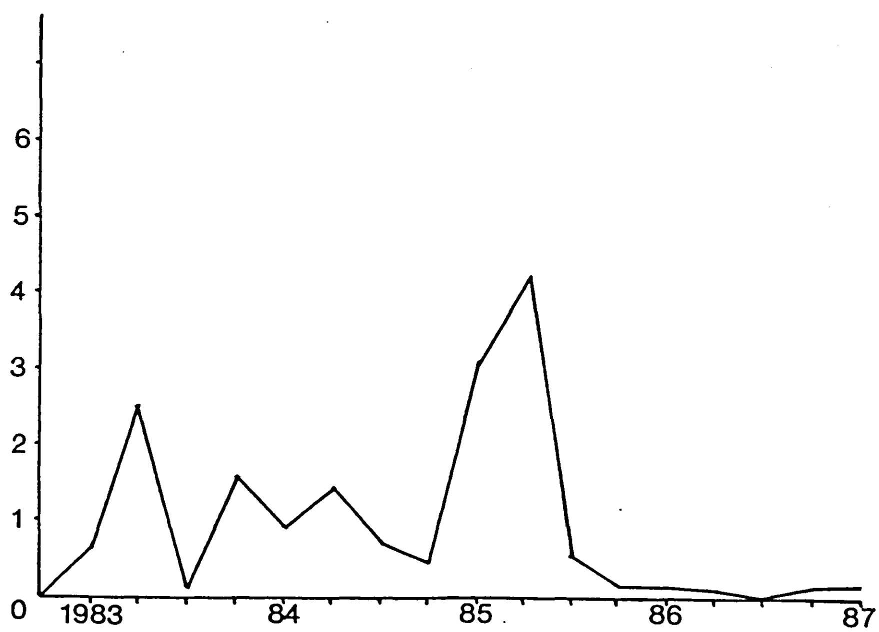
(1) Measured as the coefficient on the interest rate divided by one minus the coefficient on the lagged dependent variable.

DIAGRAM 10·4



CUSUMSQ

DIAGRAM 10·5



SEQUENTIAL CHOW TEST

Table 10.3

	LEVELS I(0)		FIRST DIFFERENCE I(1)		SECOND DIFFERENCE I(2)	
	DF	ADF	DF	ADF	DF	ADF
CD	-1.34	-0.62	-15.95	-4.17		
NLA	2.15	-1.04	- 5.19	-3.31	-16.35	-5.13
ML	3.71	2.03	-6.84	-3.28	-14.6	-5.42
RCB	-2.33	-3.16	-8.13	-5.17		
RM	-1.93	-1.76	-6.38	-4.19		
Y	-8.11	-3.08	-15.0	-7.98		
P	1.79	1.24	-7.12	-3.19	-12.7	-6.14

Testing the individual time series for integration

All variables except interest rates are in log form.

It proved relatively easy to find a cointegrating equation of the levels of the individual time series:

$$(CD) = 0.25 \ (Y) + 0.828 \ (ML) - 0.789 \ (P)$$

DF = -6.47

ADF = -3.62

R^2 = 0.7

The residuals from this equation were used as the error correction mechanism in a dynamic model which was derived using general to specific modelling:

$$\underset{}{(CD)} = \underset{(0.319)}{-\ 0.521} \ \underset{(0.056)}{-\ 0.118\ (RM)} + \underset{(0.04)}{1.08\ (CD)_{t-2}} \ \underset{(0.10)}{-\ 0.69\ (Z)_{t-2}}$$

R^2 = 0.9

SER = 0.09

ARCH = 0.0007

LM8 = 11.93

LM4 = 3.5

LM2 = 3.03

In contrast to the earlier error correction model, it was found that the interest rate on building society mortgages was significant, but that the Clearing Banks' base rate was not. Interestingly, the dummy variables used earlier were also not significant, nor was the proxy for mortgage rationing.

The equation passes a variety of tests. In particular, diagrams 10.4 and 10.5 showing the CUSUMSQ statistic and the one period ahead Chow test suggest that the equation is stable (although there is some evidence of instability in 1985 quarter 2).

Table 10.4

	Constant	$(CD)_{t-2}$	(RM)	$(Z)_{t-2}$	$(R)^2$
1972/4 to 1987/2	-0.437 (0.27)	1.12 (0.05)	-0.139 (0.054)	-0.64 (0.12)	0.9
1972/4 to 1986/4	-0.521 (0.319)	1.085 (0.04)	-0.118 (0.056)	-0.69 (0.1)	0.9
1972/4 to 1985/4	-0.706 (0.43)	1.11 (0.06)	-0.133 (0.064)	-0.69 (0.11)	0.86
1972/4 to 1984/4	-0.078 (0.550)	1.11 (0.074)	-0.122 (0.07)	-0.531 (-0.53)	0.81
1972/4 to 1983/4	-0.934 (0.703)	1.14 (0.094)	-0.184 (0.074)	-0.722 (0.154)	0.78
1972/4 to 1982/4	-2.2 (1.1)	1.31 (0.15)	-0.266 (0.097)	-0.956 (0.21)	0.74
1972/4 to 1981/4	-3.15 (1.54)	1.44 (0.21)	-0.319 (0.12)	-1.16 (0.29)	0.72
1972/4 to 1980/4	-3.11 (1.68)	1.44 (0.23)	-0.316 (0.16)	-1.17 (0.33)	0.7
1972/4 to 1979/4	-4.0 (1.52)	1.57 (0.21)	-0.513 (0.14)	-1.3 (0.31)	0.74
1972/4 to 1978/4	-1.95 (1.55)	1.31 (0.21)	-0.465 (0.15)	-0.78 (0.34)	0.76
1972/4 to 1977/4	-2.75 (2.34)	1.41 (0.32)	-0.498 (0.21)	-0.97 (0.49)	0.74

Dynamic Cointegrating Consumer Durables Equations

Table 10.5 shows that the interest elasticity of consumers' expenditure fell from -1.5 in the sub-period to 1978 to -0.725 in the period to 1981, and then rose from -0.86 to stabilise around -1.1 to -1.3 over 1983 and 1987. These elasticities are approximately twice the size of those reported earlier, but are in the range reported by Dicks (1988). It is interesting to note that the elasticities reported from this dynamic cointegrating equation follow the same pattern as those of the standard error correction model, in terms of a fall in elasticity from 1978 to 1981, and an increase thereafter with subsequent stabilisation around 1984 to 1987.

Table 10.5

1987/2	-1.15
1986/4	-1.12
1985/4	-1.21
1984/4	-1.11
1983/4	-1.31
1982/4	-0.86
1981/4	-0.73
1980/4	-0.71
1979/4	-0.9
1978/4	-1.5
1977/4	-1.21

The Interest Elasticity of Consumers' Expenditure
(measured as the coefficient on the interest rate divided by one minus the lagged dependent variable).

10.2 A Proxy for Credit Liberalization

This section attempts to update Meen's (1985) figures for mortgage rationing. Values for mortgage rationing are estimated for three purposes; firstly, a variable measuring mortgage rationing is likely a priori to be a significant determinant of the debt of the personal sector, which is estimated in section 10.2. Secondly, this variable can be used as a proxy for credit liberalisation to the personal sector, along the lines of Johnston (1985) (see Chapter Eight), such that it may be possible to quantify the effects of freeing up of credit markets in the 1980's. Finally, it is feasible that the mortgage rationing variable might be of relevance to consumers' expenditure.

Meen (1985) provides a detailed critique of previous research into models of mortgage advances. The majority of studies include some form of variable to measure house prices, personal sector income, and mortgage interest rates.

Initially, the mortgage demand equation was specified in the following general form:-

$$\begin{aligned}\Delta (M) = \quad & \text{constant} + \sum_{i=o}^{4} (RM)_{-i} \\ & + \sum_{i=o}^{4} \Delta(M)_{-i} + \sum_{i=o}^{4} (PH)_{-i} \\ & + \sum_{i=o}^{4} (Y)_{-i} + \text{seasonals}\end{aligned}$$

where:

M = stock of building society mortgages outstanding.

RM = Building society mortgage interest rate (net of tax).

PH = Average house prices at mortgage completion stage.

Y = Personal disposable income.

Full data definitions and sources are included in Appendix A.

The variables chosen for the general specification accord closely with those of Anderson and Hendry (1984) and Meen (1985). That is, the demand for building society mortgages is expected to be a function of the interest rate on mortgages, average house prices, and income.

Testing down in the usual manner, the following equation was arrived at:

$$\begin{aligned}\triangle(M) = \underset{(0.003)}{0.004} - \underset{(0.1)}{0.4}(RM)_{t-1} + \underset{(0.1)}{0.44}(RM)_{t-2} \\ + \underset{(0.1)}{0.71}\triangle(M)_{t-1} + \underset{(0.024)}{0.05}\triangle(PH) \\ + \underset{(0.02)}{0.05}\triangle(Y)_{t-1} + \text{seasonals}\end{aligned}$$

$R^2 = 0.75$ SER = 0.05

AR F[5,64] = 2.23 NORMALITY[2] = 0.38

RESET F[1.68] = 0.96 ARCH [4,60] = 0.47

HETEROSKEDASTICITY F [13,55] = 1.88

Definitions of the test statistics are on page 360, Chapter Nine.

All variables except interest rates are in logs. The data period was 1968 quarter three to 1987 quarter four.

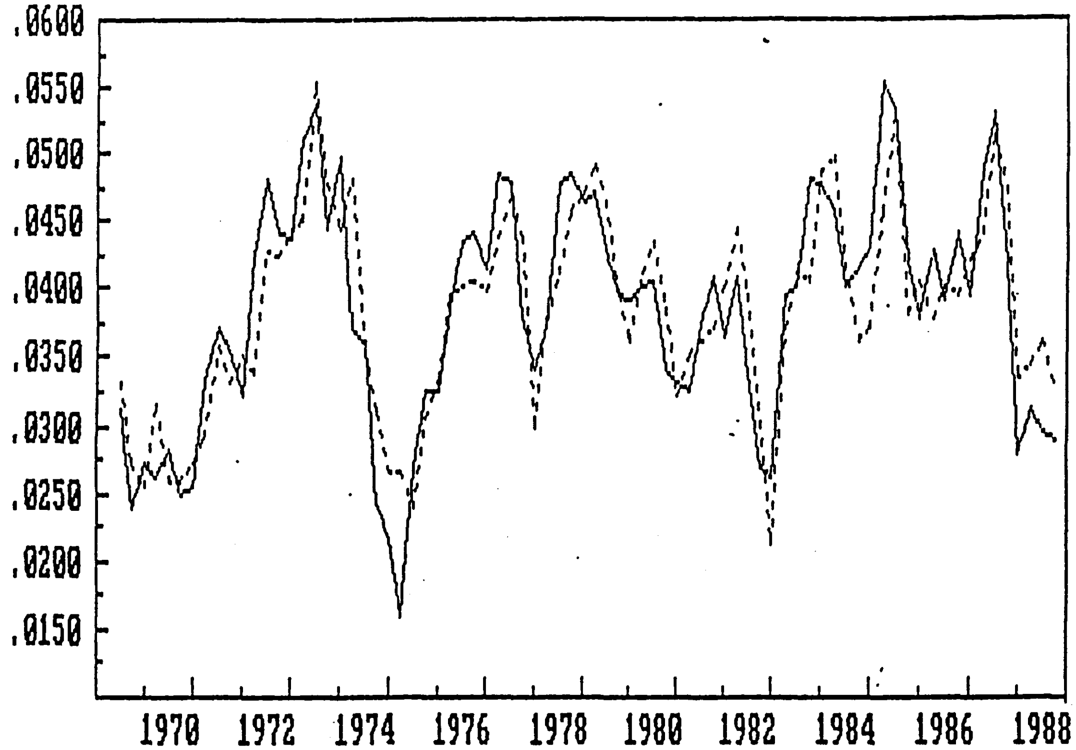
The equation passes the test statistics, and all of the variables are significant. Demand for Building Society mortgages is dependent upon average house prices and income, and mortgage interest rates. Diagram 10.1 shows that the model has a good fit, and forecasts relatively well in a twenty period out-of-sample forecast (Diagrams 10.2 and 10.3).

Excess mortgage demand (MRAT) can be measured as:-

$$(M_t - M^s_t) * 100$$

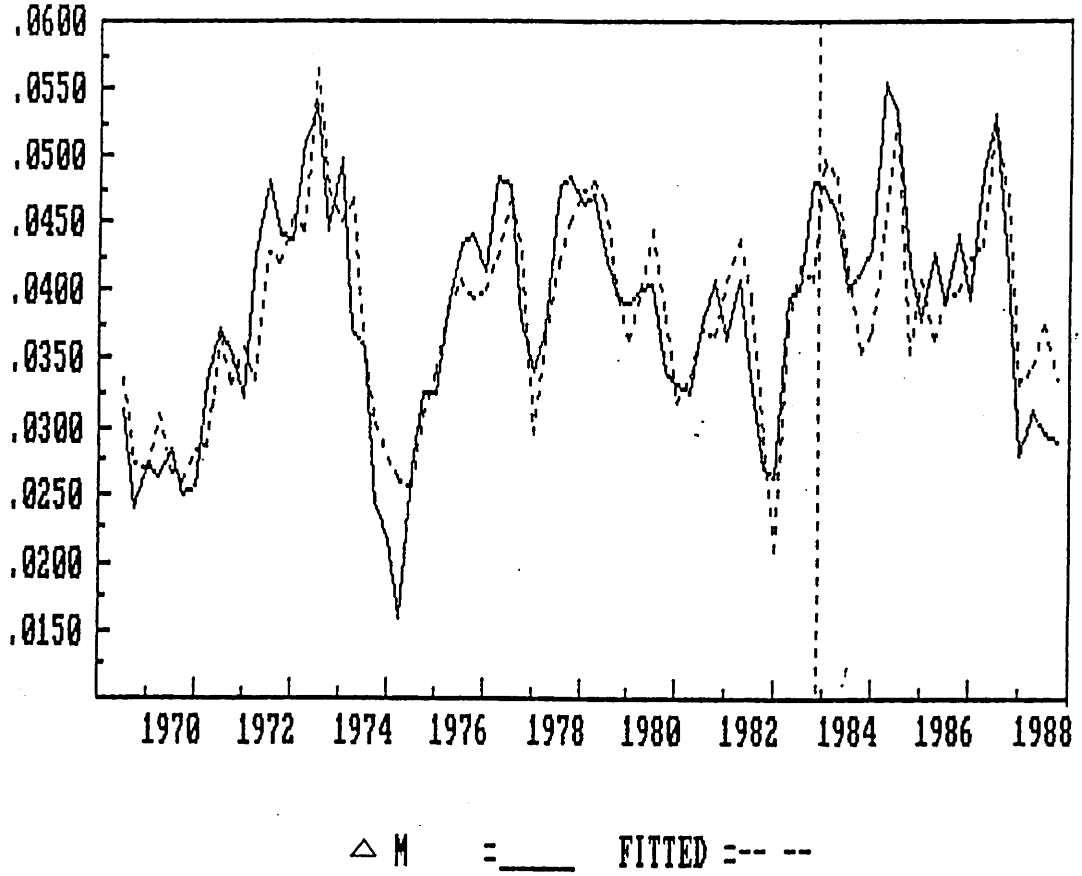
where M^s_t us the actual change in building society mortgage supply. The updated figures for Meen's (1985) MRAT calculations are shown in diagram 10.4. The change from a situation of excess mortgage demand in the 1970's to one of excess mortgage supply in the 1980's can be clearly seen, with specific reductions in mortgage rationing over the periods 1973-1975 (after the removal of direct portfolio controls and the increase in mortgage supply as analysed in Chapter Three) and again in 1979-1988, when excess mortgage

DIAGRAM 10·6



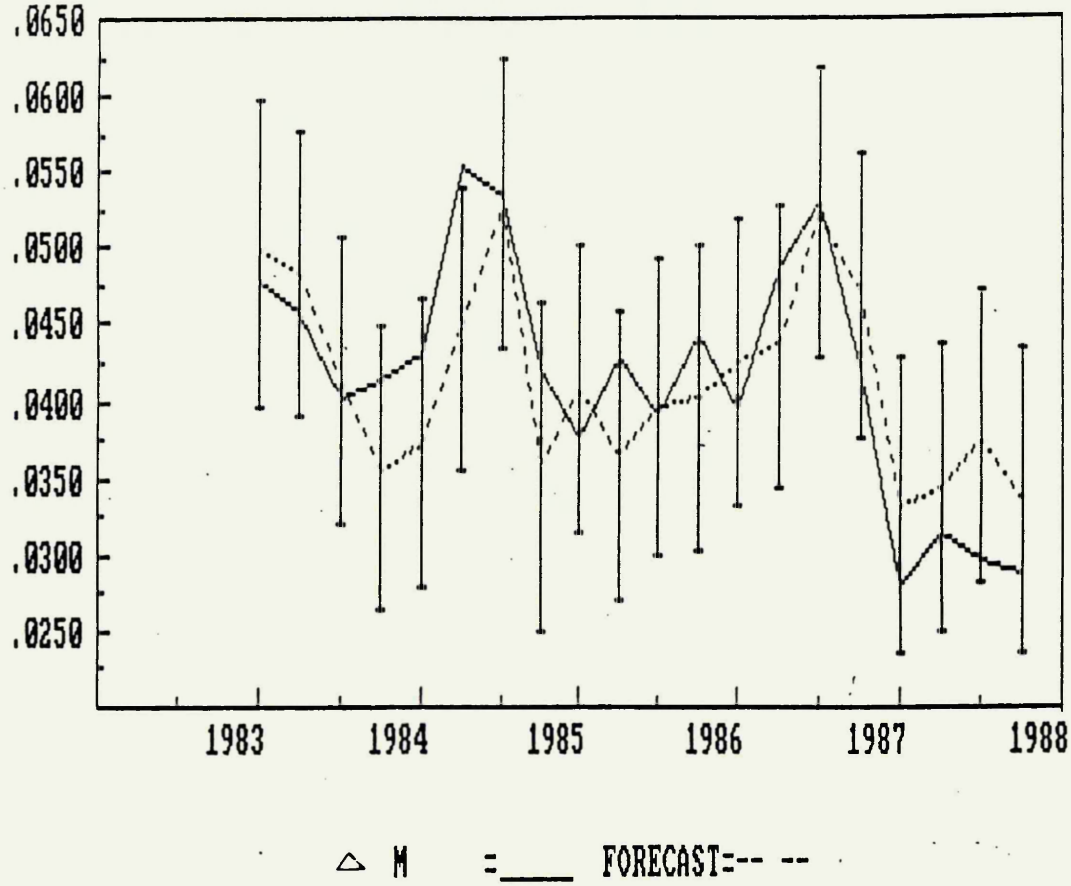
△ M =____ FITTED =-- --

DIAGRAM 10·7



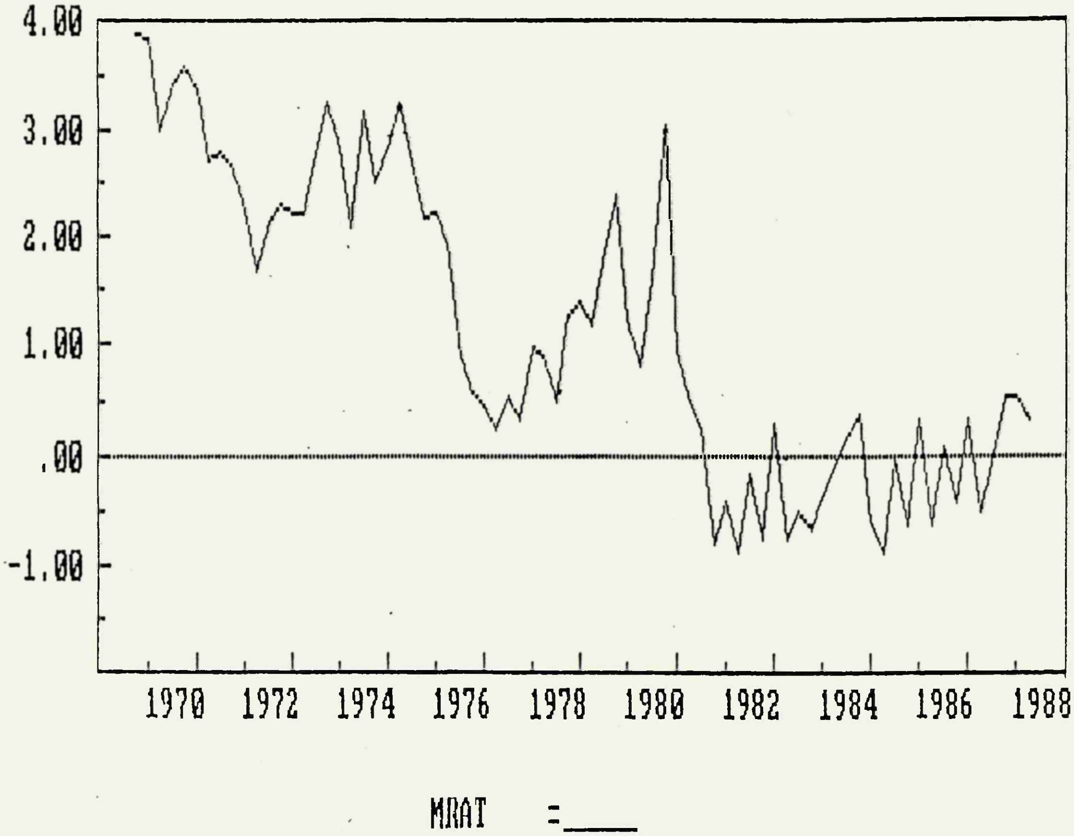
.0600
.0550
.0500
.0450
.0400
.0350
.0300
.0250
.0200
.0150
1970
1972
1974
1976
1978
1980
1982
1984
1986
1988
△ M =____ FITTED :-- --

DIAGRAM 10.8



.0650
.0600
.0550
.0500
.0450
.0400
.0350
.0300
.0250
1983
1984
1985
1986
1987
1988
△ M =____ FORECAST:-- --

DIAGRAM 10·9


4.00
3.00
2.00
1.00
.00
-1.00
1970
1972
1974
1976
1978
1980
1982
1984
1986
1988
MRAT =

supply emerged for the first time with the abandoning of the corset, the break-up of the building societies cartel, and greater competition in the mortgage market (as examined in Chapter Four).

10.3 Specification of the Personal Sector demand for credit

The personal sector's demand for credit is expected to be a function of interest rates, wealth, income, inflation and a proxy for mortgage rationing (see Johnston 1985).

The specification of the preliminary general equation to be reparameterized was as follows:-

$$\Delta\left(\frac{TD}{P}\right) = \text{constant} + \sum_{i=o}^{4} \Delta\left(\frac{TD}{P}\right)_{-i}$$

$$+ \sum_{i=o}^{4} (RCB)_{-i} + \sum_{i=o}^{4} (RM)_{-i}$$

$$+ \sum_{i=o}^{4} \left(\frac{Y}{P}\right)_{-i} + \sum_{i=o}^{4} \left(\frac{NFW}{P}\right)_{-i}$$

$$+ \sum_{i=o}^{4} \Delta(P)_{-i} + \sum_{i=o}^{4} (MRAT)_{-i}$$

$$+ DC1 + DC2 + DC3 + DCCC$$

$$+ \text{seasonals}$$

where:-

TD = Total debt of the Personal Sector

RCB = Clearing banks' base rate

RM = Building Society mortgage interest rate (net of tax).

Y = Personal Disposable Income

NFW = Net Financial Wealth of the Personal Sector

P = Consumers Expenditure Deflator

MRAT = Mortgage rationing.

DC1, DC2 and DC3 are dummy variables after Johnston (1985) to model the corset restrictions.

DC1 = 1 in 1974 Quarter four - 1975 Quarter One

DC2 = 1 in 1976 Quarter four - 1977 Quarter Two

DC3 = 1 in 1978 Quarter four - 1980 Quarter Two

DCCC = Dummy for competition and credit control: 1 after 1971 Q3.

Sample Period= 1969 Quarter four to 1987 Quarter four.

The final equation represents elements of both the demand the supply of debt to the personal sector:-

$$\Delta\left(\frac{TD}{P}\right) = \underset{(0.22)}{0.91} - \underset{(0.12)}{0.31}\Delta\left(\frac{TD}{P}\right)_{t-1} - \underset{(0.15)}{0.36}\,(RCB)$$

$$+ \underset{(0.36)}{0.78}\,(RM) - \underset{(0.04)}{0.16}\left(\frac{Y}{P}\right)_{t-2} - \underset{(0.08)}{0.59}\Delta^3\,(P)$$

$$- \underset{(0.002)}{0.006}\,(MRAT) - \underset{(0.008)}{0.009}\,(DC1) - \underset{(0.007)}{0.009}\,(DC2)$$

$$+ \underset{(0.006)}{0.013}\,(DC3) + \underset{(0.014)}{0.072}\,(DCCC) + \text{seasonals}$$

R^2 = 0.78 SER = 0.13

AR F[5,51] = 2.40 NORMALITY = 18.42

RESET F[1.55] = 1.24 ARCH [4.51] = 1.29

HETEROSKEDASTICITY = f[13,55] = 1.88

The equation has a good fit (Diagram 10.10) and a reasonable forecasting performance (Diagrams 10.11 and 10.12) although the model does have a tendency to over-predict.

Total debt of the personal sector is explained by real personal disposable income, inflation, clearing banks' base rate, and a variable (MRAT) that measures mortgage rationing. These variables all enter negatively, as would be expected a priori. The negative inflation term suggests that inflation reduces the real level of personal debt, whilst the negative mortgage rationing variable suggests that the greater is the difference between mortgage demand and mortgage supply, the less is the stock of personal sector total debt.

The equation also depends positively upon the interest rate on building society mortgages (net of tax) which is an unexpected result, and casts some doubt on the role of interest reates in the demand for credit.

DIAGRAM 10·10

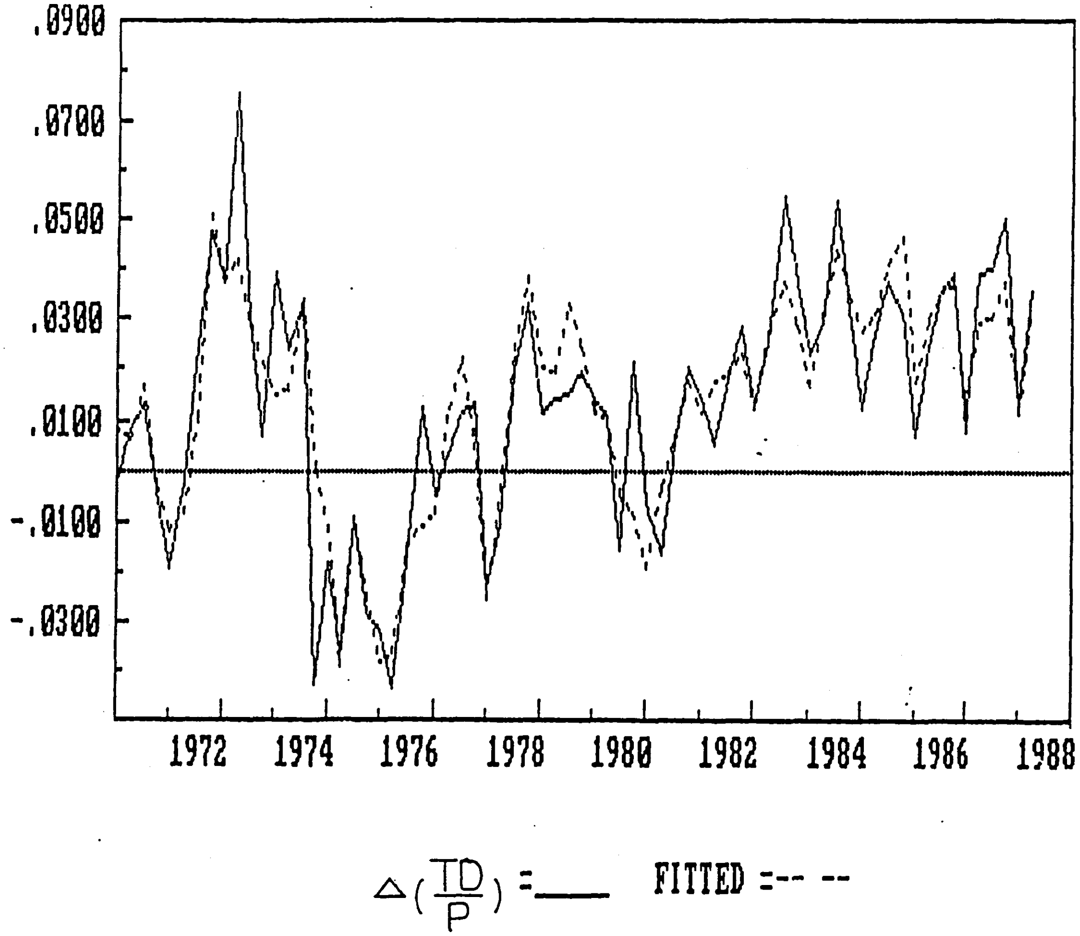
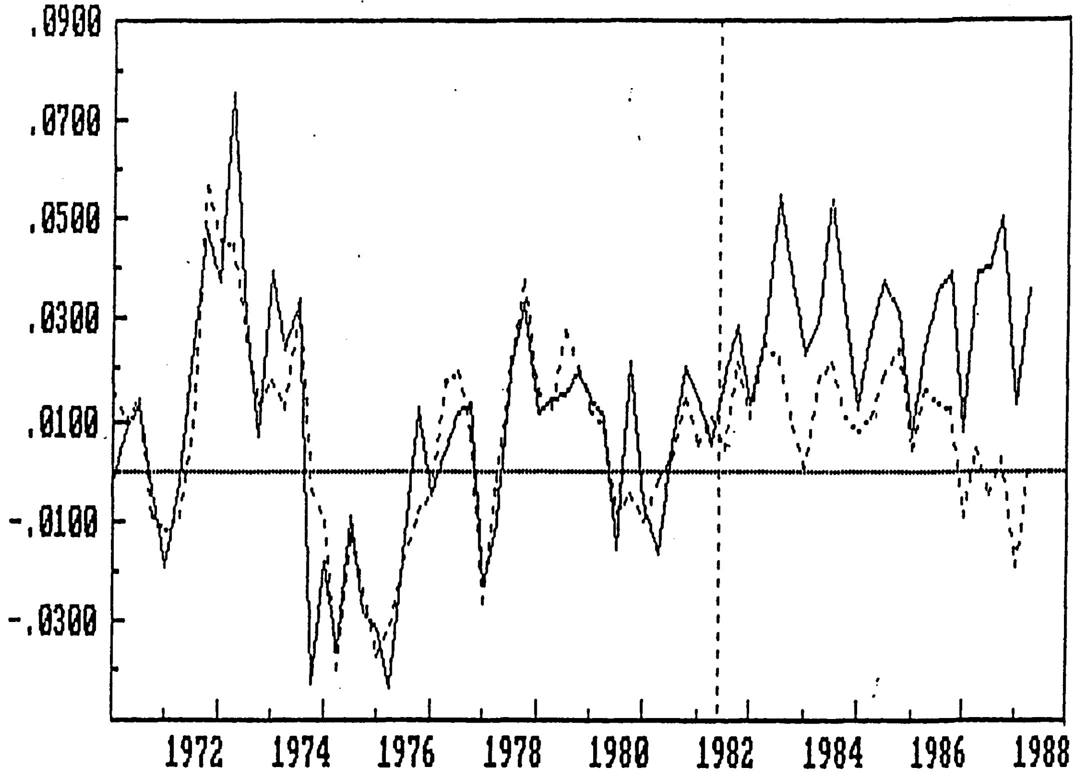
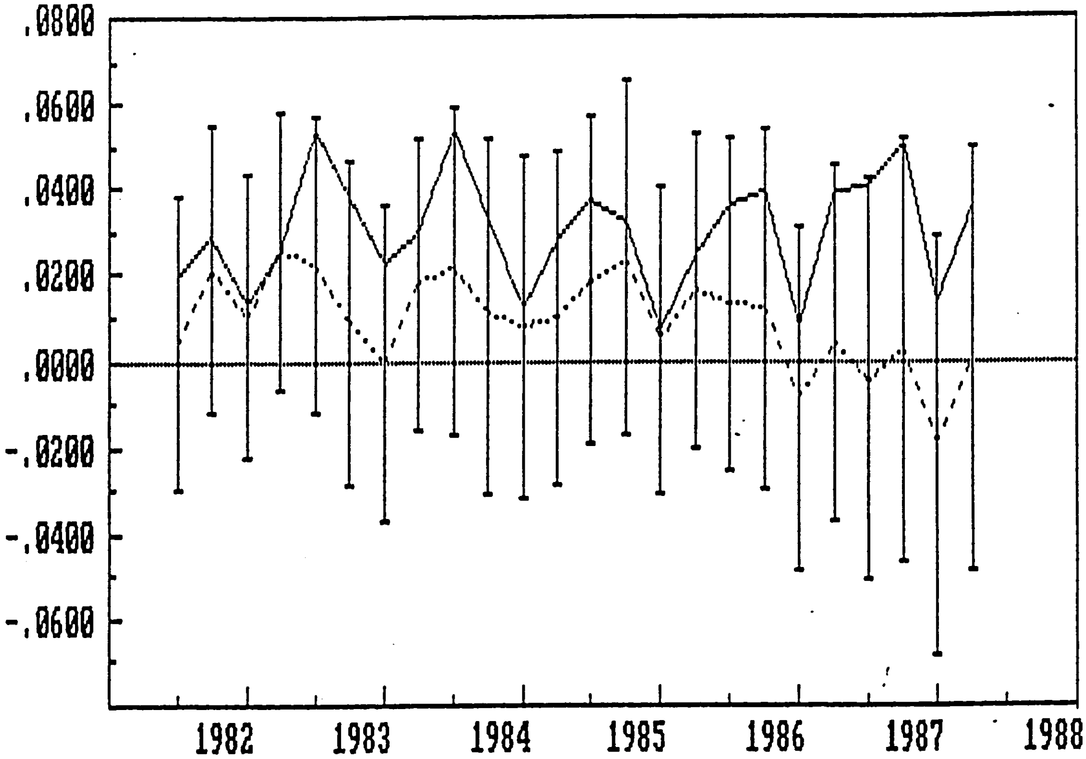


DIAGRAM 10·11



$\triangle\left(\frac{TD}{P}\right)$ =____ FITTED =-- --

DIAGRAM 10.12



$\Delta\left(\frac{TD}{P}\right)$ =____ FORECAST=-- --

The equation was used to quantify the stock effects of the abolition of the cartel and freer availability of credit.

Two simulations were carried out over the period 1980 quarter three to 1987 quarter two, one with the variable for mortgage rationing set according to the estimates above (MRAT) and the second with MRAT set at a level that reflects the excess demand situation. This level is taken to be the average level of excess mortgage demand calculated over the period 1978-1980.

The difference between the first simulation (MRAT) in Table 10.6 which attempts to measure the change in behaviour towards mortgage rationing, and the second simulation (MRATC) which assumes no change in excess demand for mortgages in the 1980's provides an estimate of the effects of credit liberalization. The percentage difference between MRAT and MRATC shows a trend increase over the period 1980 quarter four to 1987 quarter two. It appears to indicate that credit liberalization was responsible for an increase of, on average, an additional 4.2% per quarter to total personal sector debt over the period 1980 quarter four to 1982 quarter four, and an average of an additional 10'% per quarter over 1983 quarter one to 1987 quarter two. However, the MRAT model over-predicts after 1983 quarter one which would imply that actual levels of personal sector debt are somewhat below what the personal sector desires (according to the MRAT equation) after this period. This could be explained by the fact that after the rapid increase in bank

Table 10.6

		ACTUAL [1]	MRAT [2]	MRATC [3]	PERCENTAGE DIFFERENCE BETWEEN [2] & [3]
1980	4	86.1	84.1	83.9	0.24
1981	1	89.3	88.9	86.2	3.04
	2	93.7	92.5	90.8	1.84
	3	97.6	98.7	94.7	4.06
	4	102.0	101.0	96.7	4.26
1982	1	105.9	105	100	4.77
	2	111.6	111	104	6.31
	3	118.6	115	108	6.09
	4	124.4	122	113	7.38
1983	1	129.5	124	119	4.04
	2	135.2	138	124	10.15
	3	143.7	140	131	6.43
	4	149.3	156	138	11.36
1984	1	154.0	159	143	10.07
	2	161.2	167	152	9.0
	3	168.0	180	159	11.67
	4	173.4	183	165	9.84
1985	1	180.1	193	174	9.85
	2	187.7	207	181	12.57
	3	195.1	209	189	9.57
	4	203.8	217	196	9.68
1986	1	210.0	228	207	9.22
	2	219.8	242	215	11.16
	3	229.6	268	227	15.3
	4	239.8	268	237	11.57
1987	1	248.6	282	250	11.35
	2	259.4	282	260	7.81

Actual and Simulated Values of Personal Sector Total Debt (£billion) lending in 1981 and 1982 there was a significant reduction in 1983 and 1984, particularly of mortgage lending. This may have occurred for three main reasons. Drayson (1985) suggests that with the fast increase in gross lending in 1981 and 1982, net lending after this period would tend to fall as the result of repayments of principal. Also, the initial rapid increase in mortgage lending represented a once-for-all portfolio re-adjustment by the banking system towards an (unspecified) market share. Finally, as the banks became increasingly uncompetitive in the retail deposit market, mortgage lending was funded to a greater extent from wholesale money. The banks may have been unwilling to fund long-term mortgages with essentially short-term wholesale liabilities on any significant scale.

An attempt was made to justify the above results from the standard error-correction model by using a cointegration framework. Table 10.7 shows the order of integration of the individual time series.

Table 10.7

	LEVELS I (0)		FIRST DIFFERENCE I (1)		SECOND DIFFERENCE I (2)	
	DF	ADF	DF	ADF	DF	ADF
TD	2.993	0.419	-4.81	-3.381	-11.45	-3.82
Y	-1.468	-0.543	-13.122	-3.14	-21.45	-5.85
MRAT	-1.643	-1.843	-3.759	-1.826	-11.013	-4.02
P	1.79	1.24	-7.12	-3.2	-12.7	-6.14
RM	-2.19	-2.51	-8.60	-4.37	-	-

Order of Integration of the Individual Time Series

All variables except interest rates in log form.

The interest rate on mortgages is clearly I(1), and total debt of the personal sector, income and prices are also I(1), although they are close to the test statistics for I(2). The mortgage rationing proxy MRAT is definitely I(2), which means that it will not cointegrate with the other I(1) variables.

Reported below are some results for the first stage of the Engle-Granger two step procedure in which an attempt was made to find a cointegrating equation in levels terms.

Table 10.8

Y	0.918	0.99	1.25	1.02	1.26	0.95	-
RM	-0.022	-0.022	-0.015	-	-0.015	-	-0.012
P	-1.36	-0.236	-	-0.16	-	-0.31	-0.21
DCCC	-0.23	-	-	-	-0.03	-0.233	-0.04
DF	-3.61	-2.17	0.093	-0.474	0.095	-2.01	-2.11
ADF	-1.78	-1.16	-1.215	-0.613	-1.3	-1.25	-1.7

Cointegration Levels Equations

As can be seen from the DF and ADF test statistics, it was not possible to find a cointegrating levels equation given the variables used in the error-correction model earlier. Neither the DC variables for the corset restrictions nor a variable for average house prices improved the results. As a separate check on the order of integration of the individual time series and whether the variable for mortgage rationing would provide a suitable cointegrating equation, MRAT was indicated, but did not enhance the DF and ADF statistics.

Given that it was not possible to find a cointegrating interpretation of the earlier error-correction mode, then the reported results from the latter equation cannot be regarded as robust.

10.4 Conclusion

An attempt has been made in this Chapter to evaluate earlier stated hypotheses with regard to the consumers' expenditure function on durables and the demand for credit. A model of consumers' expenditure on durables was developed with income, interest rate, holdings of net liquid assets and mortgage lending variables. It was possible to estimate both a standard ECM and a dynamic cointegrating model for consumers' expenditure.

Building society mortgage rates were significant in the cointegrating equation and not the ECM, whilst bank base rates were significant in the ECM but not the cointegrating equation. Where the interest rates are significant in each equation they suggest that the interest elasticity has increased over time. The increase in interest elasticity of consumers' expenditure suggests that monetary control working through this route has become more powerful in the 1980's. The evidence from the cointegrating equation tends to imply that the greater fluidity of mortgage interest rates and market-relatedness has led to consumers' expenditure becoming more sensitive to interest rates.

The standard ECM of personal sector debt contains income, inflation, interest rate, and mortgage rationing variables. A simulation using the above equation implied that credit liberalization provided an additional 5-10% per quarter to personal sector debt, although it appears that from 1983 quarter two onwards the actual amount of personal sector debt was lower than that desired. There are however, doubts as to the robustness of the credit equation, given that it was not possible to estimate a corresponding dynamic cointegrating model. It is not therefore possible to draw conclusions from the results as to the stock effects of the liberalization of the personal sector credit market.

CHAPTER ELEVEN

CONCLUSION

This thesis has provided an analysis of the efficiency of monetary control in relation to the activities of building societies and banks. The central thematic core has been that the application of monetary control cannot be separated from the financial system within which it operates and the intermediation activities of the financial institutions that make up that system. An attempt has been made to re-emphasize the importance of an institutionalist approach to monetary control which reneges against the predominant assumption of the passivity of financial institutions and a static financial system. Indeed, direct parallels have been drawn between the warnings of the institutionalist school over two decades ago that financial innovation reduces the efficiency of monetary control and the recent concern expressed by the monetary authorities over the effects of a changing financial system.

The importance of the institutional system to the manner in which monetary control is conducted cannot be over-emphasized,

> "The choice of monetary policy instruments and the evolution of the financial system are inextricably inter-related. The relative importance of banks in total financial intermediation, the size of the financial market, the barriers to entry into banking, the pace and extent of financial innovation, the nature of bank competition and conceptions about how banks react to the use of different policy weapons determine the types of instruments that are given prominence as well as the way they are designed and used".
>
> (Bingham 1985, p103)

Chapter Two analysed the central tenets of monetarism and monetary control, and contrasted these with the opposing Keynesian school. The necessary and sufficient conditions for a monetarist policy of control of the money supply were specified, as was the Keynesian view as to the conduct of monetary policy.

Specifically, it was noted that if monetary aggregates are to be controlled as part of a money supply targeting strategy it is a necessity that there is a reasonably stable relationship between the policy instrument and the monetary aggregate(s) targeted, a reasonably stable relationship between the monetary aggregate(s) and the ultimate goal, and a stable demand for money function. An attempt was made to re-evaluate these traditional paradigms of monetary economics in terms of the increasing recognition of the importance of the financial system to monetary control.

The analysis of the forces determining financial innovation and change by the building societies and banks emphasized the crucial role of regulations, monetary control and the cartel as major constraints and major catalysts. Asymmetric monetary controls, placed on the banking system in the 1970's but not on the building societies, have been important in shaping the activities of banks and building societies, and hence a major determinant of both the nature of competition between these financial institutions and the level of financial innovation.

Specific attention was paid to the interaction between the monetary authorities' changes in regulations and monetary controls, and the innovatory activities of building societies and banks. It has been emphasized that official actions that induce changes in regulatory and monetary control provisions rarely have a neutral effect upon the structure and operations of financial institutions.

The importance of the mutuality of the building society industry and the recommended rate system have been emphasized in terms of the manner in which these institutional factors shaped the nature of competition between the mix of price and nonOprice elements, and hence provided a constraint to financial innovation. The cartel had a major effect on the type of competition between banks and building societies and on the level of financial innovation. Price competition was effectively ruled out as a change in interest rates was only carried out by all building societies as a group.

It was pointed out that the operation of the building societies' cartel had the effect of smoothing building society interest rates, and created an ex cess demand for mortgages that tended to vary with changes in general interest rates. The lag in the building society deposit and mortgage interest rates created high excess demand for mortgages when general interest rates were rising, and non-price rationing devices were used to limit mortgage supply. When general market rates were falling, deposit inflows to building societies were strong, and mortgage rationing fell. When the cartel was in operation there was thus a limited role for the price of mortgages in determining the supply of mortgages. It was maintained that the abolition of the cartel would lead to more market related mortgage rates, and greater importance of the price of mortgages in equilibriating the supply and demand for house purchase loans.

Portfolio monetary controls on the banking system in the 1970's effectively inhibited the banks from competing for personal sector deposits or from entering the mortgage market on a large scale. The building societies cartel could only really be operational in combination with this asymmetry of monetary control. Lack of competition for personal sector deposits was reflected in the homogeneous and simple nature of building society and bank accounts.

The abandonment of distorting portfolio monetary controls on the retail banking sector allowed them to re-distribute their portfolios towards mortgage lending, increasing the level of competition in this sector and precipitating the breakdown of the building societies interest rate cartel. The cartel had maintained the building society's deposit and mortgage interest rates below market clearing levels. Increased competition and the abandonment of the cartel did indeed lead to a change in the interest rate policies of the building societies. Building society interest rates have also become less sticky and tend to be market-related.

It was argued that the abolition of the cartel would have finite stock effects which would affect the interpretation of monetary conditions. It was maintained that credit liberalisation after the ending of the recommended rate system would result in a finite portfolio reallocation by the personal sector to regain its desired credit position. This would be expected to cause problems of interpretation of the growth rates of the monetary aggregates during the period when the stock adjustments occurred, but would not be expected to be a long term problem for monetary control. It would also be expected that the relationships between credit and income, and money and income may be altered in the interim, but may settle down to a steady state.

Financial innovations by building societies and banks in terms of interest bearing transactions balances would, it was argued, be expected to produce stock effects which may cause fast growth of one or more monetary aggregates, and alter the money-income relationship as balances are moved into the new innovatory accounts. In the long term, however, it would be expected that the money-income relationship would stabilise.

The Radcliffe Report (1959) first drew attention to the significance of non-bank financial intermediaries in relation to the operation of monetary control. The Report argued that spending decisions are affected by the broad liquidity position of wealth holders, rather than the possession of money balances (paragraph 389). It concluded that the existence of non-bank financial intermediaries and money substitutes makes the relationship between the money stock and the level of expenditures on goods, services and real assets more uncertain. Now, almost thirty years after the deliberations of the Radcliffe Committee, developments within the UK financial system (and in particular in relation to the activities of retail financial intermediaries) have reached the stage whereby the distinction between bank and non-bank financial intermediaries is largely academic in respect of many aspects of the provision of financial services.

An analysis of the effects of financial innovation on the definition of money in Chapter Five points to the conclusion that it is no longer possible to distinguish between balances that are for purely transactions or purely investment purposes. This has tended to confuse interpretation of monetary conditions.

The analysis of Chapter Five suggested that the stock effects of the desire on the part of the personal sector to hold high interest easy access accounts within their portfolios has been a major determinant of the change in the money-income relationship as evidenced by the fall in the velocity of circulation of broad money since 1980.

The credit market was analysed in Chapter Six in terms of finite stock effects and the effects on the growth rates of the monetary aggregates relative to nominal incomes. The effect of credit liberalization of the mortgage market after the ending of the cartel upon the growth of the monetary aggregates was examined. It appears that the credit side shock of mortgage lending led to a large number of last time sellers, who willingly held their balances in the form of interest bearing money. This seems to be part of the explanation of the fall in the income velocity of circulation of the broad monetary aggregates. Removal of direct monetary constraints allowed a portfolio re-allocation on the part of the personal sector in both money balances and credit. Both were increased faster than nominal incomes to adjust to the portfolio allocation position that would have been previously preferred. In turn, the credit shock did not lead to holdings of unwanted balances as would be expected under Buffer Stock models.

It has been noted that buffer-stock theorists have explained early instability in demand for broad money functions as being the result of the NBPs being 'forced-off' its demand for money function. This theory may have been relevant for the 1970's, but it has been argued that it is not applicable to the 1980's. Financial innovation by building societies and banks that has introduced financial instruments which offer market related rates of interest means that at the time of credit side shocks, money balances are willingly held, rather than being slowly spent over a period of time. This was particularly the case after the banks entered the mortgage market in the 1980's.

The usual duality between the views of endogeneity and exogeneity appear to be a function of the manner in which financial institutions operate, which in turn is heavily dependent upon the panoply of constraints which characterize the market environment at any point in time. The ability of building societies and banks to operate as price setters and quantity takers depends largely upon the degree and nature of regulatory and monetary controls adopted by the monetary authorities. If they are able to operate as price setters and quantity takers, then the money supply process, it is argued, is essentially an endogenous phenomena. This implies that the money supply is demand-driven or credit-driven when financial institutions are able to operate in this manner. Given that financial institutions have not always had the opportunity to act as price setters and quantity takers, it appears that the money supply process may at times be exogenous, and at times endogenous, depending upon the specific market environment and the institutional activities appertaining at the time.

Alternative monetary control techniques were surveyed in Chapter Seven, and particular attention paid to the ability of the monetary authorities to control the money supply through the manipulation of interest rates.

It was argued that in addition to causing stock effects, the abolition of the cartel would also have produced more continuing effects. It was hypothesized that the greater fluidity of mortgage interest rates and the increased debt to income ratio of the personal sector have resulted in an increase in the interest elasticity of consumers' expenditure (although these factors are difficult to separate).

This would mean an increase in effectiveness of monetary control working through interest rates, other things being equal.

It was also hypothesized that interest bearing transactions balances would lead to a reduction in the interest elasticity of the demand for money. This would mean that the ability of the monetary authorities to control the money supply through the demand side (which is not their stated intention) by inducing money holders into alternative interest bearing assets by increasing interest rates - would be reduced.

It has also been argued that the building society developments analysed have not in fact altered the technical capacity of monetary base control. If the authorities can control the reserve base, then there is no reason to suggest that financial innovation and credit liberalisation would affect the manner in which MBC works. It is widely held that the effectiveness of MBC depends ultimately on the response of the demand for credit to interest rates. Financial innovation and change does not alter this argument.

In fact, it is possible (although difficult to show empirically, and an attempt is out of the scope of this thesis) that MBC may be more effective as a result of financial innovation and competition eroding the banks' endowment effect. It may not be now so profitable for banks to push up deposit and loan rates to attract funds to swap for reserves, as a greater proportion of deposits pay interest than previously. This is certainly an area for further research.

The standard error-correction demand for money function specified for M4 in Chapter Nine has provided some interesting insights. It would appear to show that if financial innovation in the form of interest-bearing easily accessible balances is explicitly taken into account in the equation, then it is possible to specify a relatively robust and stable function. Dropping the own rate terms led to instability of the equation and poor forecasting, indicating the importance of these factors to the overall model specification, and on this evidence confirming the hypothesis that financial innovation has been responsible for the breakdown of the demand for money function. The hypothesis that the demand for money has become insensitive to the general rate of interest was evaluated, with variables that both included and excluded the expected capital gains to gilts. There does not appear to be a relationship between the demand for money and the return to gilts in the period 1969 to 1986 or in any of the sub-periods investigated. This does not, of course, rule out model mis-specification, although it does appear to indicate that the null hypothesis should be accepted. It should be noted that this result is in direct contra-distinction to that of Grice and Bennett (1981, 1984), although their own doubts as to the robustness of their model cannot be ignored.

The hypothesis that interest bearing money balances have reduced the interest elasticity of the demand for money (and hence made the LM curve steeper) does appear to be sustainable according to the evidence from the error-correction model. There has been a substantial reduction in the interest elasticity of the demand for money since 1980. In terms of monetary control operating from the demand side this would tend to imply that an increase in interest rates will have a reduced effect in inducing money holders to switch into alternative interest bearing assets and would suggest a decline in the potency of this form of control.

The overall evidence from the demand for money models is somewhat mixed however. Significant interest rate effects were not found in the cointegrating equation for the demand for M4. This casts considerable doubt on the above findings, and it cannot be held that the interest elasticity of the demand for money has fallen, nor that financial innovation has led to a temporary change in the money-income relationship.

An alaysis of the continuing effects of the abolition of the cartel and flexible mortgage rates on the effectiveness of monetary control working through consumers' expenditure was carried out. Using an error correction equation it was found that bank base rates were significant, but that mortgage rates were wrongly signed, whilst in the cointegrating equation mortgage rates were significant but bank base rates were not. Such findings are difficult to rationalise.

The evidence from both models suggests that the interest elasticity of consumers' expenditure has become more sensitive to at least one set of interest rates, and this is backed up by recently reported research. The specific evidence from the cointegrating equation, which is theoretically superior to the error-correction formulation, suggests that there has been a rise in the interest sensitivity of expenditure with respect to mortgage interest rates, and it is argued that this has been caused by more flexible and market related mortgage interest rates and greater debt to income ratios of the personal sector after the abolition of the cartel.

The personal sector's demand for credit function estimated in Chapter Ten was used to quantify the short-term stock effects of liberalization of credit conditions under the medium term financial strategy. The degree of mortgage rationing derived from a separate equation was used as a proxy for credit constraints on the personal sector. The results indicate a substantial portfolio re-adjustment on the part of the personal sector once constraints were removed, although the effects are not as great as those estimated by Johnston (1985). Particularly important was the increase in mortgage supply once the building societies' cartel was ended and the banks entered the mortgage market. The personal sector responded with a rapid growth in house purchase loans, a significant factor in the rapid growth of the broad monetary aggregates in the 1980's.

It was impossible however to find a suitable cointegrating formulation of the error-correction model, and the above results need to be treated with caution.

The New Libertarian School approach which maintains that control of the money supply is only feasible under a certain set of institutional conditions appears to be over-harsh in its attack upon the tenets of monetary control. Th e stability of the demand for M4 function would tend to militate against the more extreme assertions of the Legal Restrictions or Libertarian School, for the time being. In other words, this particular econometric relationship appears to have remained stable over a variety of regulatory regimes and under extensive financial innovation, which vitiates the claim that a stable demand function for money rests largely on various legal restrictions on money and financial institutions. This does not necessarily mean, of course, that further innovation and re-regulation will not bear out the Libertarian case. These results do seem to confirm Laidler's assertions as to the effects of financial innovation,

> "Whatever its cause, that institutional change could affect the demand for money is an intuitively obvious idea, and yet early studies of the relationship seemed to demonstrate its stability independently of any consideration of this factor. In this respect, it is now clear that they were misleading".
> (Laidler 1986, p6.)

Although a stable demand for money function has been estimated over the period 1969-86 after taking account of financial innovation, this has been done with a considerable degree of hindsight. At a time when institutional conditions are changing, and financial innovations being introduced, it is difficult for the monetary authorities to interpret events. As noted earlier, a correctly specified model may be able to capture the effects of financial innovation, but any model that maintains ex post forecasting performance and stability, but is incorrectly specified, may subsequently break down under further changing conditions,

> "To say, after the event, that our policy did not work because new assets evolved whose existence affected the outcome of our policies in a way that we could have forecast had we only been able to foresee their invention, may be true, but it is not very helpful in enabling us to do better next time, unless the evolution in question was, as it sometimes can be, the predictable policy outcome of some policy action or other".
>
> (Laidler 1981 p4)

The stock effects of the ending of the cartel and of financial innovation on the growth rates of the monetary aggregates suggests that discretionary policy action is a necessity when such events occur. It may be necessary to rely on a variety of indicators in order to assess monetary conditions. These stock effects do not mean however that interest rates will not be an effective form of monetary control.

Indeed, the evidence from the cointegrating equation implies that control by manipulating interest rates to influence ocnsumers expenditure has become a more powerful mode of monetary control.

Where does this leave the operation of monetary policy? It appears that there have been major changes in the rationale and operation of the MTFS as a result of the effects of financial innovation, which would seem to suggest a degree of discretion is necessary in policy actions, but that interest rates are more a stronger form of control. Currie (1987) has noted that there are some who maintain that policy is turning full circle back into a fully discretionary mode,

> "Indeed, some have chosen to interpret recent policy pronouncements by the Chancellor as showing that the process of easing has gone so far that the MTFS provides little clear guidance as to future policy

actions beyond a broad commitment to maintaining a low and declining inflation rate. There is, therefore, the possibility that further evolution will lead us back to total discretion in policy making albeit with inflation as an over-riding priority".

(P1)

That policy has to be discretionary, with regard to a variety of indicators, is backed up by the monetary authorities, who nevertheless argue that this represents very little deviation from the original modus operandi of the MTFS.

"The simple, easily understood, rule which a £M3 target represented was no doubt always an oversimplification. Indeed this was acknowledged, as the policy framework evolved, through the addition of further targets and the progressive elaboration of some of the many other factors necessarily 'taken into account' in the real-world process of policy decision-making. In practice, little of substance has changed. The £M3 rule has never operated in a purely mechanical way: we have always been prepared to override its signals in the light of other, contrary, evidence on the state of monetary conditions".

(BEQB August 1987 p366)

Further research might examine the effects of interest rates on sub-sections of the personal sector, in particular those individuals who are liquidity constrained and those who are not (Hubbard and Judd 1986). Another avenue of research is the development of new portfolio controls that could be placed on both banks and building societies, although the problem of distortion of the monetary aggregates through disintermediation cannot be underestimated. Finally, it should be emphasized that institutional change and innovation is an on-going process, and analysis of monetary developments cannot be divorced from the dynamic financial system within which policy operates.

APPENDIX A

DATA SOURCES AND DEFINITIONS

Demand for Money Equations:-

M4	=	Money stock M4, seasonally unadjusted,provided by the Bank of England.
Y	=	Real GDP at factor cost, Economic Trends Annual Supplement Table 9.
P	=	Implicit GDP deflator.
RT	=	Rate of Interest on 3 month Treasury Bills, Financial Statistics Table 13.8.
RG	=	Rate of Interest on 20 year Gilts, Financial Statistics, Table S7.
RS	=	Maximum rate of interest (net) on ordinary share accounts and High-interest accounts at building societies (average rate over the ten largest societies). Building Societies Gazette.
ORD	=	Net rate of interest on Ordinary Share Accounts. B.S.A. Bulletin and Compendium of Building Society Statistics, 6th Edition.
RB	=	Maximum rate of interest at banks, Financial Statistics Table S7 and Midland Bank High Interest Account.
GFW	=	Gross Financial Wealth of the Non-Bank Private Sector, Financial Statistics, Tables 14.1 and E.
RM	=	Rate on Mortgages (net of tax), B.S.A. Bulletin and Compendium of Building Society Statistics, 6th Edition.

Capital Gains Equation:-

ED	=	Interest rate on three month Eurodollars, Financial Statistics, Table 13.3
TFE	=	Total Final Expenditure, Economic Trends, Table 14.
NFW	=	Net Financial Wealth of the Non-Bank Private Sector, Financial Statistics, Tables E and 14.1.

P = Implicit Consumers' Deflator.

R = Yield on $2\frac{1}{2}\%$ Consols, Financial Statistics, Table 13.3

CG = Capital Gains on Gilts, Financial Times Index of Gilt Prices.

r = Short rate of interest (3 month Treasury Bill Rate) Financial Statistics, Table 13.8.

TD = Gross Financial Debt of the Personal Sector (Total Liabilities), Financial Statistics, Table S15.

ML = Total Flow of Mortgage Lending, Financial Statistics, Table 14.4.

Y = RPDI = Real Personal Disposable Income, Economic Trends Annual Supplement 1989, Table 5.

RMO = Rate of Interest on Building Society Mortgages (net) measured as :-

$$(1 + (RM/100) - (\ln PC_{-1} - \ln PC_{-5}))$$

RCB = Clearing Banks' Base Rate, measured as:-

$$(1 + (RCB/100) - (\ln PC_{-1} - \ln PC_{-5}))$$

RMD = Minimum deposit rate on durables.

Mortgage Equation:-

M = Stock of Building Society Mortgages Outstanding, Compendium of Building Society Statistics, Table A15.

PH = Average House Price at Mortgage Completion Stage (all houses), Compendium of Building Society Statistics, Table D2.

Y = Personal Disposable Income (Current Prices) Economic Trends, Annual Supplement 1988, Table 5.

P = Price Deflator for Consumers' Expenditure.

RCB = Clearing Banks base rate, Financial Statistics, Table 13.15.

RM = Rate on Mortgages (net of tax) B.S.A. Bulletin and Compendium of Building Society Statistics, 6th Edition.

NFW = Net Financial Wealth of the Non-Bank Private Sect9or, Financial Statistics, Tables E and 14.1.

RG = Rate of Interest on 20 year Gilts, Financial Statistics, Table S7.

Consumers' Expenditure Equation:-

CD = Consumers' Expenditure on Durables (real) 1980 prices, Economic Trends Annual Supplement 1988, Table 27.

NLA = Net Liquid Assets of the Personal Sector (Nominal), Financial Statistics, Tables 9.5 and 10.3.

P = Consumers' Expenditure Deflator (durables) 1980=1 Economic Trends Annual Supplement,1988.

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