Debt financing and firm performance: The moderating role of board independence

PHAM, Hanh <http://orcid.org/0000-0002-0764-9182> and NGUYEN, Duy Thanh

To cite this paper, please follow

Pham, H.S.T and Nguyen. 2020. Debt financing and firm performance: The moderating role of board independence. *Journal of General Management*, Vol (45), 3, 141-151.

Debt Financing and Firm Performance: The Moderating Role of Board independence

Dr. Hanh Song Thi PHAM (corresponding author)
Senior Lecturer
Sheffield Business School, Sheffield Hallam University
City Campus, Howard St, Sheffield S1 1WB, United Kingdom
Tel: +44 114 2255196
Fax: +44114 225 5268
Email: S.H.Pham@shu.ac.uk

Duy Thanh Nguyen
Lecturer
Becamex Business School, Eastern International University
Nam Ki Khoi Nghia St., Hoa Phu Dist., Binh Duong, Vietnam
Tel: +84 933 241 241
Email: duy.nguyen@eiu.edu.vn

Abstract

This article investigates the moderating role of board independence in the relationship between debt financing and performance of emerging market firms. We have used an empirical model in which the firm's accounting profitability is a dependent variable and the independent variables are debt financing, board independence, the interaction variable made of debt financing and board independence, as well as various control variables. Our analysis is based on a panel dataset of 300 listed firms in Vietnam between 2013 to 2017. Our study finds that debt financing has a significantly negative effect and that board independence reduces the adverse impact of debt financing on accounting profitability. Our results are consistent across different estimation models and methods.

Keywords: Debt financing, board independence, firm performance, emerging markets, Vietnam.

1. Introduction

In emerging economies, capital markets are less well developed and it is more difficult to raise money to finance business ventures. Laws and regulations regarding accounting requirements, information disclosure, securities trading are either absent, inefficient, or do not operate as intended in emerging economies (Young et al.,2008). These problems create chances for managers to manipulate the use of debt financing for their benefit at the cost of shareholders. Therefore, a study about which corporate governance instruments can enhance the effectiveness of debt financing would improve our understanding of corporate governance practice in emerging economies.

Despite the huge number of studies about debt financing, there is no consensus about the effect of debt financing on firm performance. Contingency and situational factors are a major explanation for these inconsistencies (O'Brien, 2003; Jermias, 2008). The effectiveness of debt financing can be affected by these factors. Thus, it is important to understand which situational and contingency factors may moderate the debt financing -performance relation.

Drawing on agency theory (Jensen and Meckling, 1976), which conceptualizes the useful role of independent directors (IDs) in monitoring managers, one can argue that under a high presence of independent directors, managers would use debt financing more prudently and effectively. In other words, board independence may moderate the effectiveness of debt financing. Nevertheless, research examining the role of board independence in moderating the impact of debt financing on firm performance is scant.

Our paper aims to address this gap. We consider the factor improving the effectiveness of debt financing decision in the context of an emerging market. In particular, we investigate the moderating effect of board independence on the impact of debt financing on accounting profitability of Vietnamese firms. We chose Vietnam as an empirical context for the study

because the country has typical characteristics of an emerging economy. During the last two decades, Vietnam's capital market has significantly developed. However, most domestic firms are still relying on bank credit as a major or even the sole source of external funding (Vo, 2017). Similar to other emerging economies, Vietnam's legal system is immature and corporate governance has not been long practised (World Bank, 2018). There are too many situations that managers made ineffective decisions on debt financing and harm the firm owners' benefits. Therefore, an examination of the role of board independence in monitoring the effectiveness of debt financing in Vietnamese firms would provide useful implications for corporate governance practices in emerging economies. We used the longitudinal data of 300 public firms listed in stock markets in Vietnam for the period 2013-2017. Our paper provides implications to both theory and practice which are presented in the conclusion.

2. Literature Review and Hypothesis Development

2.1. Board independence and firm performance

Board independence has been the main focus of research on corporate governance. In most studies, the terminology "board independence", "board composition" or "board structure" are used interchangeably to imply the ratio of independent directors/outside directors to total members of the board. The usefulness of IDs has been widely debated in the corporate governance literature.

Theoretically, there are conflicting views about the role of board independence on firm performance. According to agency theory (Jensen and Meckling, 1976), the use of IDs can address the agency problem by providing oversight of the strategic direction of the firm and scrutinising the performance of managers and thus helps to improve firm performance.

Resource dependence literature (Pfeffer and Salancik, 1978) also suggests IDs can facilitate the company's strategic decision-making process because of their expertise and networking (Westphal et al., 1997), enable the firm to obtain critical information (Haunschild and Beckman, 1998), form alliances (Gulati and Westphal, 1999), consequently enhancing firm performance. In contrast, stewardship theory (Donaldson and Davis, 1991) which defines situations in which managers want to do a good job and to be a good steward of the company indicates that the controlling and monitoring role of IDs have a negligible impact on firm performance.

The empirical research has also reported inconsistent findings. Many studies (e.g., Peng, 2004; García-Ramos and García-Olalla, 2014) reported the positive effect of board independence on firm performance, others (e.g., Cavaco et al., 2016; Darko et al.,2016) found the negative impact as well as no significant effect (e.g., Rashid, et al.,2010). We argue that the inconsistent findings among the previous empirical studies occur because those studies only focused on the direct effect and did not consider the moderating effect of board independence on firm performance through other corporate governance instruments such as debt financing.

2.2. Debt financing and firm performance

The question of whether debt financing[1] affects firm performance continues as one of the most important concerns in corporate governance literature. Despite the huge amount of theoretical and empirical research on the relationship between debt financing and firm performance, no agreement has been reached on this nexus (Vo and Ellis, 2017).

Modigliani and Miller (1963) conceptualise the benefit of tax shield to firm profitability because interest payments are deductible from a corporate tax and resulting in less tax and more

[1] In corporate governance literature, the terminology 'debt financing', 'capital structure', 'financial leverage' are used interchangeably to indicate the extent to which a business relies on borrowed capital or the 'debt-equity ratio'.

profit after tax. In contrast, Kraus and Litzenberger (1973), Kim (1978) argue on the financial distress cost as the detrimental effect of debt financing on firm profitability. Costs associated with obtaining new external funding are higher than the costs of obtaining internal financing. Internal funds do not bear any transaction costs. Debts oblique firms to make periodic interest payment which not only reduces firm' profit in the accounting period but also limits available cash for the business's operations in the next accounting period (Sarkar and Sarkar, 2008). It can also make it more difficult to obtain additional debts where companies are highly leverage due to risk assessment (Le and O'Brien, 2010). As a result, the shortage of available cash could lead to the omission of profitable investment opportunities, which generates incremental income for the corporations. More severely, high debt cost may cause insolvency and bankruptcy.

Empirically, some studies report the positive effect while others find a negative effect. Notably, many studies reporting the positive effect are the ones using the data from developed countries, while research using data of emerging economy firms tend to find the negative effect. For example, Berger and Patti (2006) using the data of American firms and Margaritis & Psillaki's (2010) use of data of French firms, both find the positive effect of debt financing on firm performance. Salim & Yadav (2012) using data of Malaysian listed firms, Le & O'Brien (2010) based on data of Chinese listed firms, Ebaid (2009) using data from Egypt and Zeitun; Tian (2007) using data from Jordan, all report the negative effect. An exception is Davydov (2016). Using data of firms from the BRIC countries, Davydov (2016) found the positive impact of debt financing. In this study, he did not consider any situational and contingency factors that could influence the effectiveness of debt usage.

O'Brien (2003) and Jermias (2008) explain that inconsistent findings in the existing literature exist because of the lack of consideration of situational and contingency factors. Such situational and contingency factors potentially moderate the financial leverage- performance

relation. In this paper, we draw on two theories to identify such situational and contingency factors. We apply agency theory to identify contingency factors and we argue that the presence of good corporate governance, such as board independence, can improve the effectiveness of the debt-financing decision and that this potentially moderates the debt financing - performance relation. For situational factors, we employ the institutional-based view of emerging markets to analyse the potential effect of debt financing on the profitability of firms in emerging markets.

According to the institutional-based view of emerging markets, emerging economies are 'low-income, rapid-growth countries using economic liberalisation as their primary engine of growth' (Hoskisson et al., 2000: 249). The literature on taxes and investment (e.g Hall and Jorgenson, 1967) has argued various ways in which the tax structure can affect investments and therefore economic growth rates. As seen in Lee and Gordon (2005), increases in corporate tax rates lead to lower future growth rates within countries. Emerging-market governments, thus, tend not to use high corporate tax rates when they wish to promote economic growth. Therefore, the positive effect of tax cost reduction from debt payment on firm profitability is arguably insignificant in the context of emerging markets.

Meanwhile, the financial distress cost of debt is likely to be high in the context of emerging markets for the following reasons. First, the lack of well-developed credit rating systems and well-regulated banking governance systems in emerging markets leads to high transaction and debt costs (Stiglitz, 2000). Second, loan interest rates in emerging markets are often set at a high level in comparison to those in developed markets. This is because emerging market economies have been fuelled by demand from foreign markets as a result of trade liberalisation, leading to a high need for capital to expand businesses which pushes up interest rates and so high cost of debt. Thus, in this institutional context, the cost of financial distress may well outweigh the benefit of debts and hence lower firm profitability. We, therefore, propose that:

Hypothesis 1. *High debt financing negatively affects the profitability of public listed firms in emerging economies.*

2.3. Debt financing, board independence and firm performance

There is a large amount of literature examining the implications of board independence and debt financing, but little research focuses on the effects of both factors on firm performance. To our best knowledge, there is no research considering board independence as a mechanism to accelerate the benefits and decelerate the effect of debt on firm performance using emerging country context. In a review of literature on corporate governance research, Denis (2001) reveals that most of the literature focuses on examining implications of corporate governance instruments such as board structure and debt financing. In a review of the literature on corporate governance in emerging markets, Claessens and Yurtoglu (2013) also indicate a similar phenomenon. For example, empirical literature on corporate governance using data from Asian emerging countries (i.e Iturriaga and Crisóstomo, 2010; Sami et al., 2011; Salim and Yadav, 2012; Khan, 2012; Hull and Dawar, 2014) only examines the direct effect of either board independence or debt financing on firm performance.

In the context of Vietnam, there are a few studies about debt financing but they only focus on examining either determinants of debt financing (Nguyen and Ramachandran, 2006; Biger et al., 2007; Vo, 2017) or the effect of debt financing on firm performance (Vo and Ellis, 2017; Cuong, 2014). Regarding the role of board independence, there exist two studies about the direct effect of board independence on the performance of Vietnamese firms (Vo and Nguyen, 2014; Nguyen et al., 2017). In a study of corporate governance and firm's performance in Vietnam, Duc and Thuy (2013) included debt financing and board independence among other corporate governance factors in their examination of the effect of corporate governance and

performance of firms. However, none of these studies examines the moderating effect of board independence on the impact of debt financing on firm performance using data from Vietnam.

2.4. The moderating effect of board independence

In this study, we propose that debt financing generates both cost and benefit as suggested by the prior literature but the net effect of debt financing on firm's profitability is subject to a firm's characteristics and the country where the firm operates. Drawing on the institutional-based view of emerging markets (Hoskisson et al., 2000), we argue that because emerging market economy is in the early stage of development, the weakness of legal regulations and their enforcement in emerging market countries (Young et al., 2008) creates more chances for managers in emerging economies to manipulate business activities for their interests.

The use of IDs is particularly useful when emerging market firms use debt financing. It is because IDs have the primary responsibility of overseeing the firm's financial reporting process (Anderson et al., 2004). Beasley (1996) find that the proportion of IDs on the board is inversely related to the likelihood of financial statement fraud. Without oversight of independent directors, the managers of emerging market firms may foresee an easy chance to manipulate financial statement and hence incline to borrow and invest in projects beneficial to their self-interest rather than to firms (Kochhar, 1996; Le and O'Brien, 2010).

With a high presence of IDs, the managers of emerging market firms would be subject to high scrutiny and therefore be more cautious and rational in making investment decisions from the borrowed money. The independently monitoring role of IDs ensures the transparency and effectiveness of debt usage (Peng, 2004; Mura, 2007).

The expertise and external relationships which IDs hold may also help managers to improve the outcomes of the investments made from borrowed money. Bringing in more outside directors may facilitate firms' borrowing (Mizruchi and Stearns, 1994) and access to broader sources of finance in the markets (Peng, 2004). IDs' external relations can help the firm obtain favourable loan terms, such as lower interest rates, larger loans and longer maturities of loan contracts to invest in profitable projects. More capital with a lower cost of financing for investment is likely to generate higher profitability (Le and O'Brien, 2010). Therefore, the more IDs on board are the more likelihood of obtaining low- cost debt financing and the more rational decisions relating to debt usage. These benefits which IDs bring about are likely to reduce the cost of debt and enhance the effectiveness of debt using, leading to higher profitability. Therefore, we propose that:

Hypothesis 2*: Board independence positively moderates the effect of debt financing on the profitability of public firms in emerging economies*

Our conceptual framework is illustrated in Figure 1.

(Insert Figure 1 here)

3. Research methodology

3.1. Research context

Since the introduction of the economic reform in 1986, Vietnam has gradually been transforming its economy from central planning toward free-market mechanism, promoting financial liberalization and facilitating constant institutional reforms. These economic reforms result in developments in equity and bond market in Vietnam. Since the establishment of Vietnam's first stock exchange in 2000, strong development is witnessed in Vietnam stock markets including a significant increase in both numbers of listed firms and total trading volume

(Vo, 2017). The development of the stock market provides firms with more options to finance their investments. By 2017, there are 700 Vietnamese enterprises listed in Vietnam's stock market. The financial and corporate governance decisions of these firms are assumed to follow the global practice but still being at the infant stage.

Despite its pace of development, Vietnam's capital market is still at an early stage of development (Jain et al., 2017). Similar to most emerging markets, the problems of information asymmetries, higher volatility and higher transaction costs are evidenced in the stock market (Vo, 2017). Jain et al. (2017) indicate that Vietnam's capital market has a similar outlook to other Asian countries which investment opportunities, funding at scale, and pricing are less available or transparent. These problems hinder firms to finance through the stock market and as a result, most domestic firms are still relying on bank credit as a major or even the sole source of external funding (Vo, 2017). Therefore, Vietnam provides an ideal context for the study of the role of corporate governance in the improvement of the effectiveness of debt financing in emerging economy firms.

3.2. The data

We extracted data from the audited financial statements from 2013 to 2017 of all firms listed on Vietnam's stock market (Ho Chi Minh Stock Exchange and Ha Noi Stock Exchange). By 2017, among 700 enterprises listed on the stock exchange, we excluded firms in the financial sector (e.g. banks, real estate, securities and insurance firms). The reason for this is that financial firms have distinctive corporate structures and revenue models, indicated by an extraordinary performance indicator (Le and O'Brien, 2010). After excluding the financial firms in the financial sector and firms with missing information, the final sample consists of 300 companies, yielding 900 observations. The industries of the sample firms are outlined in Table A in the Appendix.

3.3.Empirical Model

To test our hypothesis, we developed an empirical model in which firm accounting profitability is a dependent variable; debt financing, board independence and the interaction variable which is the product of debt financing and board independence are independent variables.

Following econometric literature (Baron and Kenny, 1986; Aiken and West, 1991) which suggests the usage of the product of the predictor and the moderator as the interaction variable to test the moderating effect, we employed the interaction variable as the product of Board Independence and Debt financing. We used the mean-centred approach suggested by Aiken and West (1991) to calculate the interaction variable to eliminate the possibility of multicollinearity. The interaction variable is calculated as below.

Interaction = (*Debt* - mean score of *Debt*) * (*IDs* - mean score of *IDs)*

We include several variables popularly used as control variables in corporate governance literature in our empirical model.

Board size. A small board is manageable and plays a controlling function, while a large board is non-manageable and so not able to act effectively (Rashid et al., 2010). We, therefore, control board size in this study.

CEO duality. When the CEO is also a board chair which is referred to in the literature as CEO duality, this may enable clear and powerful leadership, but it may also promote CEO entrenchment (Peng, 2004). Given the potential effect of CEO duality on firm performance, it is included as a control variable in this study.

Firm size. Firm size is a conventional predictor of a firm's performance because large firms can have a greater variety of capabilities which may positively influence performance (Williamson, 1967). Thus, firm size is included as a control variable in this study.

Ownership structure. Firm's ownership structure has a significant impact on the board's role in monitoring management, which in turn can influence firm performance (Dharwadkar et al., 2000). In emerging economies, many public firms used to be state-owned enterprises, and after privatisation, a state may keep some stakes of the firms. State ownership may enhance some investment opportunities for the firm, but it may also create agency problems (Le and O'Brien, 2010). Thus, we control state ownership in this study.

A firm's industry. Industry is an essential part of the business environment which frames organisational competition strategies and practices and hence performance (Porter, 1980). Thus, we controlled for the industry to capture the industry effect.

Based on the assumption that profitability of the current year is the outcomes of operation in the previous year (Bear et al., 2010; Jo and Harjoto, 2012), we developed the baseline model with the one-year lag of the predictors and control variables.

Equation 1 presents our baseline model.

$$Y_{i;t} = \alpha + \beta_1 DE_{i;t-1} + \beta_2 ID_{i;t-1} + \beta_3 ID_{i;t-1} * DE_{i;t-1} + \beta_4 SO_{i;t-1} + \beta_5 DUAL_{i;t-1} + \beta_6 BOARDSIZE + \beta_7 FIRMSIZE_{i;t-1} + \beta_8 INDUSTRY_{i;t-1} + \varepsilon_{i:t} \quad (1)$$

where for the *i*th firm at time t.

$Y_{i;t}$ is the profitability of the *i*th firm at time t. Firm's profitability is measured by two ratios: the ratio of Return-on-Assets (ROA) and the ratio of Return-on-Equity (ROE) as conventionally did in the extant corporate governance and corporate finance literature (e.g. Le and O'Brien, 2010). Follow Le and O'Brien (2010), we measured the return as the earnings before interest and tax. The information of a firm's earnings, assets and equity are provided in a firm's financial annual report.

$ID_{i;t-1}$ is the percentage of independent directors on board of the *i*th firm at time t-1

$DE_{i;t-1}$ is Debt-to-Equity ratio of the *i*th firm at time t-1

$SO_{i;t-1}$ is the percentage of shares owned by the state of the *i*th firm at time t-1

$DUALITY_{i;t-1}$ is to indicate the situation of CEO duality of the *i*th firm at time t-1. It is a dummy variable (equal to one (1) if the CEO and Chairperson posts are held by the same person, otherwise it is zero (0));

$FIRMSIZE_{i;t} - 1$ is the firm's size of the *i*th firm at time t-1, measured in terms of total asset value, and then normalized by a logarithm (lg.size);

$BOARDSIZE_{i;t} - 1$ is the board size of the *i*th firm at time t-1, measured in terms number of people on board, and then normalised by a logarithm;

$INDUSTRY_{i;t-1}$ is to indicate the industry the *i*th firm at time t-1. Following Le and O'Brien (2010), we measured it by median firm performance for each industry in each year.

and α is the intercept, β is the regression coefficient, and ε is the error term.

3.3. Estimation Strategy

Treatment for reverse causality

There is a potential for the reverse causality between profitability and debt financing. Myers (1977; 1984) suggest that firms prefer raising capital, first from retained earnings, second from debt, and third from issuing new equity. This behaviour may be due to the costs of issuing new equity, or transaction costs or the costs that arise because of asymmetric information. In either case, the past profitability of a firm, and hence the number of earnings available to be retained, could be a determinant of its current debt financing (Titman and Wessels, 1988).

We addressed the potential reverse causality between profitability and debt financing by explicitly employing lag model as presented in Equation (1). Intuitively, this model helps to rule out the reverse causality because future events (i.e ROA, ROE) cannot cause the current

conditions (i.e debt financing). The profitability of the current year cannot be a determinant of the debt financing of the year before. Empirically, we conducted an additional test to rule out the reverse causality explicitly. We tested a model with a different lag structure in which debt financing is a dependent variable and lag one year of its predictor variables which are profitability and the other control variables used in Equation (1). The unreported model shows that current profitability is not a significant predictor of the previous year debt financing.

Diagnostic tests

We conducted several diagnostic tests for our dataset. *First*, we checked the multicollinearity problem by examining correlation coefficients among predictors and their Variance Inflation Factor (VIF). As presented in Table 1, all of the VIFs are smaller than 10, suggesting that multicollinearity is not a problem with our dataset (Mansfield and Helms, 1982).

(Insert Table 1 here)

Second, we checked the heteroscedasticity problem. Breusch-Pagan test result with p=0.000 shows that the heteroscedasticity problem exists in our estimation model.

Third, we examined the potential endogeneity of IDs, DE and IDs*DE. We conducted the Durbin-Wu–Hausman tests (see Hausman (1978) for a detailed explanation of the test). Test statistics are insignificant for IDs but significant for DE and IDs*DE.

To address the endogeneity problem of the independent variable (DE, IDs*DE), following Le& O'brien (2010), we used the standard deviation of the firm's stock return (SESR) of the previous year as an instrumental variable (IV) for DE. We also employed SESR as an IV for DE*IDs. Intuitively, SESR meets two requirements of a good instrumental variable. It is believed to have a strong effect on predicting variables (DE, DE*IDs) but weak on the dependent variable (ROA, ROE).

Empirically, to check if SESR is a good IV, we conducted the Durbin (score) chi-sq test and Wu-Hausman F test of the endogeneity of DE and DE*IDs when SESR is in use as an IV respectively for DE and DE*IDs. The large P-values obtained from these tests show that the hypothesis of exogenous regressor cannot be rejected. Moreover, the results of the Sargan (score) chi2 tests and Basmann chi2 tests ($p < 0.05$) demonstrate that our models have no overidentifying restrictions. Thus, the endogeneity issue of DE and DE*IDs was addressed.

Estimation Method and Robustness Check

Our research sample contains longitudinal/panel data. The diagnostic tests show that the data reveals heteroscedasticity and endogeneity problem. Wooldridge (2010) indicates that either the Fixed effect/Random effect with an instrument variable or GMM estimation method can help to overcome such problems. In this study, we use fixed effects/random effects estimation model with instrument variable (using xtivreg 2 command in Stata 14) to estimate an FE-IV model. We then conducted the Hausman test to select our preferred baseline model and used the results of the less preferred model for robustness check. This is to follow Bell & Jones (2015) suggestion for not ruling out the results of the other model just because of Hausman test results. We also run one-step system - GMM (due to small T and large N; using xtabond command in Stata 14 to estimate GMM model) for robustness check.

4. Results

The descriptive statistics of the dataset and correlation matrix among variables are summarised in Table 2. The average total assets (firm size) is VND 1.23 trillion, equivalent to USD 54.26 million (22,700VND= 1USD). On average, the State has 38 percent stake in privatized firms. Twenty-eight percent of firms have a chairman who is also a CEO. The average Debt-to-Equity

ratio is 1.576. The average board size is 5.4 people. The average proportion of IDs is 60.5 percent. The average Return-on-Asset is 5.04 percent. The average Return-on-Equity is 7.9 percent.

(Insert Table 2 here)

The testing results obtained from FE-IV and RE-IV are presented in Table 3 for both ROA and ROE. Based on the Hausman test with Prob < 0.05, the FE model was employed as the baseline model. The results in Table 3 reveal that debt financing has a statistically significant and negative effect on both ROA (β = -0.163, p= 0.049) and ROE (β = -0.201, p= 0.000).

The results presented in the FE models in Table 3 also indicate that the significantly positive effect of IDs on profitability (β = 0.386, p= 0.004 for ROA and β = 0.557, p= 0.007 for ROE).

(Insert Table 3 here)

Finally, the results reported in Table 3 (FE models) show that the interaction variable has a significant and positive effect on both ROA (β =0.254, p= 0.001) and ROE (β =0.480, p= 0.000).

As shown in Table 3, the results obtained from FE models are consistent to results reported in RE models, initially indicating that our results are robust. For further robustness check, as mentioned earlier, we conducted the GMM estimation method. The testing results obtained from one-step system GMM reported in Table 4 show the consistency with the FE/RE- IV results, confirming the robustness of our results.

(Insert Table 4 here)

The result that the interaction variable has a significant and positive effect on profitability signals the existence of the moderating effect of board independence on the impact of debt

financing on profitability. This result provides necessary but not sufficient condition for the moderating effect. To conclude on the positive moderating effect of IDs, following Aiken and West (1991), we examine if the effects of DE on ROA/ROE in high IDs firms are higher than those with low IDs. Aiken and West (1991) suggest choosing the mean of predictors as the medium level and one standard deviation above and below the mean as high level and low level, respectively. Adopting this approach, we have examined the variance of ROA/ROE according to three levels of debt financing and two levels of the IDs. The results are presented in Table 5, Figure 2 and 3.

(Insert Table 5 here)

As shown in Figure 1, the slope of the brown line (presenting the effect of DE on ROA in high ID firms) is steeper than that of the blue line (presenting the effect of DE on ROA in low ID firms). This shows the effect of DE on ROA in high IDs firms is higher than those with low IDs. A similar outcome can be interpreted in Figure 2. The effect of DE on ROE in high IDs firms is higher than those with low IDs. Therefore, it can be confirmed that IDs strengthen the effect of DE on profitability. In other words, our hypothesis H1 is accepted.

(Insert Figure 2 here)

(Insert Figure 3 here)

We also examined the explanatory power of the regression models and the incremental power of each significant repressor by investigating the values of R-squared and partial R-squared of the regression models using equation (1). The regression model for ROA and ROE has R-squared of 72.3% and 70.9% respectively. This indicates that 72.3% of ROA and 70.9% of ROE and can be explained by variations of independent variables in our equation (1).

Partial R-squared of *Debt* for ROA and ROE are 25.7% and 33.1% respectively. This indicates that 25.7% of ROA and 33.1% of ROE can be partially explained by variations of *Debt.* Partial R-squared of *IDs* for ROA and ROE are 0.21% and 0.23% respectively. This means that only 0.21% of ROA and 0.23% ROE can be partially explained by variations of *IDs*.

5. Discussions

Our results show that debt financing tends to harm the profitability of listed firms in Vietnam. This result contrasts with studies using data from developed markets such as Berger and Patti (2006) and Margaritis & Psillaki (2010). Perhaps, the inefficient capital market in Vietnam is likely to erode the potential benefits of debt, thereby causing debt to be destructive to firm performance. In other words, this result lends the support to the theoretical work by Dharwadkar et al. (2000) which argues that debt has impaired the performance of firms in an emerging economy.

This result is in line with that of Le and O'Brien (2010). Le and O'Brien (2010) examine the effect of debt financing on the performance of Chinese listed firms. They also consider one of the corporate governance factors (firm ownership) as the contingency factor that moderates the debt financing -performance relation. Our finding is inconsistent with Davydov (2016) which uses the data from four emerging countries including Brazil, China, Russia and India but finds a positive impact. Davydov (2016) does not consider corporate governance factors (e.g board independence in his evaluation of the effect of debt financing on the performance) and that could explain for why his result is inconsistent with ours as well as Le and O'Brien (2010).

More importantly, our finding shows that a high level of board independence significantly reduces the negative effect of debt financing. To our knowledge, there is no research considering the moderating effect of board independence on the financial leverage-performance relation. Also, this finding indicates the necessity to consider board independence when

studying the financial leverage- performance relation. This can be explained by the practice that debt financing decision is one of the critical corporate decisions and hence likely to be put under the strict supervision of independent directors. Therefore, the omission of the role of board independence in such evaluation is likely to produce biased results. More significantly, this finding suggests that that debt has both costs and benefits which may vary per corporate governance properties (i.e. board independence).

Last but not least, our result also provides further empirical evidence for the effectiveness of board independence in corporate governance in emerging markets. The extant literature on corporate governance in emerging markets offers inconsistent findings on the direct effect of IDs on firm financial performance. For example, Peng (2004) found the positive impact of board independence from the sample of Chinese firms. Darko et al. (2016) discovered the negative effects in the context of Ghana. Meanwhile, Tian and Lau (2001) reported that board composition has no significant effect on the performance of Chinese firms. This is possible because those studies only focused on the direct effect and did not consider the moderating effect of board independence.

Our results suggest that management literature should consider corporate governance properties as mechanisms which can either accelerate or decelerate the effects of other managerial instruments on firm performance. To date, management literature has much focused on examining the direct effects of corporate governance properties on firm performance and this may be one of the reasons for the inconsistent findings of the effect of corporate governance properties such as board independence.

6.Conclusion

6.1. Summary of the research

This study examines the moderating effect of board independence on debt financing-profitability relation using data from firms in Vietnam. We developed the empirical model in which firm's accounting profitability is a dependent variable while debt financing, board independence, the interaction variable made of debt financing and board independence, and various control variables are independent variables. We manually collected the data from the audited financial reports of 300 listed firms in Vietnam in the period 2013-2017. We used three estimation methods that include FE/RE-IV and GMM to evaluate and validate the effect. We found a significantly adverse effect of debt financing. More importantly, we reported that board independence significantly weakens the adverse impact of debt on accounting profitability. Our results are robust as they are consistent across three different estimation methods.

6.2. Theoretical Implications

Our paper makes three contributions to literature. *First,* our paper is the first investigating the moderating effect of board independence on debt financing- performance relation. While considerable work in management has examined the governance implications of debt financing and the governance implications of board composition; none has considered corporate governance properties (i.e board independence) as mechanisms to accelerate the benefits and decelerate the adverse effect of debt on firm performance. *Second,* our study responds to O'Brien (2003) and Jermias (2008) calls for future research incorporating situational and contingency factors in a study of financial leverage- performance relation. Despite many studies on the effect of debt financing on firm performance, the results are inconclusive. Our work shows that corporate governance (i.e, board independence) is one of the key contingent factors that influence on the financial leverage- performance relation. As such, a study of the effect of financial leverage on firm performance needs to consider the effect under different scenarios of corporate governance. *Finally,* our paper adds to corporate finance and corporate governance

literature the evidence of the effectiveness of debt financing and board independence in Vietnam, the context of an emerging market that is under-researched.

6.3. Implications for Practice

We recommend public firms in emerging economies to reduce the use of debt financing due to its adverse effect on firm performance. In case, the use of debt financing is unavoidable; the firms should employ more independent directors because the monitoring and supervising role of IDs helps to prevent the bad investment decisions possibly made by self-interest seeking managers.

6.4. Limitations and Suggestion for Future Research

Our study has some limitations. *First*, we did not disintegrate debt in the long term or short term debt while different types of debt may affect firm performance in different ways. *Second*, this study conducted tests in the context of one emerging economy. It will be more significant if a future study conducts empirical tests on several emerging economies. We suggest future research to consider the moderating role of other corporate governance factors than board independence when examining financial leverage- performance relation. We also recommend future research to consider the mediating impacts of corporate governance factors instead of relying on the assumption about their direct impact on firm performance. For example, future research can consider board size, CEO duality, firm size, and firm ownership as moderating factors of the relationship between a firm's managerial instruments and performance.

References

Aiken, L. and West, S., 1991. Multiple Regression: Testing and Interpreting Interactions. Newbury Park, CA: Sage Listedations.

Agarwal, V. and Taffler, R., 2008. Comparing the performance of market-based and accounting-based bankruptcy prediction models. *Journal of Banking & Finance*, *32*(8): 1541-1551.

Balakrishnan, S. and Fox, I.,1993. Asset specificity, firm heterogeneity and debt financing. *Strategic Management Journal*, 14: 3–16.

Baron, M. R. and Kenny, A. D., 1986. The Moderator – Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic and Statistical Consideration. *Journal of Personality and Social Psychology*, 51(6): 1173-1182.

Beasley, M., 1996, An empirical analysis of the relation between the board of director composition and financial statement fraud. *Accounting Review*, 71: 443-465.

Bear, S. E., Rahman, N., and Post, C., 2010. The Impact of Board Diversity and Gender Composition on Corporate Social Responsibility and Firm Reputation. *Journal of Business Ethics*, 97(2): 207-221

Bell, A., & Jones, K., 2015. Explaining fixed effects: Random effects modeling of time-series cross-sectional and panel data. *Political Science Research and Methods*, *3*(1): 133-153.

Berger, P. G., Ofek, E. and Yermack, D. L., 1997. Managerial Entrenchment and Debt financing Decisions. *Journal of Finance*, 52(4): 1411–1438.

Berger, A & Bonaccorsi di Patti, E., 2006. Debt financing and firm performance: a new approach to testing agency theory and an application to the banking industry. *Journal of Banking and Finance*, 32: 1065-1102.

Biger, N., Nguyen, N.V. and Hoang, Q.X., 2007. Chapter 15 The determinants of debt financing: Evidence from Vietnam. In *Asia-Pacific Financial Markets: Integration, Innovation and Challenges* (pp. 307-326).

Claessens, S. and Yurtoglu, B.B., 2013. Corporate governance in emerging markets: A survey. *Emerging markets review*, *15*: 1-33.

Cuong, N.T., 2014. Threshold effect of debt financing on firm value: Evidence from seafood processing enterprises in the South Central region of Vietnam. *International Journal of Finance & Banking Studies*, *3*(3):14-28.

Daily, C.M. and Dalton, D.R., 1994. Bankruptcy and corporate governance: The impact of board composition and structure. *Academy of Management Journal*, 37(6): 1603-1617.

Darko, J., Aribi, Z.A., Aribi, Z.A., Uzonwanne, G.C. and Uzonwanne, G.C., 2016. Corporate governance: the impact of director and board structure, ownership structure and corporate control on the performance of listed companies on the Ghana stock exchange. *Corporate Governance*, *16* (2): 259-277.

Day, J. and Taylor, P., 2004. Institutional change and debt-based corporate governance: A comparative analysis of four transition economies. *Journal of Management and Governance*, 8(1): 73-115.

Davydov, D., 2016. Debt structure and corporate performance in emerging markets. *Research in International Business and Finance*, *38*: 299-311.

Denis, D.K., 2001. Twenty five years of corporate governance research… and counting. *Review of financial economics*, *10*(3): 191-212.

Department for Corporate Reform of Vietnamese Government Office., 2016. Report on the implementation of restructuring state-owned enterprises in 2016. *Electronic Portal Government of Vietnam.* Available at http://doimoidoanhnghiep.chinhphu.vn/bao-cao/bao-cao-tinh-hinh-thuc-hien-tai-co-cau-doanh-nghiep-nha-nuoc-nam-2016-626482.html.

Dharwadkar, R., George, G. and Brandes, P., 2000. Privatization in Emerging Economies: An Agency Theory Perspective. *The Academy of Management Review*, 25(3): 650-669.

Diamond, D. W., 1984. Financial intermediation and delegated monitoring. Review of Economic Studies, 51: 393–414.

Diamond, D. W., 1991. Monitoring and reputation: the choice between bank loans and directly placed debt. Journal of Political Economy, 99: 689–721.

Donaldson, L. and Davis, J.H., 1991. Stewardship theory or agency theory: CEO governance and shareholder returns. *Australian Journal of management*, *16*(1): 49-64.

Duc, V.H. and Thuy, P.B.G., 2013. Corporate governance and firm's performance: empirical evidence from Vietnam. *Journal of Economic Development*, 62-77.

Ebaid, I. E., 2009. The impact of debt financing choice on firm performance: empirical evidence from Egypt, The Journal of Risk Finance, 10(5): 477 -487.

Eisenhardt, K. M., 1989. Agency theory: An assessment and review. *Academy of Management Review*, 14(1): 57-74.

Ferri, M.G. and Jones, W.H., 1979. Determinants of financial structure: A new methodological approach. *The Journal of Finance*, *34*(3): 631-644.

Gulati, F. and Westphal, J. D., 1999. Cooperative or Controlling? The Effects of CEO-Board Relations and the Content of Interlocks on the Formation of Joint Ventures. *Administrative Science Quarterly, 44(3)*: 473-506.

García-Ramos, R. and García-Olalla, M., 2011. Board characteristics and firm performance in public founder- and nonfounder-led family businesses. *Journal of Family Business Strategy*, 2(4): 220-231.

Hackbarth, D., Hennessy, C.A. and Leland, H.E., 2007. Can the trade-off theory explain debt structure?. *The Review of Financial Studies*, *20*(5): 1389-1428.

Hall, R.E. and Jorgenson, D.W., 1967. Tax policy and investment behavior. *American economic review*, *57*(3): 391-414.

Harris, M and Raviv, A., 1991. The theory of debt financing. The Journal of Finance, 46(1): 297-355.

Haunschild, P. and Beckman C., 1998. When do interlocks matter? Alternate sources of information and interlock influence'. *Administrative Science Quarterly*, 43: 815–844.

Hausman, J. A., 1978.Specification tests in econometrics. *Econometrica*, 46: 1251–1271.

Hoskisson, R. E., Eden, L., Lau, C. M. and Wright, M., 2000. Strategy in emerging economies. *Academy of Management Journal*, 43: 249–267.

Hull, R.M. and Dawar, V., 2014. Agency theory, debt financing and firm performance: some Indian evidence. *Managerial Finance.*

Iturriaga, F.J.L. and Crisóstomo, V.L., 2010. Do leverage, dividend payout, and ownership concentration influence firms' value creation? An analysis of Brazilian firms. *Emerging Markets Finance and Trade*, *46*(3): 80-94

Jain, N., Katsuki, F., Lai, A., Pitsilis, E., and Segupra, J., 2017. Deepening Capital Markets in Emerging Economies. McKinsey. Retrieved from

https://www.mckinsey.com/industries/financial-services/our-insights/deepening-capital-markets-in-emerging-economies.

Jensen, M. C., 1986. Agency costs of free cash flow, corporate finance and takeovers. *The American Economic Review*, 76(2): 323-329.

Jensen, M. C. and Meckling, W. H., 1976. Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3: 305 - 360.

Jermias, J., 2008. The relative influence of competitive intensity and business strategy on the relationship between financial leverage and performance. *British Accounting Review*, 40: 71-86.

Jo, H. and Harjoto, M. A., 2012. The Causal Effect of Corporate Governance on Corporate Social Responsibility. *Journal of Business Ethics*, 106(1): 53-72.

John, K. and Senbet, L. W., 1998. Corporate governance and board effectiveness. *Journal of Banking and Finance*, 22(4): 371-403.

Khan, A.G., 2012. The relationship of debt financing decisions with firm performance: A study of the engineering sector of Pakistan. *International Journal of Accounting and Financial Reporting*, *2*(1): 245-262

Kiel, G.C. and Nicholson, G.J., 2003. Board composition and corporate performance: How the Australian experience informs contrasting theories of corporate governance. *Corporate Governance: An International Review*, 11(3): 189-205.

Kim, E. H., 1978. A mean-variance theory of optimal debt financing and corporate debt capacity. *The Journal of Finance, 33*(1): 45–63

Kraus, A., & Litzenberger, R. H. (1973). A state-preference model of optimal financial leverage. *The Journal of Finance, 28*(4): 911–922.

Kochhar, R. 1996. Explaining firm debt financing: the role of agency theory vs. transaction cost economics. *Strategic Management Journal*, 17: 713–728.

Le, T. V. and O'Brien, J. P. 2010. Can two wrongs make a right? State ownership and debt in a transition economy. *Journal of Management Studies* , 47(7): 1297-1316.

Lee, Y. and Gordon, R.H., 2005. Tax structure and economic growth. *Journal of public economics*, *89*(5-6): 1027-1043

Li, H.X., Wang, Z.J. and Deng, X.L. 2008. Ownership, independent directors, agency costs and financial distress: evidence from Chinese listed companies. *Corporate Governance: The international journal of business in society*, 8(5): 622-636.

Mansfield, E. R. and Helms, B. P. 1982. Detecting multicollinearity. *The American Statistician*, 36(3): 158-160.

Margaritis, D. and Psillaki, M., 2010. Debt financing, equity ownership and firm performance. *Journal of banking & finance*, *34*(3): 621-632

Meyer, J and Rowan, B. 1977. Institutional organizations: formal structure as myth and ceremony. *American Journal of Sociology*, 83: 340–363.

Myers, S. C., & Majluf, N. S. 1984. Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*,13: 187–221.

Mizruchi, M and Stearns, L. 1994. A longitudinal study of borrowing by large American corporations. *Administrative Science Quarterly,* 39: 118–140.

Modigliani, F and Miller, M. 1958. The cost of capital, corporate finance and the theory of investment. *American Economic Review*, 48(1): 261-297.

Modigliani, F and Miller, M. 1963. Corporate income taxes and the cost of capital: A correction. *American Economic Review*, 53: 433-443.

Myers, S.C. 1977. Determinants of Corporate Borrowing. *Journal of Financial Economics*, 9: 147-76.

Myers, S.C., 1984. The debt financing puzzle. Journal of Finance 39, 575–592. Myers, S.C., 2001. Debt financing. *Journal of Economic Perspectives,* 15: 81–102.

Mura, R., 2007. Firm performance: Do non- executive directors have minds of their own? Evidence from UK panel data. *Financial Management*, *36*(3): 81-112.

Nguyen,T.D.K. and Ramachandran, N., 2006. Debt financing in small and medium-sized enterprises: the case of Vietnam. *ASEAN Economic bulletin*, *23*(2): 192-211.

Nguyen, T.T.M., Evans, E. and Lu, M., 2017. Independent directors, ownership concentration and firm performance in listed companies: evidence from Vietnam. *Pacific Accounting Review*, *29*(2): 204-226

O'Brien, J. 2003. The debt financing implication of pursuing a strategy of innovation. *Strategic Management Journal*, 24(2): 415-431.

O'Brien, J. P. and David, P. 2010. Firm growth and type of debt: the paradox of discretion. *Industrial and Corporate Change*, 19: 51–80.

Peng, M. W. 2004. Outside directors and firm performance during institutional transitions'. *Strategic Management Journal*, 25(5): 453 - 471.

Pfeffer, J. 1972. Size and composition of corporate boards of directors: The organisation and its environment'. *Administrative science quarterly*, 17(2): 218-228.

Pfeffer, J., and Salancik, G. R. 1978. The external control of organizations: A resource dependence perspective. New York: Harper and Row.

Porter, M.E. (1980). *Competitive strategy: Techniques for analyzing industries and competitors*, New York: free press.

Puffer, S. M. and McCarthy, D. J. 2003. The emergence of corporate governance in Russia. *Journal of World Business*, 38(4): 284-298.

Rashid, A., De Zoysa, A., Lodh, S. and Rudkin, K. 2010. Board composition and firm performance: Evidence from Bangladesh. *Australasian Accounting Business and Finance Journal*, 4(1): 76-96.

Raymar, S. 1991. A model of debt financing when earnings are mean-reverting. *Journal of Financial and Quantitative Analysis, 26*(03): 327-344.

Roslan, S., 2012. Debt financing effect on firms performance: Focusing on consumers and industrials sectors on Malaysian firms. *International review of business research papers*, *8*(5): 137-155.

Salim, M. and Yadav, R., 2012. Debt financing and firm performance: Evidence from Malaysian listed companies. *Procedia-Social and Behavioral Sciences*, *65*: 156-166.

Sami, H., Wang, J. and Zhou, H., 2011. Corporate governance and operating performance of Chinese listed firms. *Journal of International Accounting, Auditing and Taxation*, *20*(2): 106-114

Sarkar, J. and Sarkar, S. 2008. Debts and corporate governance in emerging economies. *Economics of transition*, 16(2): 293-334.

Simerly, R. L. and Li, M. F. 2000. Environmental dynamism, debt financing and performance: a theoretical integration and empirical test. *Strategic Management Journal*, 21: 31–49.

Stiglitz, J.E. 2000. Capital market liberalization, economic growth, and instability. *World development*, *28*(6): 1075-1086.

Tian, J and Lau, CM. 2001. Board composition, leadership structure, and performance in Chinese shareholding companies. *Asia Pacific Journal of Management*, 18: 245–263.

Titman, S. and Wessels, R., 1988. The determinants of debt financing choice. *The Journal of finance*, *43*(1): 1-19.

Vincente-Lorente, J. D. 2001. Specificity and opacity as resource-based determinants of debt financing: evidence for Spanish manufacturing firms. *Strategic Management Journal*, 22: 157–177.

Vo, D.H. and Nguyen, T.M., 2014. The impact of corporate governance on firm performance: Empirical study in Vietnam. *International Journal of Economics and Finance, 6*(6): 1-13

Vo, X.V., 2017. Determinants of debt financing in emerging markets: Evidence from Vietnam. *Research in International Business and Finance, 40*: 105-113.

Vo, X.V. and Ellis, C., 2017. An empirical investigation of debt financing and firm value in Vietnam. *Finance Research Letters, 22*: 90-94

Wen, Y., Rwegasira, K. and Bilderbeek, J., 2002. Corporate governance and debt financing decisions of the Chinese listed firms. *Corporate Governance: An International Review*, *10*(2): 75-83.

Westphal, J. D., Gulati, R. and Shortell, S. M. 1997. Customization or conformity? An institutional and network perspective on the content and consequences of TQM adoption. *Administrative Science Quarterly*, 42(2): 366-394.

Williamson, O. E. 1967. Hierarchical Control and Optimum Firm Size. *Journal of Political Economy*, 53 (2): 123-138.

Wooldridge, J.M. 2010. Econometric analysis of cross section and panel data. MIT press.

World Bank. 2006. Overview of the capital markets in Vietnam and directions for development. Washington, DC: World Bank. Available at http://documents.worldbank.org/curated/en/799361468350165858/Overview-of-the-capital-markets-in-Vietnam-and-directions-for-development

World Bank. 2018. Vietnam Overview. Available at https://www.worldbank.org/en/country/vietnam/overview

Young, M.N., Peng, M.W., Ahlstrom, D., Bruton, G.D. and Jiang, Y. 2008. Corporate governance in emerging economies: A review of the principal–principal perspective. *Journal of Management studies*, *45*(1): 196-220.

Zeitun, R and Tian, G., 2007. Debt financing and corporate performance: evidence from Jordan. Australasian Accounting Business and Finance Journal, 1: 40-53

Appendix

Table A: Industry-based classification of the sample

Industry	*Description*	*Observations (2013-2017)*
Industry 1	Agriculture, forestry and fishing	20
Industry 2	Mining and quarrying	90
Industry 3	Manufacturing	435
Industry 4	Electricity, Gas, Steam and Air Conditioning supply	115
Industry 5	Water supply	20
Industry 6	Construction	430
Industry 7	Wholesale and retail trade	160
Industry 8	Transportation and storage	105
Industry 9	Accommodation and food service activities	35
Industry 10	Information and communication	40
Industry 11	Professional, Scientific and technical activities	15
Industry 12	Administrative and supportive service	15
Industry 13	Arts, entertainment and recreation	20

Table 1. Correlation matrix

	ROA	ROE	DE	ID	DE*ID	SO	DUAL	BOARDSIZE	FIRMSIZE	VIF
ROA	1									
ROE	0.1504	1								
DE	-0.0103	-0.7096	1							4.54
ID	0.0106	0.0561	0.0163	1						1.11
DE*ID	0.0654	0.4913	-0.6817	0.0375	1					4.55
SO	-0.0332	0.0057	-0.0063	-0.0097	0.0129	1				1.11
DUAL	-0.0293	-0.0045	0.0108	-0.2492	-0.0286	-0.1711	1			1.11
BOARDSIEZE	-0.0001	-0.0095	-0.0128	0.1077	0.0152	-0.2314	-0.0258	1		1.16
FIRMSIZE	0.0654	0.0104	0.0061	0.1311	-0.0048	0.0362	0.0149	0.2621	1	1.10

Table 2. Descriptive Statitic

Variable	Obs	Mean	S. Dev.	Min	Max
ROA	1500	0.050	0.094	-0.689	1.719
ROE	1500	0.079	2.270	-51.125	65.053
DE	1500	1.576	1.463	0.000	0.820
ID	1500	0.605	0.183	0.000	0.900
SO	1500	0.381	0.217	0.000	0.890
BOARDSIZE	1500	5.430	1.160	0.000	12.000
FIRMSIZE	1500	1.23	0.292	0.045	301.492

Note: Firm size is measured by total asset in trillion VND

Table 3: Fixed/Random effect-IV results for ROA and ROE

	ROA				ROE			
	FE		RE		FE		RE	
	Coeff.	p value	Coeff.	p value	Coeff.	p value	Coeff.	p value
Lag DE	**-0.163**	**0.049**	**-0.124**	**0.046**	**-0.201**	**0.000**	**-0.200**	**0.001**
Lag ID	**0.386**	**0.004**	**0.186**	**0.023**	**0.557**	**0.007**	**0.638**	**0.000**
Lag DE*ID	**0.254**	**0.001**	**0.314**	**0.041**	**0.480**	**0.000**	**0.479**	**0.003**
Lag SO	0.090	0.293	0.025	0.173	0.031	0.001	0.019	0.062
Lag DUAL	0.066	0.052	0.013	0.072	0.020	0.078	0.041	0.043
Lag BOARDSIZE	0.039	0.045	0.061	0.849	0.048	0.673	0.037	0.857
Lag FIRMSIZE	0.029	0.607	0.054	0.033	0.115	0.027	0.046	0.002
Lag Industry 1	0.619	0.278	0.064	0.139	0.399	0.495	0.085	0.834
Lag Industry 2	0.034	0.051	0.040	0.091	0.047	0.832	0.145	0.727
Lag Industry 3	0.073	0.091	0.044	0.318	0.969	0.263	0.086	0.832
Lag Industry 4	0.052	0.132	0.046	0.017	0.231	0.541	0.116	0.778
Lag Industry 5	0.089	0.438	0.050	0.355	0.099	0.811	0.135	0.762
Lag Industry 6	-0.035	0.762	0.080	0.857	-0.155	0.883	0.147	0.718
Lag Industry 7	0.059	0.513	0.031	0.491	1.463	0.097	0.227	0.581
Lag Industry 8	0.288	0.703	0.063	0.160	-0.382	0.619	0.052	0.901
Lag Industry 9	0.049	0.328	0.066	0.186	0.059	0.821	0.044	0.918
Lag Industry 10	0.592	0.874	0.111	0.822	0.062	0.817	0.029	0.946
Lag Industry 11	0.194	0.821	0.357	0.503	-0.065	0.941	0.092	0.842
Lag Industry 12	0.651	0.439	0.389	0.498	0.431	0.549	0.339	0.457
Lag Industry 13	0.034	0.792	0.057	0.916	0.079	0.838	0.074	0.869
Constant	-0.101	0.043	-0.197	0.005	-3.541	0.016	-1.490	0.009
N	900		900		900		900	
R-squared	0.690		0.659		0.881		0.879	
Hausman Test	Prob > Chi2 = 0.0324				Prob > Chi = 0.0119			

Table 4: One step- system GMM results

	ROA		ROE	
	Coeff.	p value	Coeff.	p value
Lag Profitability	0.091	0.107	0.198	0.389
Lag DE	**-0.005**	**0.000**	**-0.232**	**0.000**
Lag ID	**0.066**	**0.018**	**1.131**	**0.023**
Lag DE*ID	**0.089**	**0.003**	**1.113**	**0.041**
Lag SO	-0.073	0.062	0.148	0.744
Lag DUAL	-0.007	0.713	-0.270	0.319
Lag BOARDSIZE	-0.015	0.022	-0.103	0.144
Lag FIRMSIZE	0.000	0.403	0.000	0.529
Lag Industry1	1.053	0.034	4.223	0.466
Lag Industry2	-0.052	0.874	-4.008	0.239
Lag Industry3	0.706	0.307	-2.260	0.596
Lag Industry4	-0.450	0.338	1.554	0.737
Lag Industry5	0.454	0.422	2.097	0.810
Lag Industry6	-0.078	0.865	-3.309	0.528
Lag Industry7	-0.196	0.808	-0.713	0.924
Lag Industry8	0.121	0.592	0.662	0.728
Lag Industry9	0.025	0.888	2.095	0.361
Lag Industry10	-0.080	0.845	1.452	0.778
Lag Industry11	0.336	0.307	1.793	0.434
Lag Industry12	-0.072	0.480	-0.390	0.590
Lag Industry13	-0.562	0.125	-0.365	0.904
Constant	0.031	0.599	0.963	0.164
N	900		900	
AR(1)	p=0.151		p=0.053	
AR(2)	p=0.852		p=0.082	
Sargen Test	p=0.068		p=0.070	

Table 5: The moderating effect of IDs on debt financing- profitability relation

ROA		**Financial leverage**		
		Low	*Medium*	*High*
IDs	*The lowest % of IDs*	0.5188	0.5158	0.5129
	The highest % of IDs	0.3910	0.4949	0.5988
ROE		**Financial Leverage**		
		Low	*Medium*	*High*
IDs	*The lowest % of IDs*	2.3527	2.2707	2.1888
	The highest % of IDs	2.0503	2.6998	3.3494

Figure 1: Conceptual Framework

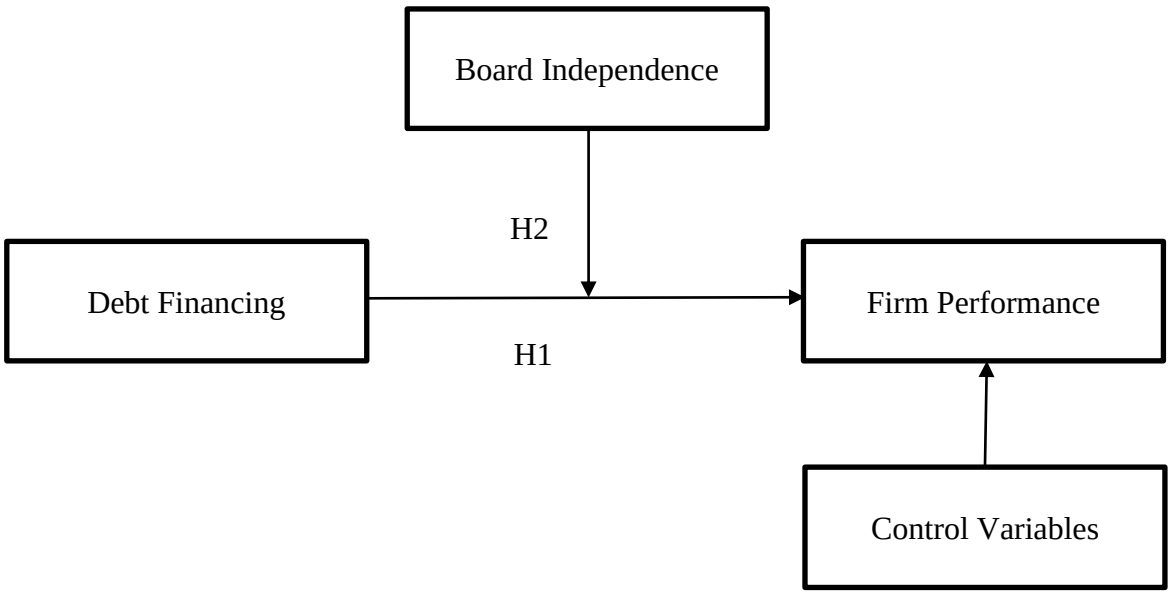

Figure 2: The effects of DE on ROA in case of low and high IDs

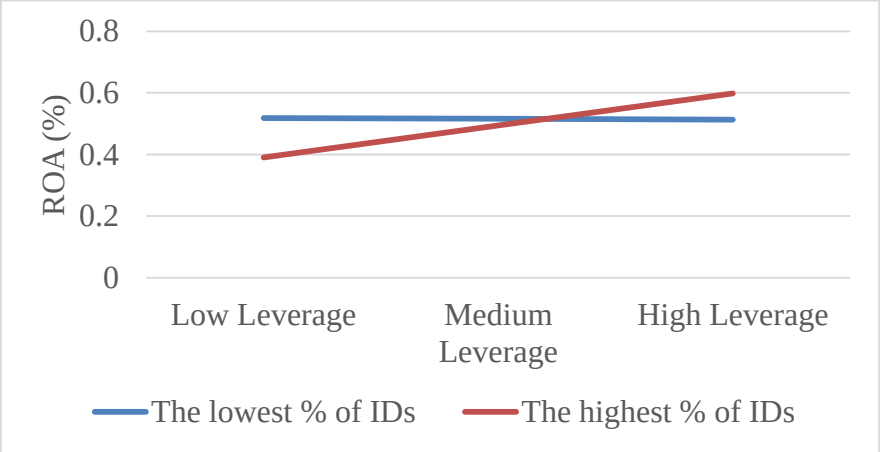

Figure 3: The effects of DE on ROE in case of low and high IDs