Board Characteristics and Capital Structure: Evidence from Thai Listed Companies

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Abstract

This study examines the relationship between board characteristics and capital structure. Data was collected from the annual reports of listed companies in the Stock Exchange of Thailand, from 2015 to 2017, which totaled 1,264 firm-year observations. The study uses multiple regression analysis to analyses the data by using independent variables, including board size, outside directors, managerial ownership, CEO duality, frequency of board meetings, board experience, and gender to measure board characteristics and the total debt ratio for capital structure. Research findings show that the more independent the directors are, the lower the cost of debt financing is, as they control the management team more strictly about debt financing than directors with less independence do. Additionally, the results reveal that the higher the percentage of managerial ownership, the higher the level of leverage and debt financing, whereas board size and board meetings have a negative relationship to capital structure. Further research showed that firm size, growth opportunities and corporate governance rating all had a positive significant impact on capital structure. The findings of this study suggest that the presence of proper corporate governance leads to better funding mechanisms as it ensures that the company is in a better position to obtain external funding.

Keywords: Board Characteristics, Capital Structure, Corporate Governance

JEL Classification Code: G34, D34, G32

1. Introduction

Corporate governance provides the framework that is needed to achieve the company's goals by controlling every management process, ranging from controls to measurements. Corporate governance is a good thing that helps with the checking and balancing of firms and enables them to avoid failure (Bhagat & Bolton, 2008). Some of the basics of corporate governance include governance, which is used to refer to a set of policies, rules, controls and resolutions that dictate corporate behavior. If a firm has good corporate governance this will have a positive impact on the firm and the capital market. The benefits are not only reduced financial costs and greater business competitiveness for issuers and listed companies, but also a tax benefit. This has a major impact on their capital structure too. According to Aldamen and Duncan (2012), it was found out that corporate governance decreases agency problems by reducing their risk and the cost of debt. Good corporate governance also enhances a firm's market confidence and attractiveness, which is conducive to higher liquidity and a higher market price for corporate finance (Claessens, 2006).

The Board of Directors is one of the major principles of corporate governance that has a major impact on a firm (Baysinger & Butler, 1985). This is because the board's roles and responsibilities have a direct impact on every part of the company. The Securities and Exchange Commission of Thailand (SEC) requires that the suitable board structure of a company should neither be too small nor too large. It also needs to have sufficient independence to examine the management team's operations. In addition, the board's decision making will impact on both firm performance and capital structure. The results of firm performance have only ever shown the performance of the firm, but capital structure can show what the firm should be doing in the future. Moreover, it shows the

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firm's risk, such as financing risk and investment risk that could affect the firm's value and stability. The firm's risk is an uncertainty that prevents it from achieving its goals and objectives and it has an impact on the firm's financial situation or leads to financial distress. That's why we need the board of directors to create policies and control the management team that will reduce risk and debt.

A lot of research has studied the relationship between corporate governance and capital structure using different corporate governance factors (e.g., Abor, 2007; Anderson, Mansi, & Reeb, 2004; Bashir & Asad, 2018; Berger, Ofek, & Yermack, 1997; Bokpin & Arko, 2009; Fosberg, 2004; Le & Tannous, 2016; Nyamweya, 2015; Rakhmayil & Yuce, 2009; Ranti, 2013). However, some research focuses on board characteristics in developing countries, which use different variables and provide a different result. There was a lack of consensus in the previous studies that used different variables, including independent variables and control variables.

In this study, we include independent variables, such as board experience and frequency of meetings, as well as board characteristics factors, and also add another control variable that is different from the others, which may have an impact on capital. Consequently, this paper will examine the relationship between corporate governance factors and capital structure by focusing on board characteristics. To enhance the results, the samples represent the companies listed in all of the sectors, excluding the financial sector. The results are also expected to vividly illustrate the relationship between board characteristics and capital structure.

The study is organized in the following structure. First, in the next section we reviewed the related literature and main hypotheses of the study. Then, section three provides a conceptual framework. Section four explains the data and methodology used in the study. After that, section five shows the results of empirical analysis and discussion. Finally, the last section presents conclusion and recommendation of the study.

2. Literature Review

2.1. Theoretical Background

There are three main theories related to this paper. Firstly, the agency theory states that the interests of the principals and the agent conflict when there is a separation between ownership and control. The theory is that everybody is motivated to do everything for themselves (Jensen & Meckling, 1976). Firstly, the principals, the shareholders who own the firm, hire an agent to manage the firm in a way that will maximize profit. The agent then receives compensation such as a salary and bonus for managing the firm. However, the relationship leads to agency conflict because even though

the firm becomes more profitable, the agent cannot receive any more salary. Consequently, the agent is not motivated anymore to maximize the shareholders' profit.

Secondly, the trade-off theory has been developed from Modigliani and Miller (1958), which states that the capital structure of an enterprise does not change its overall performance. For example, U firm is an unleveraged firm with funding from shareholders and no debt financing. On the other hand, L firm is a leveraged firm that has run up some debts. If the two firms are unconcerned about taxes, their firm value will be equal in all cases. If firms concentrated on personal taxes, then debt financing would help to decrease their taxes. Therefore, the more a firm uses debt financing, the more it increases its firm value. Consequently, the optimization of the capital structure should consider the cost and benefit analysis because the cost of debt is a lower cost than the cost of equity. Kraus and Litzenberger (1973) state that firms with heavy debt financing will make more tax savings. On the other hand, the firm value will decrease when a firm confronts the costs of financial distress.

Thirdly, the pecking order theory was initially suggested by Myers and Majluf (1984). It states that equity funding is the least preferred option because the investor thinks the stock price is overvalued when a firm issues new equity, the management team benefits and profits from this by selling their stock. However, this theory involves two hypotheses about the management team. Firstly, that the management team has more information than external investors. Secondly, the management team does everything for the shareholder's benefit. This is the root cause of the asymmetry of information; namely, the management team cannot send a positive information signal to investors, i.e. future investment. The net present value is positive, but investors will normally buy stock when the price is undervalued. Hence, the firm needs to generate funding by issuing new equity.

To solve the problem, Myers and Majluf (1984) suggest that firms should first use internal financing. If this is not enough, they should then start using external financing with debt financing, and only issue new equity as the last resort. When the funding of a firm is done internally with external debt, which has a lower risk, the firm has a good sign to the market that it intends to use future profits as a source of investment. On the contrary, when firms continuously issue new equity, it sends the signal that the stock price is overvalued.

2.2. Hypothesis Development

2.2.1. Board Size

Having a suitable board size is the one factor that affects firms because the board has the authority to decide planning and strategy, and provide the firm with the

leadership they require to achieve their goals. Lipton and Lorsch (1992) studied the importance of effective boards in US companies. They state that boards with more than ten members find it very difficult to share their opinions and ideas in a limited amount of time. In contrast, a smaller board is more likely to have more informed opinions and make more effective decisions because the members get to know each other better. Thus, larger boards with more members are less effective than smaller boards with fewer members.

Jensen and Meckling (1976) stated that companies with a greater level of debt and leverage will have a larger board size. On the other hand, Berger et al. (1997) found that when the board of directors is larger, leverage is lower. Heng, Azrbaijani, and San (2012) studied Malaysian companies and found that companies with larger boards could enhance their performance by driving the management to reduce the firm's debt financing. Moreover, Ranti (2013) found there is a significant negative relationship between both of them, and concluded that firms with a smaller board size tend to have greater leverage, which they can use to reduce their agency problems. This is because a firm with a larger board strictly monitors and controls the management team.

H1: Board size is negatively related to the total debt ratio.

2.2.2. Outside Directors

Outside directors is another factor that affects firms because their role and responsibilities are to control, lead management transparency and make appropriate decisions using good corporate governance. There are many empirical research studies about outside directors. Abor (2007) studied the relationship between corporate governance and capital structure in order to find a positive significant relationship between the ratio of outside directors and debt decision. Moreover, Bokpin and Arko (2009) found there is a positive significant relationship between the board's independence and the firm's capital structure.

On the other hand, Berger et al. (1997) stated that firms with a lower ratio of outside directors would have significantly less leverage. Zahra and Pearce (1989) carried out a study that looked at the effect that the proportion of outside directors had on firm performance. They found out that the higher proportion, the better the firm's performance. Pfeffer (1972) states that a firm needs to have a suitable board size and composition to respond reasonably to the external environment. For example, firms who need funding from the capital market have a higher proportion of outside directors than inside directors.

H2: Outside directors are negatively related to the total debt ratio.

2.2.3. Managerial Ownership

The relationship between the managers and shareholders of listed firms can lead to an agency problem when they have a difference of opinions about the management of the company and firm performance. Managerial ownership can reduce the problem by providing incentives, like giving stocks to the managers. Increasing managerial ownership gives managers the motivation to focus on improving the firm's performance, rather than just benefiting themselves.

By using many empirical studies, Bathala, Moon, and Rao (1994) and Fosberg (2004) found a negative significant relationship between managerial ownership and capital structure, with firms using managerial ownership to decrease the agency cost of debt instead of debt financing. Sheikh and Wang (2012), who studied how corporate governance affects the capital structure choices of Pakistani firms, found there is a relationship between managerial ownership and capital structure. They indicated that increased managerial ownership aligns with the interests of managers and outside shareholders, reducing the role of debt as a tool to mitigate agency problems. Wellalage, Locke, and Acharya (2018) have shown that managerial ownership negatively affects the debt of New Zealand firms. Moreover, Ruan, Tian, and Ma (2011) have found there is a negative relationship when the CEO's proportion of ownership is either lower than 18 percent or over 46 percent, and the debt level increases as the percentage of ownership increases in the Chinese market.

Conversely, Berger et al. (1997) reported that a relationship between both of them is significantly positive. They stated that managers with financial incentives are more closely aligned with outside shareholders and will pursue a more levered capital structure to increase the value of the firm. Moreover, Kim and Sorensen (1986) have stated that a firm with a higher percentage of managerial ownership tends to have a higher level of leverage. Shoaib and Yasushi (2015) report that when CEO ownership level is at a low level in Pakistan, it has a positive impact on firm leverage. In addition, Le and Tannous (2016) and Bokpin and Arko (2009) found that managerial shareholding has a significant positive effect on the debt ratio. The reason for this may be that the CEO, who has ownership of the company, is motivated to enhance the firm's value by increasing more debt financing and leverage. Moreover, it can decrease the agency problem (Jensen & Meckling, 1976).

H3: Managerial ownership is positively related to the total debt ratio.

2.2.4. CEO Duality

Normally, the chief executive officer (CEO) manages and directs the company's growth while the chairman of the board (COB) holds the most power and authority on the

board of directors. CEO duality refers to the situation when the CEO also holds the position of COB. This means the firm has a clear direction and will respond faster because the authority lies in the CEO only.

Fama and Jensen (1983) suggest that the role of the CEO should be separated from the role of the COB, because CEO duality will lead to the agency problem. Hermalin and Weisbach (1991) also state that a firm will perform better without CEO duality. This is because the firm can reduce the agency problem by separating the duties and responsibilities of the CEO and the COB. The CEO is the person who plans and decides the firm's strategy while the COB is a person who guarantees, investigates and controls the CEO's performance. Therefore, segregation of their duties will improve firm performance. Thus, Abor (2007) and Ranti (2013) found there is a positive significant relationship between CEO duality and the firm's leverage because one person is able to make decisions quickly and clearly. There is a tendency to be not careful enough in making financing decisions, however, so the total debt ratio could increase. Hence, it could be implied that CEO duality increases the firm's debt usage.

H4: CEO duality is positively related to the total debt ratio

2.2.5. Frequency of Board Meetings

Lipton and Lorsch (1992) studied the frequency and duration of board meetings, and suggested the meetings should be at least bi-monthly and last a full day. They believe this time should be well spent focusing on essential topics, which would improve the effectiveness of corporate boards. Chou, Chung, and Yin (2013) showed that the attendance of board meetings affected firm performance in Taiwan.

Evans and Weir (1995) and Brick and Chidambaran (2010) reported there was a positive significant relationship between the frequency of board meetings and firm performance. The frequency of meetings can imply that the board will develop a better understanding of the company and the nature of the business, and their control and monitoring of the management team will benefit the shareholders. This, in turn, improves the firm's strategy and makes it more effective. Hanh et al. (2018) have shown that the frequency of board meetings in Vietnam negatively affects firm performance.

H5: Frequency of board meetings is positively related to the total debt ratio.

2.2.6. Board Experience

Board experience is another factor that affects firms because having a lot of experience and expertise on the board improves the performance and effectiveness of the firm, enabling it to solve problems it has faced in the past.

Gîrbină, Albu, and Albu (2012), who studied the financial education and firm performance of board members in Romania, stated that firms with board members who have a superior education in the financial fields will have a better firm performance. Peni (2014) also found there was a positive relationship between executive experience and firm performance. Like Darmadi (2013), they also reported that the board's education and experience has a positive effect on firm performance in developing economy.

Wen et al. (2002) reported that firms with more experienced CEO tend to have less leverage. Custódio and Metzger (2014) studied the work experience of CEOs and the financial policies of firms in S&P500. They stated that the work experience of the CEO affected the firm's financial policy (including leverage, cash holdings and payout policy). Moreover, Rakhmayil and Yuce (2009) showed there is a significant positive relationship between the education of management and leverage. Their research implied that firms who had CEOs with greater experience in education increase their leverage. This is because the CEOs think they can manage all of the leverage and make it useful for the company.

H6: Board experience is positively related to the total debt ratio.

2.2.7. Gender

Gender can also have an impact on firms. There is plenty of empirical evidence that shows the difference between males and females. Krishnan and Parsons (2008) stated that male directors performed better and the firm's financial results were better as a result. Campbell and Mínguez-Vera (2008) reported that having gender diversity in the boardroom has a positive effect on firm value. On the other hand, Abobakr and Elgiziry (2016) revealed a significant negative relationship between the proportion of female directors on the board and short-term debt.

Conversely, Liu, Wei, and Xie (2014) showed female directors have a significant impact on firm performance. Adams and Ferreira (2009) state that female directors are committed to attending board meetings, have a better record than male directors and put more effort into observing executive directors. Likewise, Nyamweya (2015) found there was a positive significant relationship between gender and the debt-equity ratio, stating that the more male directors there are on the board, the higher the firm's leverage will be. This may cause men and women to have a different risk preference. Stinerock, Stern, and Solomon (1991) stated that women have a lower risk preference than men because they have less confidence in making risk-decisions. Similarly, Hillesland (2019) found that males are better at risk-taking investments than females.

H7: Gender of directors is positively related to the total debt ratio.

3. Conceptual Framework

The literature review led to the development of the proposed conceptual model and seven independent variables and six control variables for the relationships with capital structure (see Figure 1).

4. Research Methodology

4.1. Research Sample and Data

The information that will be used in this study is secondary data, which is cross-sectional data. The population was sampled from the companies listed on the Stock Exchange of Thailand (SET) over the period of 2015–2017. There were 753 listed firms in SET. This study excluded 160 announcements made by the Market for Alternative Investment (MAI) firm and an additional 149 announcements under the financial sector, property fund, real estate investment trusts and firms under rehabilitation. Finally, 68 observations of listed companies were dropped as missing data. We included companies that had data on all of the variables for a minimum of one year in our final sample. Therefore, our final sample included 1,264 observations between 2015 and 2017.

The data on board characteristics factors and financial information for capital structure was collected from www.setsmart.com, DATASTREAM and the individual firms' data, documented in Form 56-1 and the Annual Report. The data on Corporate Governance Rating (CGR) was collected from the Governance Report of Thai Listed Companies by the Thai Institute of Directors Association (IOD).

4.2. Variable Measurement

4.2.1. Dependent Variable

The dependent variable is capital structure, calculated by the total debt ratio, applied from Rajan and Zingales (1995), who found out that it is a suitable measurement to show the effect of funding. Moreover, it shows the leverage and financial structure of the company and the risk that the company is now taking.
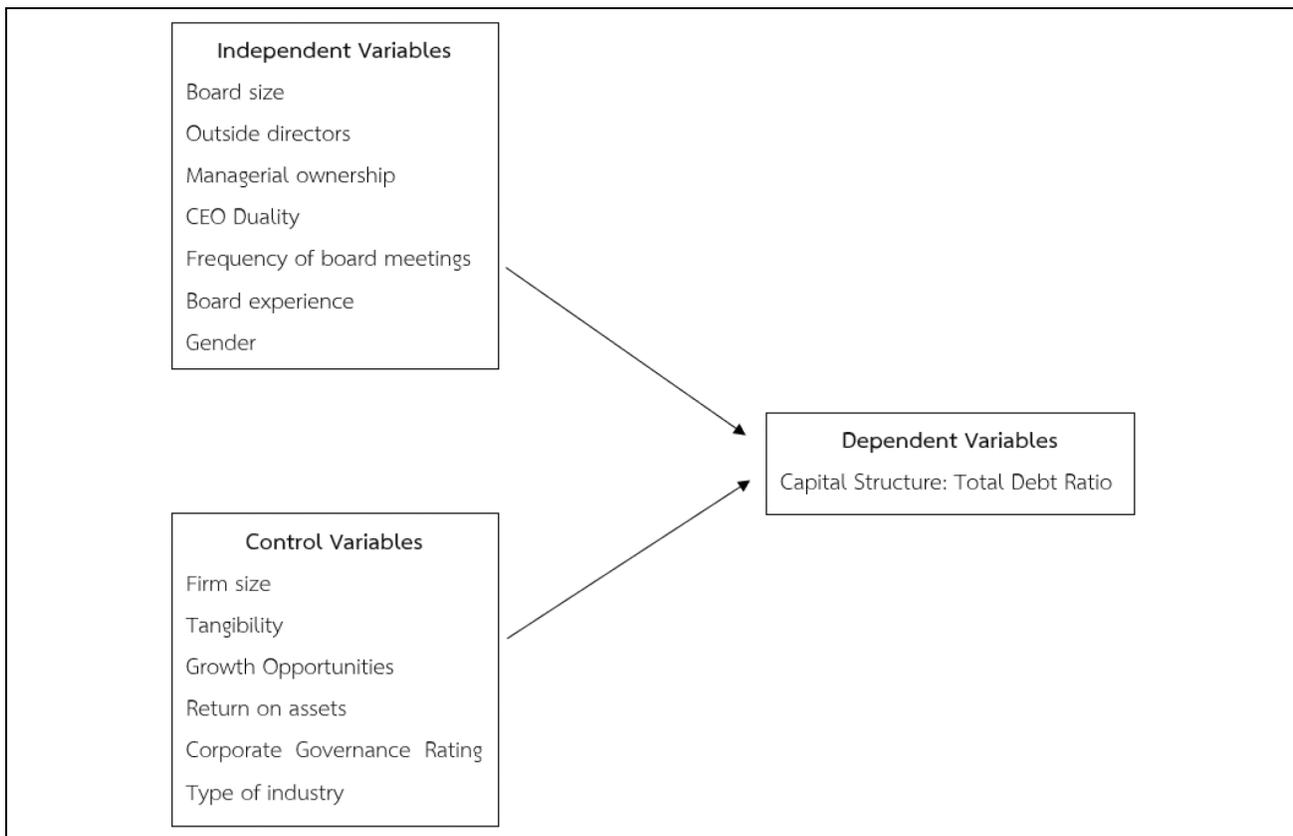

Figure 1: Conceptual Research Model

4.2.2. Independent Variable

There are seven board characteristics from the previous literature to find the relationship between board characteristic and capital structure. The board characteristics are as follow:

Board size is the total number of directors on the board. Outside directors is the ratio of independent directors to the total number of directors on the board. Managerial ownership is the percentage of controlling shareholders owned by the CEO. In this study, we only use direct shareholding data. CEO duality occurs when the CEO also serves as the COB. In this study, we measure CEO duality as a dummy variable that is coded 1 if the CEO also serves as the COB and 0 otherwise. The frequency of board meetings is the number of board meetings per year. Board experience is the ratio of directors who have experience of accounting and/or finance to the total number of directors on the board. Finally, the gender of the COB was measured as a dummy variable that is coded 1 if the firm has a male COB and 0 otherwise.

4.2.3. Control Variables

There are standard control variables for other attributes of the firms that may affect the capital structure applied from Sheikh and Wang (2012), Le and Tannous (2016) and Kyriazopoulos (2017). The control variables include.

4.2.3.1. Firm Size

Each firm has a different size that can affect the firm's capital structure. The natural logarithm of the total assets will represent the firm's size. Panigrahi (2011) states there is a relationship between firm size and leverage. Hence, small firms will choose to use more funding on financing debt than equity and, consequently, are more likely to go bankrupt than large firms. The smaller the firm, the higher the ratio of debt to equity. Moreover, Kim and Sorensen (1986) reported that larger firms can easily get favorable terms for their obligations due to their larger debt capacity.

4.2.3.2. Tangibility

Tangibility is one of the factors that can affect a firm's capital structure. Setiadharma and Machali (2017) reports that firms who use a secured loan, whereby the debt is backed by their tangible assets, tend to increase their firm value. Myers and Majluf (1984) also state that firms with high tangibility can reduce their financial debt and leverage. Thus, issuing new equity is less costly. Tangibility will be represented by the ratio of PPE and total assets.

4.2.3.3. Growth Opportunities

Myers and Majluf (1984) have established that a firm with a high growth rate tends to have high leverage that leads

to financial distress and bankruptcy. This is because there's a conflict of interest that exists between equity and the debt holders. These problems could be solved by not issuing new debt for the new project. In addition, Rajan and Zingales (1995) also state there's a negative relationship between growth opportunities and leverage in the UK market. Hence, growth opportunities are a variable that affects the firm's capital structure.

4.2.3.4. Return on Assets (ROA)

We use ROA to measure the profitability of a firm. ROA is the ratio of earnings before interest and taxes (EBIT) to total assets. Firms with a high ROA can earn profit by using overall resources. Frank and Goyal (2009) report that a firm will face lower bankruptcy costs if they can make more profit, which leads to a more valuable tax shield. Thus, a profitable firm will have a higher level of debt in order to benefit more from its tax shield.

4.2.3.5. Industry

Industry is a dummy variable for each type of industry that the firm belongs to. The categories are based on seven SET industries (excluding the financial industry), such as the Agro & Food Industry, Consumer Products, Industrials, Property & Construction, Resources, Service and Technology. Firms in that industry are coded 1 and 0 otherwise.

4.2.3.6. Corporate Governance Rating (CGR)

CGR is a dummy variable that measures the firm by using the good corporate governance scoring given by the IOD. Firms with good Corporate Governance are coded 1 and 0 otherwise. We concluded the variable measurement of dependent variable, independent variable and control variable in Table 1.

4.3. Data Analysis

Multiple linear regression was used to study the relationship between board characteristics and capital structure by following the formula below:

$$\begin{aligned} \text{TODR}_{it} = {}& \alpha + \beta_1\,\text{BODSIZE}_{it} + \beta_2\,\text{ODI}_{it} + \beta_3\,\text{MOWN}_{it} \\ & + \beta_4\,\text{CDUAL}_{it} + \beta_5\,\text{MEET}_{it} + \beta_6\,\text{BODEX}_{it} \\ & + \beta_7\,\text{GEND}_{it} + \beta_8\,\text{FSIZE}_{it} + \beta_9\,\text{TANG}_{it} \\ & + \beta_{10}\,\text{GROWTH}_{it} + \beta_{11}\,\text{ROA}_{it} + \beta_{12}\,\text{IND}_{it} \\ & + \beta_{13}\,\text{CGR}_{it} + u_{it} \end{aligned}$$

Where the variables and measurement showed in Table 1.

Table 1: Variables and Measurement

Variables	Symbol	Measurement
Independent Variables		
Board size	BSIZE	Number of Board of Directors
Outside directors	ODI	Outside directors/Total directors
Managerial ownership	MOWN	A percentage of controlling shareholders owned by CEO
CEO Duality	CDUAL	A dummy variable coded 1 if Chief Executive Officer (CEO) also serves as the Chairperson of the Board (COB) and 0 otherwise
Frequency of board meetings	MEET	Number of board meetings per year
Board experience	BODEX	Directors that have an experience on accounting and/or finance/Total directors
Gender	GEND	A dummy variable of Chairperson of the Board (COB) coded 1 for male and 0 otherwise
Dependent Variable		
Total debt ratio	TODR	(Total Assets – Total Equity)/Total Assets
Control Variables		
Firm size	FSIZE	Ln of Total Assets
Tangibility	TANG	Plant, Property and Equipment/Total Assets
Growth opportunities	GROWTH	Market value of Equity/Book value of Equity
Return on assets	ROA	Earnings before interest and taxes/Total Assets
Corporate Governance Rating	CGR	A dummy variable coded 1 for firm with good Corporate Governance and 0 otherwise
Type of Industry		
Agro & Food Industry	AGRO	A dummy variable coded 1 for firm in Agro & Food Industry and 0 otherwise
Consumer Products	CONS	A dummy variable coded 1 for firm in Consumer Products and 0 otherwise
Industrials	IND	A dummy variable coded 1 for firm in Industrials and 0 otherwise
Property & Construction	PROP	A dummy variable coded 1 for firm in Property & Construction and 0 otherwise
Resources	RESOURCE	A dummy variable coded 1 for firm in Resources and 0 otherwise
Service	SERV	A dummy variable coded 1 for firm in Service and 0 otherwise
Technology	TECH	

5. Results and Discussion

Table 2 shows the descriptive statistics of the sample of 1,264 firm-year observations over the period of 2015-2017 for all the variables by showing the minimum, the maximum, the average and the standard deviation of data.

The average of the Total Debt Ratio (TODR) was 0.431 and the median was 0.439. The mean value of the board Size (BODSIZE) was 10.252, with the median being 10, whereas the minimum was 5. The results are consistent with the CG code that the board size should be at least 5 members. The average of the Outside Directors (ODI) was 0.409, whereas the median was 0.385. This agrees with the CG code that at least one-third of the total number of directors on the board should be independent directors. The mean value of

Managerial Ownership (MOWN) was 7.872%, whereas the median was 0.813%. The mean value of the board meetings (MEET) was 7.719 and the Median was 6, whereas the Maximum was 21 per year. The average of Board Experience (BODEX) was 0.503, whereas the median was 0.5.

Table 3 showed descriptive statistics analysis of the control variables. It was found that the mean value of the Firm Size (FSIZE) of the 1,264 firms was 9.809 and the median was 9.714, whereas the minimum was 8.468 and the maximum was 12.349. The average of Tangibility (TANG) was 0.35469 and the median was 0.324. In addition, the mean value of growth opportunities (GROWTH) was 2.538 and the median was 1.517, whereas the minimum was –24.286 and the maximum was 83.862. The average return on assets (ROA) was 6.648 and the median 6.775.

Table 2: Descriptive Statistics Analysis of the Independent Variables

Variables	N	Mean	Median	SD	Min	Max
TODR	1264	0.431	0.439	0.238	−3.2026	1
BODSIZE	1264	10.252	10.000	2.433	5	21
ODI	1264	0.409	0.385	0.090	0.2500	0.8000
MOWN	1264	7.872	0.813	12.833	0	76.9200
MEET	1264	7.719	6.000	3.694	2	36
BODEX	1264	0.503	0.500	0.183	0.0714	1

Table 3: Descriptive Statistics Analysis of the Control Variables

Variables	N	Mean	Median	SD	Min	Max
FSIZE	1264	9.809	9.714	0.661	8.468	12.349
TANG	1264	0.355	0.324	0.321	0.000	7.904
GROWTH	1264	2.538	1.517	4.222	−24.286	83.862
ROA	1264	6.648	6.775	10.025	−50.310	75.060
CGR	1264	0.706	1	0.456	0	1

Table 4: Pearson Correlation Analysis

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1)	1											
(2)	−0.185**	1										
(3)	−0.217**	0.060*	1									
(4)	−0.185**	0.036	0.187**	1								
(5)	0.089**	0.161**	−0.053	0.02	1							
(6)	−0.105**	−0	0.034	−0.006	−0.042	1						
(7)	0.074**	0.022	−0.072*	−0.047	0.026	0.005	1					
(8)	0.384**	0.120**	−0.106**	−0.081**	0.198**	0.045	0.128**	1				
(9)	0.122**	−0.01	−0.027	−0.064*	−0.025	−0.084**	0.059*	−0.03	1			
(10)	−0.029	−0.02	0.096**	−0.046	−0.012	−0.032	−0.03	0	0.016	1		
(11)	0.051	−0.04	0.012	−0.013	−0.193**	−0.046	−0.05	0.122**	0.006	0.315**	1	
(12)	0.175**	0.039	−0.017	−0.112**	−0.024	0.099**	−0.03	0.249**	−0.03	0.018	0.187**	1

Note: (1) BODSIZE, (2) ODI, (3) MOWN, (4) CDUAL, (5) MEET, (6)BODEX, (7) GEND, (8) FSIZE (9) TANG, (10) GROWTH, (11) ROA, (12) CGR

The results of correlation test are presented in Table 4. The correlation among the variable are less than 0.8. Therefore, it showed that there is no potential multicollinearity problem in the data.

In Table 5, we found that R-squared was 0.3356 and Adjusted R-squared 32.6%. This could imply that the independent variables explain the capital structure as 32.6%. In addition to this, the F-test and p-value indicate the fitness

of the model ($p < 0.05$). This means that at least 1 variable in this model has a relationship with capital structure. For multicollinearity, Hair et al. (1995) state that we can test the multicollinearity by the test Variance Inflated Factor (VIF) and Tolerance. If VIF was more than 10 and Tolerance was lower than 0.10, it means there is multicollinearity in the model. This research found that VIF was below 10 and Tolerance was more than 0.10, hence no multicollinearity

exists in this study. The regression results from this model indicated there is statistically some association between board characteristics factors and capital structure, as follows:

We found that the coefficient (β) of the outside directors was –0.1586. This means there is a negative significance with the total debt ratio, namely that the outside director was negatively related to capital structure at 5% significance level. The p-value was 0.015, which is less than 0.05, thus this leads to an acceptance of the hypothesis. This finding is consistent with the hypothesis that states a firm with a greater proportion of outside directors will have less leverage and cost of debt financing because the greater independence of the directors will strictly control the management team regarding debt financing (Anderson et al., 2004).

Moreover, the coefficient (β) of managerial ownership was 0.0015. This means there is a positive significance with the total debt ratio; namely, managerial ownership was positively related to capital structure at the 5% significance level. The p-value was 0.001, which is less than 0.05, hence we accept the hypothesis. This finding agrees with the hypothesis that a firm with a higher percentage of managerial ownership tends to have greater leverage because the CEO and the other management team, who have ownership, have the motivation to increase firm value by using debt financing (Berger et al., 1997; Kim & Sorensen, 1986).

On the other hand, the regression results show there is an insignificant association with capital structure, as follows:

For board size, the coefficient (β) of board size was –0.0014 and the p-value was 0.624, which is more than 0.05, thus rejecting this hypothesis. It is indicated that there is no relationship between board size and the total debt ratio. This finding is consistent with Detthamrong, Chancharat, and Vithessonthi (2017) because board size may not impact on the management team's decision. They don't need to care about how much debt financing they can do in Thailand.

Table 5: Multiple Regression Analysis

Variables	Coef.	Std. Err.	*t*	***P > Itl*** **Tolerance**	**Collinearity Statistics**	
					VIF	
BODSIZE	−0.0014	0.0028	−0.49	0.624	0.665	10.504
ODI	−0.1586**	0.0649	−20.45	0.015	0.880	10.137
MOWN	0.0015**	0.0005	30.21	0.001	0.900	10.112
CDUAL	0.0141	0.0142	10.00	0.319	0.917	10.091
MEET	−0.0002	0.0017	−0.10	0.920	0.858	10.165
BODEX	0.0418	0.0312	10.34	0.181	0.928	10.077
GEND	0.0116	0.0230	0.50	0.614	0.945	10.058
FSIZE	0.1477**	0.0110	130.99	0.000	0.620	10.612
TANG	−0.1949**	0.0180	−10.82	0.000	0.903	10.107
GROWTH	0.0055**	0.0014	30.79	0.000	0.816	10.226
ROA	−0.0056**	0.0006	−90.01	0.000	0.801	10.248
CGR	0.0019	0.0130	0.15	0.884	0.866	10.154
AGRO	0.0919**	0.0262	30.52	0.000	0.721	10.386
CONS	0.1524**	0.0233	50.36	0.000	0.720	10.388
IND	0.0743**	0.0235	30.16	0.002	0.601	10.663
PROP	0.1144**	0.0238	40.82	0.000	0.583	10.715
RES	0.1393**	0.0292	40.77	0.000	0.713	10.403
TECH	0.1525**	0.0284	50.36	0.000	0.735	10.360
(Constant)	−0.9944**	0.0922	−10.79	0.000		
Observations			1,264			
Prob > *F*			0.0000			
R-Squared			0.3356			
Adj. *R*-Squared			0.3260			

** Significant at the 0.05 level

For CEO duality, the coefficient (β) of CEO duality was 0.0141, while the *p*-value was 0.319, which is more than 0.05, hence the finding rejects this hypothesis. It is indicated that there is no relationship between CEO duality and capital structure. This finding agrees with Bokpin and Arko (2009) and Detthamrong et al. (2017). Moreover, Heng et al. (2012) also had the same results, which are not related, in Malaysian companies, as 90% of the companies separated the duties of the CEO and COB. This could also be the reason why 79% of firms in Thailand separate the duties of the CEO and COB.

Moreover, the coefficient (β) of board meetings was –0.0002, whereas the *p*-value of the frequency of board meetings was 0.920, which is more than 0.05, thus rejecting this hypothesis. It is inferred that there is no relationship between the frequency of board meetings and capital structure. This finding is in line with Naseem, Xiaoming, Riaz, and Rehman (2017). For board experience, the coefficient (β) of board experience was 0.0418, while the *p*-value was 0.181, which is more than 0.05, hence rejecting this hypothesis. It showed there is no relationship between board experience and capital structure.

In addition, the coefficient (β) of gender was 0.0116, whereas the p-value of gender was 0.614, which is more than 0.05, thus rejecting this hypothesis. It is indicated that there is no relationship between gender and capital structure. This result is consistent with Naseem et al. (2017) and shows that gender is not related to firm performance in Pakistan. Normally, there is less female representation on boards. In this study, only 6.49% of firms in Thailand have a female COB. It can be concluded from all of the above that the other independent variables, including board size, CEO duality, board meetings, board experience and gender, were insignificantly associated with capital structure, hence they reject those hypotheses.

The control variables, except for CGR, were significantly associated with capital structure. We found that the coefficient (β) of firm size was 0.1477 and the p-value of firm size was 0.000, which is less than 0.05. This means it was positively related to capital structure at the significance level of 5%. The coefficient (β) of tangibility was –0.1949 and the p-value of tangibility was 0.000, which is less than 0.05, thus it was negatively related to capital structure at the significance level of 5%. The coefficient (β) of growth opportunities was 0.0055 and the *p*-value of growth opportunities was 0.000, which was less than 0.05, so it was positively related to capital structure at the significance level of 5%. The coefficient (β) of return on assets was -0.0056 and the *p*-value of return on assets was 0.000, which less than 0.05, then it was negatively related to capital structure at the 5% significance level. The p-value of industries was 0.000, which was less than 0.05, hence the type of industries were significantly related. This means almost all the control variables affect capital structure.

6. Conclusion

The main aim of this paper was to study the relationship between board characteristics and capital structure in the Stock Exchange of Thailand by using independent variables, including board size, outside directors, managerial ownership, CEO duality, frequency of board meetings, board experience and gender, in order to measure board characteristics and total debt ratio for capital structure. The control variables that may affect the total debt ratio include firm size, tangibility, growth opportunities, return on assets, corporate governance rating and industries. The sample size was 1,264 firm-year observations, from 2015 to 2017. The data was collected from www.setsmart.com, DATASTREAM and individual firm data documented in Form 56-1 and the Annual Report. In this study, we used descriptive statistics and regression analysis to examine the relationship.

The empirical results found that the factor of outside directors was negatively related to capital structure at the 5% significance level, which agrees with Wen, Rwegasira, and Bilderbeek (2002) and Anderson et al. (2004). This means the more independent directors are, the lower the cost of debt financing is, as they control the management team more strictly about debt financing than other directors with less independence do. Thus, the management team will take risk by decreasing debt financing.

In addition, managerial ownership was positively related to capital structure at the 5% significance level, which is consistent with the study of Berger et al. (1997) and Kim and Sorensen (1986). This could imply that the higher the percentage of ownership is, the higher the level of leverage and debt financing is because the CEO and the other management team, who have ownership, will be motivated to use debt financing to increase firm value. Hence, the more they enhance debt financing, the more capital structure increases. The other independent variables, such as board size, CEO duality, frequency of board meetings, board experience and gender, were not related to capital structure.

Despite the relationship between board characteristics and capital structure, this study establishes that the control variables, namely, firm size, tangibility, growth opportunities, return on asset and type of industries, have an impact on the capital structure too. These findings are consistent with Myers and Majluf (1984), Sheikh and Wang (2012) , Le and Tannous (2016) and Kyriazopoulos (2017).

In conclusion, having good corporate governance provides various benefits to a company or business. The presence of proper corporate governance leads to better funding mechanisms by ensuring that the company is in a better position to obtain external funding. In addition, the company enjoys more effective management because all of the roles and responsibilities have been clearly defined. This plays a major role in ensuring that the business progresses well in

terms of planning, as well as other key managerial activities. A combination of all these advantages helps the company to manage business risks better and respond to emergency activities promptly and effectively. Moreover, the company can support innovation and invention through proper corporate governance, ensuring that it creates a suitable platform that will promote innovation and creativity. Good corporate governance safeguards a business by preventing it from suffering reputational damage. Therefore, achieving good governance helps a company to improve its business policies to investors and stakeholders in the global market space.

References

Abobakr, M. G., & Elgiziry, K. (2016). The effect of board characteristics and ownership structure on the corporate financial leverage. *Accounting and Finance Research, 5*(1), 1–14.

Abor, J. (2007). Corporate governance and financing decisions of Ghanaian listed firms. *Corporate Governance: The International Journal of Business in Society*, 7(1), 83–92.

Adams, R. B., & Ferreira, D. (2009). Women in the boardroom and their impact on governance and performance. *Journal of Financial Economics, 94*(2), 291–309.

Aldamen, H., & Duncan, K. (2012). Does adopting good corporate governance impact the cost of intermediated and non-intermediated debt? *Accounting & Finance, 52*, 49–76.

Anderson, R. C., Mansi, S. A., & Reeb, D. M. (2004). Board characteristics, accounting report integrity, and the cost of debt. *Journal of Accounting and Economics, 37*(3), 315–342.

Bashir, A., & Asad, M. (2018). Moderating effect of leverage on the relationship between board size, board meetings and performance: A study on textile sector of Pakistan. *American Scientific Research Journal for Engineering, Technology, and Sciences, 39*(1), 19–29.

Bathala, C. T., Moon, K. P., & Rao, R. P. (1994). Managerial ownership, debt policy, and the impact of institutional holdings: An agency perspective. *Financial Management*, 38–50.

Baysinger, B. D., & Butler, H. N. (1985). Corporate governance and the board of directors: Performance effects of changes in board composition. *Journal of Law, Economics, & Organization, 1*(1), 101–124.

Berger, P. G., Ofek, E., & Yermack, D. L. (1997). Managerial entrenchment and capital structure decisions. *The Journal of Finance, 52*(4), 1411–1438.

Bhagat, S., & Bolton, B. (2008). Corporate governance and firm performance. *Journal of Corporate Finance, 14*(3), 257–273.

Bokpin, G. A., & Arko, A. C. (2009). Ownership structure, corporate governance and capital structure decisions of firms. *Studies in Economics and Finance*, 26(4), 246–256.

Brick, I. E., & Chidambaran, N. (2010). Board meetings, committee structure, and firm value. *Journal of Corporate Finance, 16*(4), 533–553.

Campbell, K., & Mínguez-Vera, A. (2008). Gender diversity in the boardroom and firm financial performance. *Journal of Business Ethics, 83*(3), 435–451.

Chou, H.-I., Chung, H., & Yin, X. (2013). Attendance of board meetings and company performance: Evidence from Taiwan. *Journal of Banking & Finance, 37*(11), 4157–4171.

Claessens, S. (2006). Corporate governance and development. *The World Bank Research Observer, 21*(1), 91–122.

Custódio, C., & Metzger, D. (2014). Financial expert CEOs: CEO′s work experience and firm′s financial policies. *Journal of Financial Economics, 114*(1), 125–154.

Darmadi, S. (2013). Board members' education and firm performance: evidence from a developing economy. *International Journal of Commerce and Management*, 23(2).

Detthamrong, U., Chancharat, N., & Vithessonthi, C. (2017). Corporate governance, capital structure and firm performance: Evidence from Thailand. *Research in International Business and Finance, 42*, 689–709.

Evans, J., & Weir, C. (1995). Decision processes, monitoring, incentives and large firm performance in the UK. *Management Decision*, 33(6), 32–37.

Fama, E. F., & Jensen, M. C. (1983). Separation of ownership and control. *The Journal of Law and Economics, 26*(2), 301–325.

Fosberg, R. H. (2004). Agency problems and debt financing: leadership structure effects. *Corporate Governance: The International Journal of Business in Society*, 4(1), 31–38.

Frank, M. Z., & Goyal, V. K. (2009). Capital structure decisions: which factors are reliably important? *Financial Management, 38*(1), 1–37.

Gîrbină, M. M., Albu, C. N., & Albu, N. (2012). Board Members' Financial Education and Firms' Performance: Empirical Evidence for Bucharest Stock Exchange Companies. *International Journal of Economics and Management Engineering, 6*(9), 2343–2347.

Heng, T. B., Azrbaijani, S., & San, O. T. (2012). Board of directors and capital structure: Evidence from leading Malaysian companies. *Asian Social Science, 8*(3), 123–136.

Hermalin, B. E., & Weisbach, M. S. (1991). The effects of board composition and direct incentives on firm performance. *Financial Management*, 101–112.

Hillesland, M. (2019). Gender differences in risk behavior: An analysis of asset allocation decisions in Ghana. *World Development, 117*, 127–137.

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics, 3*(4), 305–360.

Kim, W. S., & Sorensen, E. H. (1986). Evidence on the impact of the agency costs of debt on corporate debt policy. *Journal of Financial and Quantitative Analysis*, 131–144.

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

Krishnan, G. V., & Parsons, L. M. (2008). Getting to the bottom line: An exploration of gender and earnings quality. *Journal of Business Ethics, 78*(1-2), 65–76.

Kyriazopoulos, G. (2017). Corporate governance and capital structure in the periods of financial distress. Evidence from Greece. *Investment Management and Financial Innovations, 14*(1), 254–262.

Le, T. P. V., & Tannous, K. (2016). Ownership structure and capital structure: A study of Vietnamese listed firms. *Australian Economic Papers, 55*(4), 319–344.

Lipton, M., & Lorsch, J. W. (1992). A modest proposal for improved corporate governance. *The Business Lawyer*, 59–77.

Liu, Y., Wei, Z., & Xie, F. (2014). Do women directors improve firm performance in China? *Journal of Corporate Finance, 28*, 169–184.

Modigliani, F., & Miller, M. H. (1958). The cost of capital, corporation finance and the theory of investment. *The American Economic Review, 48*(3), 261–297.

Myers, S. C., & Majluf, N. S. (1984). *Corporate financing and investment decisions when firms have informationthat investors do not have* (0898-2937). Retrieved from https://www.nber.org/papers/w1396

Naseem, M. A., Xiaoming, S., Riaz, S., & Rehman, R. U. (2017). Board attributes and financial performance: the evidence from an emerging economy. *The Journal of Developing Areas, 51*(3), 281–297.

Nyamweya, S. A. (2015). Relationship between the board of directors' characteristics and the capital structures of companies listed in Nairobi securities exchange. *Journal of Business and Management, 17*(2), 104–109.

Panigrahi, C. (2011). Firm Size and Capital Structure: Evidence From Indian Corporate. *Journal of Business Solutions*. Available at SSRN: https://ssrn.com/abstract=2342488

Peni, E. (2014). CEO and chairperson characteristics and firm performance. *Journal of Management & Governance, 18*(1), 185–205.

Pfeffer, J. (1972). Size and composition of corporate boards of directors: The organization and its environment. *Administrative Science Quarterly*, 218–228.

Rajan, R. G., & Zingales, L. (1995). What do we know about capital structure? Some evidence from international data. *The Journal of Finance, 50*(5), 1421–1460.

Rakhmayil, S., & Yuce, A. (2009). Do CEO Qualifications Affect Capital Structure? *The Journal of Applied Business and Economics, 9*(2), 76–85.

Ranti, U. O. (2013). The effects of board size and CEO duality on firms' capital structure: A study of selected listed firms in Nigeria. *Asian Economic and Financial Review, 3*(8), 1033.

Ruan, W., Tian, G., & Ma, S. (2011). Managerial ownership, capital structure and firm value: Evidence from China's civilian-run firms. *Australasian Accounting, Business and Finance Journal, 5*(3), 73–92.

Setiadharma, S., & Machali, M. (2017). The effect of asset structure and firm size on firm value with capital structure as intervening variable. *Journal of Business & Financial Affairs, 6*(4), 1–5.

Shoaib, K., & Yasushi, S. (2015). Capital structure and managerial ownership: Evidence from Pakistan. *Business and Economic Horizons, 11*, 131–142.

Stinerock, R. N., Stern, B. B., & Solomon, M. R. (1991). Gender differences in the use: of surrogate consumers for financial decision-making. *Journal of Professional Services Marketing, 7*(2), 167–182.

Wellalage, N., Locke, S., & Acharya, S. (2018). Does the composition of boards of directors impact on CSR scores? *Social Responsibility Journal*, *14*(2).

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

Zahra, S. A., & Pearce, J. A. (1989). Boards of directors and corporate financial performance: A review and integrative model. *Journal of Management, 15*(2), 291–334.