Relationship between Firm Characteristics, Debt Level and Earnings Quality of Listed Companies in the Stock Exchange of Thailand with the Moderating Effect of Corporate Governance

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Abstract

This research aimed to investigate the relationship between firm characteristics, debt level, and earnings quality (EQ), and the moderating effect of corporate governance (CG) of listed companies in The Stock Exchange of Thailand. The accruals quality which is the measure of earnings quality was analyzed using the model developed by McNichols (2002) and used in Francis, et al. (2005). The results showed that size had a positive relationship with EQ and debt level and growth had a negative relationship with debt level. In addition, debt level had a negative relationship with EQ, that is, the company tends to have lower EQ as it incurs more debt. Moreover, this research found that CG had a negative effect on the relationship between debt level and EQ.

Keywords: 1) Firm Characteristics 2) Firm size 3) Growth 4) Debt Level 5) Earnings Quality

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Introduction

Earnings figures presented in the financial statements is important information for investors in making investment decisions in the securities of various companies through the stock exchange. Investors will choose to invest in companies that provide expected returns, where shares value is a form of return that investors focus on. Today, there are several methods for valuing a company's shares. One of them is the use of earnings as a basis for valuation (Sabol and Sverer, 2017, pp. 21-25). Therefore, earnings figures in the financial statements should be accurate and reliable in order to reflect the true value of the company, which then enables investors to make the right investment decisions and to achieve the expected returns. Earnings quality analysis is one of the things that investors should pay attention to and understand before making an investment decision.

Earnings quality has been defined in a variety of ways. In sum, quality earnings is one that shows the true value of a company and can be used by users to make economic decisions. Based on previous research regarding earnings quality there are many factors that affect the earnings quality of a company. One of which is the firm characteristic, such as the size of the company, profitability and company's growth and, the level of debt. However, the results of previous research remained unclear. The relationship between firm characteristics and earnings quality was found to be both positive and negative. (Burgstahler and Dichev, 1997, p. 119; Beaver, Kettler and Scholes, 1968, p. 690; Kim, Liu and Rhee, 2003, p. 29; Hoang and Nguyen, 2018, p. 247; Nalarreason, Sutrisno and Mardiati, 2019, p. 22). Moreover, there are still few studies on such relationship in Thailand, indicating gaps for further research.

The relationship between debt level and earnings quality is also unclear. Some studies have found that debt has a positive influence on earnings quality. That is, as a company incur more debt, creditors will pressure such company to show more real operating information, resulting in higher earnings quality (Naz, et al., 2011, p. 29; Chansarn, 2015, p. 84; Orazalin and Akhmetzhanov, 2019, p. 718). In contrast, some studies have found that debt has a negative influence on earnings quality, that is, when a company has more debt, it will negatively affect the image of the company. In addition, high debt causes the company to violate the terms of the contract with the creditor, causing a company more pressure to manage accounting figures. (Dechow, Sloan and Sweeney, 1996, p. 31; Zhang and Liu, 2009, p. 17). Some studies have also found that debt has no influence on earnings quality (Buaphuean, 2015, p. 47).

The mixed results of the previous research may be because the relationship is moderated by other factors. This argument leads this study to investigate the moderator of the relationship. This study focuses on corporate governance as it is an important mechanism that supervises, monitors, controls, and tries to reduce conflicts of interest between the principal and the agent. (Srijunpetch, 2012, p. 3). The problem between the principal and the agent is one of the incentives that create earnings management, which affects

the earnings quality. Thus, it is expected that corporate governance will be a factor influencing the relationship between debt level and earnings quality.

Based on the above arguments, this study is interested in investigating the relationship between firm characteristics, debt level, and earnings quality of companies listed on The Stock Exchange of Thailand. In addition, the moderating effect of corporate governance on the relationship between debt level and earnings quality is also examined

Literature Review

Earnings Quality Concept

Several definitions of earnings quality have been mentioned in previous studies. For example, earnings quality is earnings that accurately predicts future earnings (Penman, 2009, p. 362) or earnings that shows true information about the company's performance which related to financial statement users' decisions (Dechow, Ge and Schrand, 2010, p. 350) etc. It can be concluded from these definitions that earnings quality is earnings that shows the true value of company and can be used by the user to make appropriate economic decisions.

From previous studies, it can be concluded that earnings quality should have the following properties: (Dechow and Schrand, 2004 cited in Komutputipong, 2014, p. 5)

1. It is a sustainable earnings and least volatility

2. It is earnings that reflects the future cash flow

3. It is earnings that is related to the value of the securities of the company.

One of the key measurements of earnings quality is accruals quality. That is, if the company's accruals quality is high, the earnings quality will be high accordingly. on the contrary if a company has low accruals quality, then earnings quality will be low because earnings consists of cash and accruals. Therefore, if the accruals can reflect cash flow well, it indicates good earnings quality. (Komutputipong, 2014, p. 5) The accruals are the items recorded on an accrual basis in the relevant accounting period by considering the revenue when earned and expenses when incurred so that the financial statements reflect the performance for the period appropriately even when cash has not been received or paid in the accounting period recorded.

Earnings Quality on agency theory principle

Based on agency theory by Jensen and Meckling (1976, p. 308), an agency problem arises due to the reason that the principals (shareholders) are unable to manage an organization. The principals, therefor, hire the agents (executives) to act on their behalf. However, the agents do nit act for best interest of the principals. Instead, they act for their own benefits.

From the idea of Jensen and Meckling (1976, p. 308) that the agency theory arises from the inability of shareholders to manage alone. Therefore, it is necessary to have an agent in the administration. This is a relationship between two parties, namely, the party who having authority is the shareholder (principal) and the management is the executive (agent).

In today's changing business environment, executives have been hired to manage the operations of the business with the salary or other benefits given to them as agreed. For example, when shareholders want the company to achieve the desired performance, there is an agreement to pay compensation to executives if executives achieve the goals. Therefore, in order to achieve the goals and get the compensation that executives need, executives may manage the accounting figures to reflect the performance of the company as desired by the shareholders. This is because Generally Accepted Accounting Principles (GAAP) allow the executives to use judgment in estimating figures on an accrual basis, which may open a vulnerability for the executives to use this as an opportunity to manage and misrepresent accounting information, thereby decreasing the earnings quality of the company. One of the most popular tools that executives use to manage accounting figures is discretionary accruals.

Accruals Quality Concept

Accounting researchers can divide accruals under management's control into 2 types:

1. Non-discretionary accruals (NDA): Accruals arising from normal business operations under economic and industrial conditions. This accrual is the part that the executive cannot control, such as accounts receivable with high or low balance depending on the economic and industrial conditions, etc.

2. Discretionary accruals (DA): Accruals that require the discretion of the executives, such as the choice of depreciation method.

From these two types of accruals, accruals from normal operations will help the financial statements better reflect the company's performance, but accruals arising from the executives' discretion convey the intent to distort actual performance of operations. If discretionary accruals are high, it indicates low accruals quality because it represents earnings management but if low discretionary accruals, it indicates high accruals quality.

Prior studies tried to measure discretionary accruals from the difference between total accruals and non-discretionary accruals. Therefore, they developed the models that tried to measure the NDA which would be subtracted from total accrual. In 2002 McNichols (2002) developed a model that combines variables from the Jones model (1991) and the Dechow and Dichev model (2002) in measuring NDA which are cash flow from operations (CFO), change in sales (ΔRev), and value of property, plant and equipment (PPE).

In 2005, Francis, et al. (2005, pp. 295-327) studied the accruals quality using the McNichols model (2002) by using five years of annual cross-sectional data to estimate current accruals each year by industry group and then compared with actual current accruals. The difference is considered as discretionary accruals, which is considered a part that shows the earnings quality of the company. From this study, it was found that adding the change in sales (ΔRev) and value of property, plant, and equipment (PPE) increases the model's coefficient of determination (R^2)

from 39% to 50%. The accruals quality of year t is measured by the standard deviation of accruals estimation error (SD) under the model for 5 years from year t-4 to year t for each company. A high standard deviation indicates low accruals quality, while a low standard deviation indicates a high accruals quality.

This study follows Francis, et al. (2005) in measuring accruals quality.

$$\frac{TCA_{j,t}}{A_{j,t}} = \alpha_{0,j} + \alpha_{1,j}\left(\frac{CFO_{j,t-1}}{A_{j,t}}\right) + \alpha_{2,j}\left(\frac{CFO_{j,t}}{A_{j,t}}\right) + \alpha_{3,j}\left(\frac{CFO_{j,t+1}}{A_{j,t}}\right) + \alpha_{4,j}\left(\frac{\Delta REV_{j,t}}{A_{j,t}}\right) + \alpha_{5,j}\left(\frac{PPE_{j,t}}{A_{j,t}}\right) + v_{it}$$

Firm Characteristics

From the literature review, it was found that firm characteristics are conceptualized differently across various studies depending on the criteria used to define them. It can be concluded that firm characteristics are characteristics of a company that can be found in its financial statements, which are important factors in its operation. From the literature review on the relationship between firm characteristics and earnings quality and the relationship between the firm characteristics and debt level, it was found that the characteristics popularly used by research as a variable and influencing both earnings quality and debt level were size, profitability and company's growth (Kim, Liu and Rhee, 2003, pp. 1-30; Supanvanij, 2006, pp. 324-330; Akhtar and Oliver, 2009, pp. 23-26; Zamri, Rahman and Isa, 2013, pp. 90-95; Hoang and Nguyen, 2018, pp. 243-249) Therefore, this study has identified 3 variables in terms of firm characteristics, namely size, profitability and growth.

Corporate Governance

The Stock Exchange of Thailand has defined that corporate governance refers to a system that provides a structure and process of relationship between the executive, board, and shareholders to create competitiveness leading to growth and adding value to shareholders in the long run. The main objective of corporate governance is to supervise, monitor, control and try to minimize conflicts of interest between principals and agents so that the resources of the company are used effectively, efficiently and in order to achieve the highest benefit returns to all stakeholders. (Srijunpetch, 2012, p. 3)

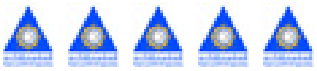
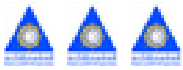
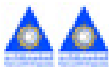
In 2012, The Stock Exchange of Thailand improved the principles of corporate governance for listed companies. This is an amendment to comply with the ASEAN Corporate Governance Scorecard (ASEAN CG Scorecard), which is a tool used to measure the level of "Corporate Governance of listed Companies" for countries in ASEAN. The principles and practices of this corporate governance are divided into 5 sections as follows:

1) Right of Shareholders
2) Equitable Treatment of Shareholders
3) Role of Stakeholders
4) Disclosure and Transparency
5) Responsibilities of the Board

For level measurement of "Corporate Governance of Listed Companies" in Thailand, the Thai Institute of Directors Association (Thai IOD) has conducted a corporate governance survey of listed companies in Thailand since 2001 by relying on Corporate Governance Criteria of the Organization for Economic Cooperation and Development (OECD Principles of Corporate Governance) and The

Stock Exchange of Thailand. It consists of 241 criteria, divided into 5 main categories. The sources used for the assessment consisted of 1) annual report 2) annual registration statement (form 56-1) 3) Meeting notice and minutes of shareholders' meeting. 4) Information about the company disseminated through the SET and the SEC 5) Other information disclosed to the public such as company website, etc. The above information must be a document published on the company's website. For company impressions, the committee organized the surveyed companies into six groups based on the range of points awarded and used the number of badges of the National Corporate Governance Committee to show the scores at each level as in the following table.

Table No. 1 The score range used in the evaluation of corporate governance

Range	Symbol	Meaning
90 – 100		Excellent
80 – 89		Very Good
70 – 79		Good
60 - 69		Satisfactory
50 – 59		Pass
Below 50	-	N/A

Source: Thai IOD (2020)

Research Hypothesis

Relationship between firm characteristics and earnings quality

1. Size

Hoang and Nguyen (2018, p. 244) stated that when a company is large, earnings management will be more difficult because it has internal control and good corporate governance, auditors are hired from reliable and large companies and the company has a reputational cost. This makes large companies less risky in managing their earnings, thus resulting in better earnings quality.

In the business environment of Thailand, large and reputable companies tend to hire auditors from large and reputable audit firms (Big 4) because the earnings quality of the company audited by large audit firms is better than those audited by the smaller audit firms (Aroonjit, 2005, p. 4; Foofuengsombat, 2016, p. 4), and the large companies gave greater importance to corporate governance than the smaller ones. (Thai IOD, 2020) Due to the cost of reputation of the company, it is necessary to maintain the image of the company more than smaller companies, therefore this tends to have less risk of managing earnings. As a result, it tends to have better earnings quality. Thus,

this study hypothesized that size is positively correlated with earnings quality.

H_1: size is positively correlated with earnings quality.

2. Profitability

Hoang and Nguyen (2018, p. 244) stated that profitability is a key performance indicator that is communicated to shareholders, therefore it is a major pressure on the executives. Executives tend to avoid reporting losses, for example, a study by Burgstahler and Dichev (1997, p. 119) found that 30-40% of all studied companies with small losses had managed earnings in the way that keep their earnings positive.

According to the previous study in Thailand, Thunputtadom, Kiniphan and Sirikanerat (2019, p. 153) found that the higher profitability, the higher earnings management, which makes the earnings quality worse. Therefore, it is hypothesized that profitability is negatively correlated with earnings quality.

H_2: Profitability is negatively correlated with the earnings quality.

3. Growth

Beaver, Kettler and Scholes (1968, pp. 660-661) had the idea that growing companies are pressured to maintain growth and reduce earnings volatility, hence earnings management incentives. As a result, the earnings quality is reduced. The results of a study by Beaver, Kettler and Scholes (1968, p. 680) have been found that growth opportunities give executives the motivation to manage their earnings. This is because the volatility of operating results increases the risk of the business in terms of security. This will negatively affect the cost of capital of the company. Therefore, high-growth businesses tend to manage earnings as well.

As the nature of business in Thailand is family run (Chinnasuk, 2010, p. 38), as the company grows more, it tends to hire more professional outsiders to manage the business to support its growth. This causes an agency problem, and as growth continues, it often puts pressure on the executives to maintain growth. Therefore, this study hypothesized that growth is negatively correlated with earnings quality.

H_3: Growth is negatively correlated with earnings quality.

Relationship between firm characteristics and debt level

1. Size

Banchuenvijit (2019, p. 20) stated that large companies have more credibility and high borrowing capacity. Therefore, they tend to seek more capital from debt than small companies. This leads to a positive relationship between size and debt level, which is consistent with the study of Theerawongseri (2003, p. 45) studying financial constraints on investment of Thai companies and found that small companies were more likely to face limitations in accessing external funding sources than large companies. This is partly due to the fact that commercial banks in Thailand have rules in considering credit in terms of collateral in order to reduce the likelihood of a subsequent default. This causes inequality in access to funding, giving smaller companies a lower ability to access capital than large companies. In addition, large companies receive lower

interest rates and larger loan sizes than smaller ones (Kengchon, Mahajchariyawong and Wacharachaisurapol, 2014, p. 7), thus causing an incentive for large companies to incur debt. Therefore, it is hypothesized that size is positively correlated with debt level.

H_4: Size is positively correlated with debt level.

2. Profitability

The Trade-off Theory states that each company has a different optimal capital structure between debt benefits and potential financing costs. An improper capital structure would result in higher cost of capital than expected (Myers, 1977, p.3). However, the Pecking Order Theory of Myers and Majluf (1984, p. 2-6) contradicts the Trade-off Theory, stating that although the cost of capital from the improper capital structure is high, the costs are still lower than the costs of external financing. Therefore, companies should seek to fund in a hierarchical way using internal funds first, if they are insufficient, then external sources of funding by choosing the most secure securities first. Therefore, profitable companies are more likely to seek capital from internal sources than external sources. More profitable companies are expected to have less debt because internal financing is easier and more cost-effective. This causes a negative relationship between profitability and debt level.

From prior research in Thailand, Tangsamphan (2009, p. 91-92) studied the factors that determine the capital structure of companies in The Stock Exchange of Thailand. It was found that profitability was the most influential factor, indicating that listed companies in Thailand would determine their capital structure based primarily on profitability. Companies with high profitability will use internal funding first. This results in a negative relationship between profitability and debt level. This is in line with Chinnasuk (2010, p. 11) who stated that Thai entrepreneurs are highly "owners", that is, most companies are family businesses that focus on protecting the interests of their relatives, so if the company has high profitability, it will use internal sources of funds before incurring debt to avoid financial risks. Therefore, it is hypothesized that profitability is negatively correlated with debt level.

H_5: Profitability is negatively correlated with debt level.

3. Growth

Banchuenvijit (2009, p. 21) had the idea that high-growth companies do not want to commit themselves to debt because they see income instability, and thus can pose a risk of debt repayment, resulting in a negative relationship between growth and debt level. For example, studies by Supanvanij (2006, pp. 324-330) and Akhtar and Oliver (2009, pp. 23-26) found that growth has a negative relationship with debt level. High-growth companies tend to have low debt-to-equity ratios and low short-term debt and bank loans. A study in Thailand found that most companies in Thailand were family-owned (Chinnasuk, 2010, p. 38), so as the company grows it tends to choose to take on debt to maintain ownership rather than issuing shares. Therefore, that growth is positively correlated with debt level is hypothesized.

H_6: Growth is positively correlated with debt level.

Relationship between debt level and earnings quality

Based on the idea that as more debt is incurred, a company tends to less manage earnings and show more of the actual operating performance for the benefit of reducing the cost of borrowing and when the debt increases, creditors tend to oversee and control the debtor's company to present a more realistic performance, thus reducing the level of earnings management. This results in a positive relationship between debt level and earnings quality. For example, the Chansarn (2015, p. 80) and Naz, et al. (2011, p. 29) studies found that companies with high debt tended to have high earnings quality because they wanted to build confidence in their affordability for low borrowing costs and higher borrowing opportunities. On the other hand, incurring more debt will negatively affect the image of the company and may cause the company to violate rules or regulations under the terms of the loan agreement with the previous creditor, thus forcing the executive to manage more earnings, resulting in a negative relationship between debt level and earnings quality. For example, from a study of Zhang and Liu (2009, p. 17) studying the earnings quality of listed companies in China, it was found that the level of debt was negatively correlated with earnings quality; that is, the more level of debt, the more earnings are managed. While some previous studies found no relationship between debt level and earnings quality, for example, a study of Buaphuean (2015, p. 47) who studied companies listed on The Stock Exchange of Thailand about the real estate and construction sector; it was found from this study that debt to equity ratio and debt to total asset ratio have no relationship with earnings quality.

At present, private companies registered in Thailand tend to incur debt by issuing debentures because it can be done easily and also has a credit rating, making it easier to get money to expand the company than borrowing money from banks. Therefore, when there is a higher level of debt, it affects the credit rating, and if the company's credit rating goes down, it affects its ability to incur debt because investors use credit ratings for investment consideration. Moreover, if the level of debt is too high, it often affects the image of the company, thus it may incentivize more earnings management in order to recover the image and increase the company's credit rating. Therefore, this study hypothesized that the debt level is negatively correlated with earnings quality.

H_7: Debt level is negatively correlated with earnings quality.

Effects of corporate governance on the relationship between debt level and earnings quality

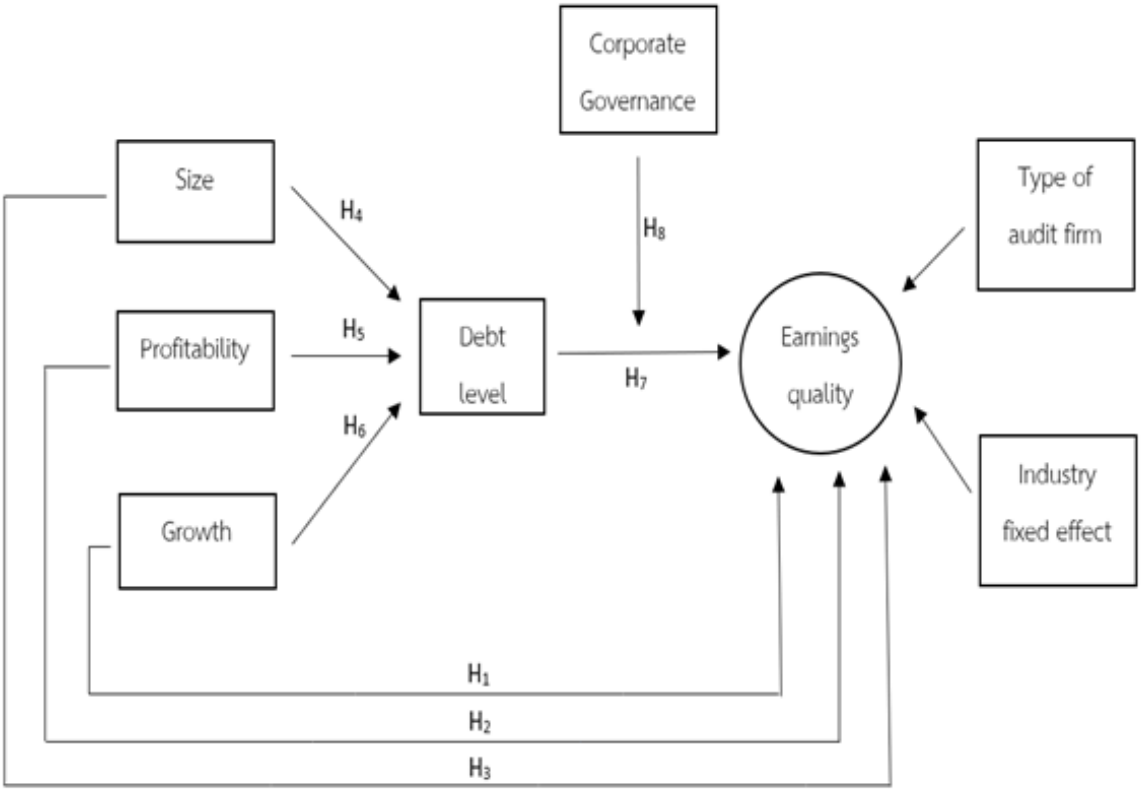
From the prior study of the relationship between the debt level and earnings quality, it had shown that the relationship remains unclear. The results of the study were divided into 3 groups: debts have a positive influence on earnings quality, debts have a negative influence on earnings quality and debts have no influence on earnings quality. One of the reasons for the conflict of study results is probably from the context of the company by referring to contingency theory, which is developed from the idea that the most suitable organization should be an organization with a structure and

system that is consistent with its environment and the reality of the organization with nature as a variable and an important factor in the formulation, rules and regulations to be rational and consistent with the reality, environment and goals of the organization (Fiedler, 1967 as cited in Rueangcharoonsri, 2009). The context which is expected to affect the relationship between the debt level and earnings quality was corporate governance. The Stock Exchange of Thailand has defined corporate governance as a system that provides a structure and process of relationship between the executive, board, and shareholders to create competitiveness leading to growth and adding value to shareholders in the long run by taking other stakeholders into consideration as well. Therefore, corporate governance can help solve the agency problem because it is the supervision of the executive to consider the shareholders as the main thing and the principles of corporate governance also attach importance to transparency. This will reduce the opportunity for the executive to manage earnings. Therefore, even if the company has a high debt level, if the company has good corporate governance, the earnings quality may not be as low as the assumption because there is corporate governance to control the work of the executive. As a result, a negative relationship between debt level and earnings quality may not arise or it happened but the relationship weakened. On the other hand, if the company has a high debt level and no good corporate governance, this may result in worse earnings quality; in other words, there is a more negative relationship between debt level and earnings quality. Therefore, that corporate governance has a negative influence on the relationship between debt level and earnings quality is hypothesized.

H_8: Corporate governance has a negative influence on the relationship between debt level and earnings quality.

From the literature review, it was found that two other factors were associated with earnings quality which are the type of industry and the size of the audit firm. Therefore, to prevent discrepancies in the results of the study, the type of industry group and the size of the audit firm are included as the control variables of this research.

Conceptual framework



Picture No. 1 Conceptual framework

Methods

Method for measuring variables

1) Size (Size) is measured by the natural logarithm of total assets at the end of the year. (Supanvanij, 2006, p. 326; Akhtar and Oliver, 2009, p. 24; Banchuenvijit, 2009, p. 23)

2) Profitability (Profit) is measured by the ratio of net profit to net sales at the end of the year. (Supanvanij, 2006, p. 326; Akhtar and Oliver, 2009, p. 24)

3) Growth (Growth) is measured by the percentage change in the book value of total assets at the end of the year. (Akhtar and Oliver, 2009, p. 24; Banchuenvijit, 2009, p. 23)

4) Debt level (Debt) is measured by the level of the debt from the ratio of total liabilities to total assets at the end of the year. (Buaphuean, 2015, p. 67)

5) Earnings quality (EQ) is measured by the standard deviation of accruals estimation error (SD) according to the model from the study of Francis, et al. (2005)

6) Corporate Governance (CG) is measured by the results of corporate governance assessments disclosed in the Corporate Governance Report of Thai Listed Companies (CGR) (Surawatthanaboon, 2011, p.33) which was assessed by the Thai IOD, It is divided into 2 groups:

1 = The high-level group is the group that received the assessment results at the levels of “excellent”, “very good”, and “good”.

0 = The low-level group is the group that received the assessment results at the levels of “Satisfactory”, “Pass”, “N/A” and

did not meet the assessment criteria.

There are two control variables:

1. Industry fixed effect (INDUS) (Banchuenvijit, 2009)

2. Type of audit firm (AUTYPE) set to a dummy variable (Sultana, Harjinder and Mitchell, 2015, p.76) by substituting

1=Company is audited by the BIG 4 auditing firm. (KPMG, EY, Deloitte and PWC)

0=Company is audited by the Non-BIG 4 Auditing firm.

Earnings Quality Analysis

This research analyzes earnings quality (EQ) from accruals quality. Using a model developed by McNichols (2002) and used in the study by Francis, et al. (2005):

$$\frac{TCA_{j,t}}{A_{j,t}} = \alpha_{0,j} + \alpha_{1,j}\left(\frac{CFO_{j,t-1}}{A_{j,t}}\right) + \alpha_{2,j}\left(\frac{CFO_{j,t}}{A_{j,t}}\right) + \alpha_{3,j}\left(\frac{CFO_{j,t+1}}{A_{j,t}}\right) + \alpha_{4,j}\left(\frac{\Delta REV_{j,t}}{A_{j,t}}\right) + \alpha_{5,j}\left(\frac{PPE_{j,t}}{A_{j,t}}\right) + v_{it}$$

$TCA_{j,t}$ Total current accruals of company j in year t

$A_{j,t}$ Average total assets of company j in year t between year t and year t-1

$CFO_{j,t}$ Cash Flow from operations of company j in year t

$\Delta Rev_{j,t}$ Change in revenues of company j in year t (the difference between revenue in year t and revenue in year t-1)

$PPE_{j,t}$ Historical cost of property, plant and equipment before deduction of accumulated depreciation of the Company in year t

The procedure for the analysis is as follows:

1) Analyze coefficient (α) of the model for 2014-2018 from information of every company each year. $TCA_{j,t}$ in the model can be calculated from the following equation

$$TCA_{j,t} = \Delta CA_{j,t} - \Delta CL_{j,t} - \Delta Cash_{j,t} + \Delta STDEBT_{j,t}$$

Determine

$\Delta CA_{j,t}$ Changes in current assets of company j between year t-1 and year t

$\Delta CL_{j,t}$ Changes in current liabilities of company j between year t-1 and year t

$\Delta Cash_{j,t}$ Change in cash of company j between year t-1 and year t

$\Delta STDEBT_{j,t}$ Change in debt in current liabilities of company j between year t-1 and year t

$CFO_{j,t}$ in the model can be calculated from the following equation:

$$CFO_{j,t} = NIAT_{j,t} - TA_{j,t}$$

Determine

$NIAT_{j,t}$ Net Income After Tax (In the original model of Francis, et al. (2005), this variable uses the Income before extraordinary items. However, because in Thailand TAS 1 does not allow the entity to show extraordinary items as a separate item, so this variable is adjusted to net income after tax.)

$TA_{j,t}$ Total accruals of company j in year t

$TA_{j,t}$ can be calculated from the following equation:

$$TA_{j,t} = \Delta CA_{j,t} - \Delta CL_{j,t} - \Delta Cash_{j,t} + \Delta STDEBT_{j,t} - DEPN_{j,t}$$

Determine

$DEPN_{j,t}$ Depreciation and amortization of company j in year t.

2) Calculate estimates total current accruals ($TCA_{j,t}$) for each company for the years 2014-2018 using the equations in step 1)

3) Calculate the error from the total current accruals estimation (e) for the year 2014-2018 of each company, which is the difference between the estimation and actuality.

4) Calculates 5-year standard deviation of accruals estimation error (SD), which represents the accruals quality. If the standard deviation is low, it means the quality of accruals and earnings is high because there are few errors, but if the standard deviation is high, it means the quality of accruals and earnings is low because there are many errors.

Samples and Data Collection

The samples for research were companies listed on The Stock Exchange of Thailand in all industries except for Banking, Finance and Securities, Insurance and companies listed on the Market for Alternative Investment (MAI). The research was performed by collecting financial information of sample companies during the years 2013–2019 for the calculation of accruals in 2018 (Due to the fact that the calculation of total current accruals requires the historical data of 5 years and the data in advance of 1 year) and the researcher selects a company with complete data at a given time interval for analysis. After considering the selection of companies listed on The Stock Exchange of Thailand according to the criteria set out above, a total of 406 companies can be assigned a sample group in this research.

The data source for this research is secondary data from 2013 – 2019. Size, profitability, growth and earnings quality were collected from the Bloomberg database. Corporate governance data were collected from the results of corporate governance assessments disclosed in the Thai Institute of Directors' Corporate Governance Report of Thai Listed Companies (CGR) (www.thai-iod.com). Control variable data were collected from the annual report (Form 56-1) of the sample companies which are disclosed on the website of the Securities and Exchange Commission. (www.market.sec.or.th)

Results

This study on the relationship between debt level and earnings quality and the moderating effects of corporate governance of listed companies in The Stock Exchange of Thailand was using Structural Equation Modeling (SEM) by AMOS. The results of this section started with descriptive statistical data and structural equation model analysis results, respectively.

Descriptive statistics

The descriptive statistics consisted of analysis of numbers, percentages, mean, standard deviation, minimum value, maximum value, skewness, and kurtosis. It was found that the companies in the sample group had an average size of 3.84 (6,918.30 million baht with the maximum value of 6.37 (2,355,483.87 million baht), the minimum of 2.25 (177.36 million baht). Most companies have positive profitability, with the average of 0.085 (8.5%), with the maximum of 10.96 (1096%), the minimum of -2.39 (-239%). The average growth was 7%, with the maximum value of 126%, the minimum value of -79%. The average debt level was 0.45 (45%), with the maximum value of 2.50 (250%), the minimum value of 0.02 (2%). The average standard deviation of accruals estimation error (SD) was 0.05, with the maximum value of 0.25, the minimum value of 0.004, and the standard deviation was 0.03, as shown in Table No. 2.

Table No. 2 Descriptive statistics of independent and dependent variables

	Max	Min	Mean	Std. Deviation	Skewness	Kurtosis
Size	6.37	2.25	3.84	0.68	0.68	0.41
Profit	10.96	-2.39	0.085	0.62	12.99	234.47
Growth	126	-79	7	0.18	2.06	10.78
Debt	2.50	0.02	0.45	0.28	2.28	14.18
SD	0.25	0.004	0.05	0.03	2.26	8.26

It was also found that most of the companies in the sample group had high corporate governance (CG) assessment results, with 324 companies having high corporate governance assessment results and 82 companies having low assessment results, which accounted for 79.8% and 20.2% respectively. The sample group studied were companies in the service industry the most consisting of 89 companies, accounting for 21.9% and the technology industry was the least consisting of 33 companies, accounting for 8.1%. Looking at the type of audit firm (AUTYPE) variable, the majority of companies were audited by BIG4, with 249 companies, and there are 157 companies that were not audited by BIG4, representing 61.3% and 38.7%, respectively, as shown in Table No. 3.

Table No. 3 Descriptive Statistics of Nominal Scale Variable and Dummy Variables

		Number	Percentage
CG			
	0	82	20.2
	1	324	79.8
	Total	**406**	**100**
INDUS			
	Agro and Food Industry	46	11.3
	Resources Industry	37	9.1
	Technology Industry	33	8.1
	Services Industry	89	21.9
	Industrials Industry	81	20.0
	Consumer Products Industry	35	8.6
	Property and Construction Industry	85	20.9
	Total	**406**	**100**

	Number	Percentage
AUTYPE		
BIG4	157	38.7
Non-BIG4	249	61.3
Total	**406**	**100**

Structural Equation Modeling (SEM) of firm characteristics, debt level and earnings quality

The analysis of the structural equation model is divided into two parts: 1) the direct relationship test and 2) the moderator test. The details are as follows:

1. The direct relationship testing results are shown in Table 4.

Table No. 4 The statistical value used to analyze the results of the direct relationship.

Path between variables			Hypothesis	Relationship direction	β Estimate	Research results
Size	→	SD	H_1	-	-0.295***	**Accept H_1**
Profit	→	SD	H_2	+	Insignificant	Reject H_2
Growth	→	SD	H_3	+	Insignificant	Reject H_3
Size	→	Debt	H_4	+	0.291***	**Accept H_4**
Profit	→	Debt	H_5	-	-0.242***	**Accept H_5**
Growth	→	Debt	H_6	+	0.192***	**Accept H_6**
Debt	→	SD	H_7	+	0.302***	**Accept H_7**

Note: *** Significance level at 0.01 ($p < 0.01$)

2. The moderator testing results

This study assumed that corporate governance (CG) is a moderator variable that affects the relationship between debt level and earnings quality. In the test of the moderator variable, Moderator Regression Analysis (MRA) was used. From Table No. 5, Equation 3, it was found that debt level (β = 0.132), corporate governance (β = -0.224) and the interaction between debt level and corporate governance (β = -0.153) on earnings quality were statistically significant at 0.01 level, meaning that corporate governance was a Quasi-Moderator as corporate governance had a direct effect and an interaction effect with debt level on earnings quality. The significance of the interaction between corporate governance and debt level showed the moderating effect of corporate governance on the relationship between debt level and earnings quality in that corporate governance weakens the relationship. In moderating the relationship between debt level and earnings quality, the relationship between debt level and earnings quality weakens, analyzed by negative interaction values (-0.153), as shown in the Table No. 5.

Table No. 5 Results of Moderator Regression Analysis (MRA)

Independent Variable	Equation 1		Equation 2		Equation 3	
	β	t-value	β	t-value	β	t-value
Debt	0.206***	4.226	0.210***	4.432	0.132***	2.411
CG			-0.222***	-4.674	-0.224***	-4.749
Debt*CG					-0.153***	-2.801
R^2	0.042		0.092		0.109	
Adjusted R^2	0.040		0.087		0.102	
F	17.858		20.314		16.387	

Note: β is Standardized coefficient, *** Significance level at 0.01 ($p < 0.01$), the dependent variable was SD

Conclusion and Discussion

The purpose of this study was to study the relationship between firm characteristics, debt level and earnings quality with the moderating effect of corporate governance of companies listed on The Stock Exchange of Thailand for the year 2018. The firm characteristics include size, profitability and growth. Earnings quality is measured using accruals quality. Control variables consisted of the type of audit firm and Industry fixed effect.

This study found size had a positive effect on earnings quality. As for the relationship between the firm characteristics and debt level, it was found that all three characteristics were correlated to the debt level. Size and growth were positively correlated but profitability was negatively correlated with debt level.

The debt level found to have a negative relationship with earnings quality. In other words, as a company has more debt, earnings quality decreases as the executive is pressured by its debt ratio but this result is inconsistent with the results of a study by Chansarn (2015), which found that the amount of debt had a positive relationship with earnings quality. The reason for the conflicting results may be due to the influence of corporate governance. The results of moderating effect of corporate governance in suggested that corporate governance is a Quasi-Moderator which has a direct effect on earnings quality and has a moderating effect on the relationship between debt level and earnings quality. A high level of corporate governance will reduce the negative effect of debt level on earnings quality. Therefore, at the same level of debt, companies in high-level corporate governance group have higher earnings quality than those in the low-level of corporate governance group. From the results of this research, the executives can apply it in planning for the management of debt and corporate governance in accordance with the characteristics of each business in order to maintain earnings quality level. It is also useful for

investors to apply this information in making investment decisions in respect of the consistency of the nature of the business and the corporate governance policy of listed companies on the stock exchange as well as those who are interested in general for the benefit of education.

Limitation of the research

This research was the collection of earnings quality data in the only Year 2018 (A total of 7 years of data was used to be processed), which is inconsistent with Francis, et al. (2005)'s model which was the collection of earnings quality data of 25 years (A total of 32 years of data was used to be processed), because, if the number of years under the study of Francis, et al. (2005) is used, a large number of samples will be omitted due to incomplete data.

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