Firms' Debt Covenant and Accruals Based Earnings Management:
Empirical Evidence from Thai Listed Companies

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Abstract

This research aims to investigate firms' debt covenant and accruals-based earnings management through the earnings management discretion in order to maintain the terms of the loan agreement of firms listed in the Stock Exchange of Thailand. The data samples are 1,772 firms collected from 2014 to 2018. Multiple regression is employed to test the hypotheses. The results show that an increase in debt covenant was a positive relationship to accruals-based earnings management of Thai listed firms. In addition, MAI listed firms have accruals-based earnings management more than Thai-listed firms. Management level has incentives regarding debt covenants profits, management, posted on an accrual basis of listed firms.

Keywords : Debt Covenant, Accruals, Earnings Management, Thai Listed Companies, MAI

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1. Introduction

The source of the company's business operation funds comes from two sources; account payable and owner equity. Most companies have almost the same debt and equity ratio. The implementation of short-term debt, such as supply and service credit management, and bank overdraft was a working capital that the business makes agreements to incur debts with other banks or financial institutions. The implementation of long-term debt such as bond, debenture, long-term debt. As a result, the business has increased obligations as interest expenses. The obligations arising from the actions of the company, the company must comply with the obligations that implicitly. The terms and conditions of the contract require the borrower to build confidence in the payment of principal and interest at maturity. Onerous contract entities to recognize such obligations. The contract causes costs that cannot be avoided in compliance with debt covenant as maintaining financial ratios: current assets ratio, interest coverage ratio, debt to assets ratio, debt to equity ratio, or long –term debt to assets to maintain the borrower's liquidity and ability to pay the debt. If the borrower fails to comply with the terms of the loan agreement, it may affect. The creditor postpones the debt faster. Creditors can call back the loan and interest immediately or increase loan rates. The borrower will be responsible for all liabilities. The firm's costs do not cause revenue increases. This makes the cost of business that does not generate revenue increase.

Amount of research on Thai firm's earnings management is less than those in China (Kulroop et al., 2019). With research on real earnings management and accrual-based earnings management implications for future profitability (Vilalai, et.al., 2020). Those on average listed companies in MAI had low earnings quality due to high earnings management, the overall listed companies in MAI are likely to have lower earnings management, leading to higher earnings quality, as they have more debts (Chansarn, 2015). This research thus increases the literature on earnings management companies in Thailand. The past research found the debt covenant hypothesis, some of the rules, terms of the shareholder loan agreement and creditors as dividend, treasury stock, company control, sale of property, and new debt. The more hedges against debt default and reliance. The firm will be able to pay the loan and interest payments punctually. Management prefers to minimize cash and accrual expenditure during the economic downturn (Ahmed et al., 2021). which these rules are often in the form of the value of the account and financial ratio. The companies have to maintain a working capital ratio, interest coverage ratio, equity, and other variables to the extent that the lender will be able to accept. Therefore, executives often choose the accounting policy that can reduce the likelihood that the company will have a high debt to equity ratio was violated the debt covenant because the effects of the default may be credited (1) refinance will increase the financial cost of the company (2) able to intervene in the administration (Chatwong, 2017). Therefore, the researcher is interested in studying motivation about firms' debt covenant and accruals based earnings management: empirical evidence from Thai listed companies.

2. Literature review and Hypotheses Development

2.1 Positive Accounting Theory

The study found positive accounting theory by Watts and Zimmerman (1986) cited in Chatwong (2017). The basic concept is to achieve the conditions resulting from contractual obligations that occurred between the company and the stakeholders. Executives often seize the opportunity, through the selection of accounting policies under the circumstances vary. The debt covenant hypothesis is the hypothesis mentioned. Some of the rules, terms of the shareholder loan agreement and creditors as dividend, treasury stock, company control, sale of property and new debt. The more hedges against debt default and reliance. The firm will be able to pay the loan and interest payments punctually. These rules are in the form of the value of the transaction and financial ratio. The companies have to maintain a working capital ratio, interest coverage ratio, equity, and other variables to the extent that the lender will be able to accept. Therefore, executives often choose accounting methods that can reduce the likelihood that the company will have a high debt to equity ratio as if the debt covenant because the effects of the default may be credited (1) refinance will increase the financial cost of the company (2) able to intervene in the administration.

2.2 Contracting Theory

Contracting theory by Lambert (2001), Astami and Tower (2006) cited in Bumrungyat and Sutthachai (2016) describes the relationship between borrower and creditor. The terms and conditions of the loan agreement. One of the incentives that make executives more likely to earn management or accounting policy changes. Due to the conditions of the loan agreement, a requirement was identified to boost the creditor's confidence. This may set a number or financial ratio. A requirement for borrowers to get the results of operations in accordance with the terms of the agreement. If the borrower can maintain the terms of the loan agreement, creditors are confident that the borrower will have the ability to repay the loan and interest on the loan as due. On the other hand, if the borrower operates, the operating results are not in accordance with the terms of the loan agreement. The creditor may believe that the borrower cannot repay the loan and interest has been completed. Therefore, the creditor will hedge the risks that may arise with the acceleration of the repayment of loan and interest or may return the whole amount or set higher interest rates. The financial costs of borrowers increased. Therefore, the failure to maintain the loan agreement terms will result in damage and a direct impact on borrowers. That is why executives are more likely to earn management and avoid the cost incurred from not keeping the terms of the loan agreement.

2.3 Earning Management

Earning Management; It is one of the key indicators for measuring the quality of profit. If the executives have earned management a lot. The company's profit quality is low. On the other hand, If the executives earn less. The company's profit quality is high. Healy and Wahlen (1999) indicate earning

management happens when the executive has discretion in handling financial reports or chooses an accounting policy to change the financial report. Its purpose is to mislead users of financial statements about the company's performance or the tendency to produce results based on the financial report. However, earning management is related to the increase (or decrease) of income, profit or return per share of the company as a result of choosing to use an accounting policy to manage or change that financial report.

The executive of the company can use discretion in choosing the policy or accrual basis accounting method in recording or recognizing accounting transactions to change or postpone the recognition of profit or loss at a financial report. The objective is to earn management, according to the company's requirements. Therefore, it is one of the key quality indicators of profit. Earning management can be measured in many methods. The method found in the literature is measurement accruals based earnings management caused by discretionary accrual. The total accrual of the business is equal to the difference between net income and cash flow from operating, the conceptual cash flow statement-based approach (Hribar & Collins, 2002).

Total accrual includes accrual transactions in 2 parts such as (1) non-discretionary accrual and (2) discretionary accrual (Jones, 1991). Non-discretionary accrual results from the normal business operations of the company. While discretionary accrual resulting from the discretion of the management to select an accounting method to manage accounting information and structure of business transactions to select a financial report, that misleads users of the information about company performance, to use accounting that the report convinces to achieve the desired return (Healy & Wahlen, 1999). However, discretionary accrual will be a measure of earning management. If discretionary accrual was positive, show that earning management gives the company a higher profit. On the other hand, the negative discretionary accrual shows that earning management gives the company a lower profit. An example of a model used to measure or research discretionary accrual or accrual resulting from the discretion of the executives, such as Modified Jones (Dechow et al., 1995).

Thai listed firms, most of them are earning quality below average. And the relationship between auditor reports and earning quality are significant in the opposite of the auditor's report. When the companies have low earning quality high tends will receive the auditor's report unqualified opinion (Bottares et. al., 2018).

When considering cause and effect, it is assumed that debt covenant. It is one of the reasons that contributed to accruals based earning management's operation. Therefore, there is a possibility that debt covenant has relation with accruals based earning management as the following research hypotheses :

H1a : The motivation for increased debt covenant as a result of earning management of companies listed on the Stock Exchange of Thailand increased.

H1b : The motivation for increased debt covenant as a result of earning management increased more than the companies listed on the Stock Exchange of Thailand without debt covenant.

From such research hypothesis can be used to write a conceptual research framework, including independent variable, moderator, and dependent variable as follows:

Figure 1
A research model in the case of a moderator variable
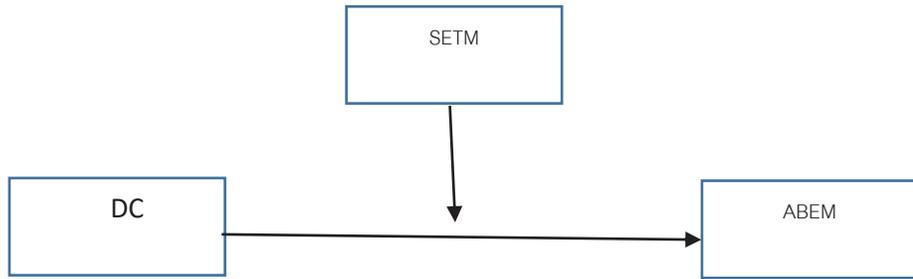
The dependent variable was accruals based earning management : (ABEM)

The independent variable was the debt covenant : (DC) and

The moderator variable was the stock exchange of Thailand : SET and market for alternative investment: MAI (SETM)

Acquisition of variables of this research, modeled from "accruals based earning management" of Jenifer J Jones Improved by Dechow et al. (1995). The model is based on the principles of Econometrics. Calculated using ordinary least square from time series which Dechow et al. (1995) have adapted the model of Jones by adding changes in trade accounts receivable as follows

$$\frac{TA_{i,t}}{A_{i,t-1}} = \alpha \frac{1}{A_{i,t-1}} + \beta_1 \frac{\Delta REV_{i,t} - \Delta REC_{i,t}}{A_{i,t-1}} + \beta_2 \frac{PPE_{i,t}}{A_{i,t-1}} + \varepsilon_{i,t} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(1)$$

From equation 1

$TA_{i,t}$ = Total Accruals calculated from the change of current not including cashless changes current liability, not including non-current liability that are due in the next accounting period and less depreciation and amortization of intangible assets of i year t

$\Delta REV_{i,t}$ = Changes in the company's sales or revenue. i year t

$\Delta REC_{i,t}$ = Changes in the company's account receivable i year t

$PPE_{i,t}$ = The company's property, plant and equipment i year t

$A_{i,t-1}$ = The company's total assets i year t-1

i = Listed company on the Stock Exchange of Thailand

t = Current fiscal period

When estimated coefficient from equation 1 then calculate total accruals or TA, including all outstanding items which include accruals transaction according to the requirements of the financial reporting

standards or generally accepted accounting principles (GAAP). The executive does not have discretion in non-discretionary accrual (NDA) and discretionary accruals (DA) to get the value earning management discretion. The calculation DA therefore starting from calculation NDA from TA as the following equation :

$$NDA_{it} = \hat{\alpha}\frac{1}{A_{i,t-1}} + \hat{\beta}_1\frac{\Delta REV_{i,t}-\Delta REC_{i,t}}{A_{i,t-1}} + \hat{\beta}_2\frac{PPE_{i,t}}{A_{i,t-1}} + \varepsilon_{i,t}$$ ....(2)

From equation 2 value $\hat{\alpha}, \hat{\beta}_1, \hat{\beta}_2$ was estimated correlation coefficient of α, β_1, β_2 respectively and when the representative of DA. It contains estimates of the difference between TA and NDA. Thus valuation DA can be calculated from the following equation.

$$DA_{it} = TA_{it} - NDA_{it}$$ ....(3a)

Therefore

$$DA_{it} = TA_{it} - \left[\hat{\alpha}\frac{1}{A_{i,t-1}} + \hat{\beta}_1\frac{\Delta REV_{i,t}-\Delta REC_{i,t}}{A_{i,t-1}} + \hat{\beta}_2\frac{PPE_{i,t}}{A_{i,t-1}}\right]$$ ....(3b)

From equation 3 when TA = NDA + DA. If Net income (NI) as cash flow from operations (CFO) add TA, so NI = CFO + NDA + DA. Therefore, the principle of CFO and NDA was a dependent variable from the discretion of the management. There is DA only the impact of earning management by the discretion of the management posting on an accrual basis, which can measure both the level of earning management and position or direction of earning management.

This research uses the model of Modified Jones (Dechow et al., 1995) to measure DA or discretionary accruals or earning management by the discretion of the management posting on an accrual basis. It was an agent considering that debt covenant. That may increase the earning management. Therefore, believe Absolute DA (AbDA) was a measure of the size of earning management to represent the business performance (Davidson et al., 2006; Krishnan, 2003; Frankel et al., 2002; Becker et al., 1998; Davidson & Neu, 1993)

3. Methodology

This research was collected from secondary data of companies listed on the Stock Exchange of Thailand (SET). It consists of the yearly data (Form 56-1) and annual report (Form 56-2). The key informants were financial and non-financial data consisting of preparing quality financial reports. The data analyzed was time series data of cross sectional data otherwise known as "Panel Data". Which stores financial information for each company continuously since 2014 – 2018 total period of 5 years. However, missing data and data of listed

companies that are financial institutions. which has a structure of financial statements that are different from other industries will not be included in the calculations for the study in this research.

3.1 Data

The sample of this research is a listed company in the Stock Exchange of Thailand since 2014 – 2018. The type of data is called time series data of cross-sectional data or Panel Data. which tracks the financial information of each company each year for a total of no more than 5 years per company and the analysis unit of this sample is called firm year observations. There is a total number of approximately 1,772 years of the company. Acquisition details are shown in table 1.

Table 1 Sample Selection Table

Description	amount	Unit
Total population	790[1]	Firm
less Missing Data	281	Firm
Data of financial institutions which has a structure of financial statements that are different from that of other industries	84	Firm
Residual population	425	Firm
Total unit of Anaylsis	2,125	Firm year observations
Less outliner and incomplete data	353	Firm year observations
Estimated total number of samples	1,772	Firm year observations

The industry grouping of the sample group is classified according to the industry group structure of companies listed on the Stock Exchange of Thailand. Therefore, companies that operate similar businesses are in the same category for appropriate comparison and are the basis used for estimating coefficients for forecasting discrepancies of accruals-based earnings management. The management of the industry is divided into cross-sections or panels as in the table below.

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[1] Data from the Stock Exchange of Thailand as 12/09/2018 accessible at https://www.set.or.th/set/commonslookup.do?language=th&country=TH

Table 2 Table of classification structure of industrial groups

Panel	Division	amount (%)
Panel A	Agro & Food Industry	136 (7.67%)
Panel B	Consumer Products	155 (8.74%)
Panel C	Industrials	391 (22.06%)
Panel D	Property & Construction	67 (3.78%)
Panel E	Resources	448 (25.28%)
Panel F	Services	420 (23.70%)
Panel G	Technology	155 (8.74%)

Table 2 presents the classification of industry groups of companies listed on the Stock Exchange of Thailand by Panel A as a group of agriculture and food industry for 136 firm year observations, as a percentage 7.67. Panel B was a group of consumer products for 155 firm year observations, as a percentage 8.74. Panel C was a group of industrials for 391 firm year observations, as a percentage 22.06. Panel D was a group of property & construction for 67 firm year observations, as a percentage 3.78. Panel E was a group of resources for 448 firm year observations, at a percentage 25.28. Panel F was a group of services for 420 firm year observations, as a percentage 23.70. Panel G was a group of technology for 155 firm year observations, as a percentage 8.74. However, the data regarding groups of finance were not included in the analysis in this research. This is because the data structure is different from the general industry.

This empirical research uses time series data of cross-sectional data or panel data of companies listed on the Stock Exchange of Thailand for 5 years since 2014 – 2018. This will be used to analyze the relationship between the dependent variables to test the hypothesis by using the correlation analysis model of multiple regression analysis from positively analyzed research. This research has been further improved by adding moderator variables and intermediate variables. The research model used to analyze the data to test the hypothesis is written in the form of equations as follows:

Model 1 Equation with a variable

$$\text{ABEM} = \alpha_1 + \beta_1 DC + \beta_2 Size + \varepsilon_1$$

Model 2 Equation with a moderator variable

$$\text{ABEM} = \alpha_2 + \beta_3 DC\_MAR + {} + \beta_4 Size + \varepsilon_2$$

Where variable descriptions and variable types in the above equation are shown in the following table 3.

Table 3 Table Variable, Variable Types and Descriptions

Variable	Types	Descriptions
ABEM	Dependent	accruals based earnings management measured by the discretion of the management in accruals based earning management's Modified Jones's Model
DC	Independent	The debt cost to the entity is measured by interest expense dividing by total liability
MAR	Moderator	Listed company type measured by 1 was listed on SET and 0 was listed on MAI
DC_MAR	Interact Variable	Interact
Size	Control Variable	The size of the company measured by i in year t Natural log of total asset
Firm *i*	-	The companies listed on the Stock Exchange of Thailand
Year *t*	-	Test year 2014 – 2018
$\sum$	Error term	Tolerance value

4. Results and Discussion

Table 4 Descriptive statistical of variables

Variable	Obs	Mean	Std.Dev.	Min	Max
ABEM	1,772	0.0899	0.1098	0.0000	0.9068
DC	1,772	0.0992	1.2469	1.0000	34.7646
Mar	1,772	0.8047	0.3965	0	1
DC_MAR	1,772	0.0932	1.2471	0	34.7646
Size	1,772	8.4100	1.6846	-0.0652	15.2470
Da	1,772	-0.0427	0.1354	-0.9068	0.5422
Small	1,772	0.1849	2.5561	-0.0506	94.2644

Table 4 presents the descriptive statistics of the variables in the research found ABEM or accruals based earnings management, measured from management's discretion in accruals base earning management's modified Jones's model. ABEM of the companies listed on the Stock Exchange of Thailand has the highest value equal to 0.9068, has a minimum 0.00, and has a mean 0.0899. The DC variable or Debt cost calculates interest expense dividing by total liability has the highest value equal to 34.7646, has a minimum 1.000, has a mean 0.0992.

4.1 Inferential Statistical Analysis

In this research, inference statistics were used to test the relationship between debt covenant with accruals based earnings management companies listed on the Stock Exchange of Thailand. This is the third research objective. Data analysis by inferential statistics shows the results as follows:

Table 5 The table shows the Pearson's correlation coefficient

	ABEM	DC	DC_MAR	Size	Small
ABEM	1.0000				
DC	0.1546*	1.0000			
DC_MAR	0.1536*	0.9998*	1.0000		
Size	-0.1644*	-0.0042	-0.0013	1.0000	
small	0.1011*	0.4285*	0.4287*	-0.0963*	1.0000

* significant level at 0.01

Table 5 presents the Pearson's correlation coefficient to test the relationship of independent variables research showed the coefficients of all independent variables of continuous research have a coefficient not more than 0.75, except for the relationship between variable DC and variable DC_MAR. This is because it is an interaction variable. Therefore, the causal relationship test ensures no multicollinearity or problem in which two independent variables have a relatively high but incomplete correlation. This will affect the designation coefficient. The least squares estimate (R square) is high and the t-test is very low. This may cause the results of the independent variables to be inaccurate.

Table 6 Table showing the results of the relationship analysis of the operating results of companies listed on the Stock Exchange of Thailand and debt covenant

Variable	Panel A: q H_{1a} Coefficient est. (p-value)	Panel B: q H_{1b} Coefficient est. (p-value)
INTERCEPT	0.177***	0.177***
DC	0.012***	
DC_MAR		0.012***
Size	-0.010***	-0.010***
F statistic	23.83***	23.75***
n (Obs)	1772	1772
Adj R^2	0.0490	0.0489

*** significant level at 0.01

Table 6 presents the results of the correlation analysis of the performance of companies listed on the Stock Exchange of Thailand (ABEM) and debt covenant (DC) to test the research hypothesis as follows:

H1a: Incentives on increased debt covenant as a result earning management's companies listed on the Stock Exchange of Thailand. The results showed that the coefficient of the correlation test is equal 0.012 and statistically significant at 0.01 accepting the hypothesis. The motivation for increased debt covenant was positively correlated with earning management's companies listed on the Stock Exchange of Thailand.

H1b: Incentives on debt covenant to accruals-based earnings management companies listed on the Stock Exchange of Thailand more than the companies listed on the market for alternative investment. The results showed that the coefficient of the correlation test is equal to 0.012 and statistically significant at 0.01 accepting the hypothesis. The incentives on debt covenant to accruals based earnings management's companies listed on the Stock Exchange of Thailand more than the companies listed on the market for alternative investment.

4.2 Discuss The Research Results

From research results debt covenant positive correlation with accruals based earnings management's companies listed on the Stock Exchange of Thailand. The statistical significance of the research results was in accordance with Chatwong (2017). Terms of the shareholder loan agreement and creditor as dividend, treasury stock, company control, sale of property and new debt. The more hedges against debt default and reliance. The firm will be able to pay the loan and interest payments punctually. These rules are in the form of the value of transaction and financial ratio. These rules are often in the form of the value of the account and financial ratio. The companies have to maintain a working capital ratio, interest coverage ratio, equity and other variables to the extent that the lender accepts. Therefore, management chooses an accounting policy. To reduce the chance that the firm will have a high debt to equity ratio, infraction the debt covenant. Because the impact of the infraction may be credited, consider (1) The refinance increases the cost of the firm. (2) The creditor intervened in the administration. By conforming to Bumrungyat and Sutthachai (2016). Found most companies use cash flow from operating activities to reduce net income and earning management Through cash flow from operations.

When considering the companies listed on market for alternative investment have accruals based earnings management more than companies listed on the Stock Exchange of Thailand conform to Chansarn (2015) that the companies listed on market for alternative investment have the profit quality is relatively low. Out of the relatively high level of earning management. The amount of debt positively influences the level of profit quality for both total liabilities, current liabilities and non-current liabilities and liabilities from financial institutions and those that are not from financial institutions. However, the company has low debt. The management tends to show more than real performance. To give creditors confidence in their potential and ability to pay debts Benefit from reducing the cost of borrowing from creditors. But in incurring additional debt, the company has more

chances to violate the terms of the debt covenant. Therefore, management tends to use accounting policies to manage more profits and thus lower profit quality. According to Truong (2021), this speed varies between groupings of enterprises with different characteristics, underlining the heterogeneity of the adjustment speed even more. Small deviation firms adjust more rapidly than large deviation firms. Large free cash flow (FCF) firms adjust more readily than small FCF firms, and fiscal deficit firms modify more rapidly than firms with a financial surplus.

In addition, executives are motivated by debt covenant to accruals-based earnings management measured by the discretion of the management in accruals base earning management conform to Chiengtong (2010) the relationship between earning management and debt covenant. Firms with debt covenants are likely to manage earnings by using discretionary accruals. The empirical evidence also indicates that those firms have statistically significant discretionary accruals and conform to Ketsuwan (2012). Which managers increasingly engage to manage earnings to reach earning benchmarks. The trend of using real activities manipulation is escalating because it is solely under the management's discretion, and it can be done throughout the accounting periods. The real activities manipulation is not under the scrutiny of the regulators since it is not in violation of financial report standards.

5. Conclusion

These findings and knowledge about debt covenants are positively correlated with accrual-based earnings management's companies listed on the Stock Exchange of Thailand. This indicates that the management uses debt covenant to accrual-based earnings management. It is to avoid breaching the loan agreement. This results in knowledge and findings about agreements in debt covenant, supporting theories and concepts, used to form hypotheses and research conceptual frameworks and related factors.

This research also shows that the companies listed on the market for alternative investment have accrual-based earnings management more than companies listed on the Stock Exchange of Thailand. This will be useful for regulators and agencies that are considered and announce relevant accounting standards and auditing standards and benefits for academics, researchers, investors including stakeholders of companies listed on the Stock Exchange of Thailand. They can understand the real situation of companies listed on the stock exchange and companies listed on the market for alternative investment: empirical evidence. In addition, the results of the study can be used as part of the regulator's consideration of additional measures to review debt covenants.

This research limitation may result from data collection errors because a lot of the financial information contained in the financial statements needs to be systematically collected and must be recorded on the working paper. Therefore, errors may occur in recording data. Moreover, non-monetary information takes time to carefully read and observe. Therefore, errors in reading and recording data codes on working paper may occur.

The research is expected to continue by adding interstitial variables and a schema analysis of debt covenant and business performance. Other environmental factors can be taken into account to obtain the direct relationship and the indirect relationship between these groups of variables.

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