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The Firm Life Cycle and Debt Maturity Structure: Evidence from ASEAN Countries

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Abstract

This study aims to examine the firm's debt maturity structure policy across the firm life cycle stage in five ASEAN countries, namely Indonesia, Malaysia, Singapore, Thailand and Vietnam. The Firm life cycle stages are classified based on its cashflow pattern into four stages, namely introduction, growth, mature, and decline. The study was conducted using 2769 samples of non-financial listed companies in these five ASEAN countries in the period 2007-2020. The data analysis method used is a panel data model with a fixed effect. The results of the study from the research conducted show that the company's life cycle in the introduction and growth stages chooses to use long-term debt compared to companies in the mature and decline stages. It's possible that during introduction and growth stages, firms are overloaded with many investment opportunities that they want to invest. Internal funds might not be enough for them and they opt to acquire external debt such as long term debt.

Keywords **:** Debt maturity, Firm life cycle, Growth stages
JEL Classification **:** M21, C33

1. Introduction

A company is an entity that can grow depends on two components, namely internal and external factors. The Internal factors are company's strategy, the funding owned, and the company's managerial governance. On the other hand, external factors such as competitors and macroeconomics can determine the company's progress and growth. (Dickinson, 2011) suggests that companies have a life cycle starting from the initial stages of a business until when the business declines. There are four stages of the company cycle, namely the introduction, growth, mature, and decline stages (Dickinson, 2011). The evidence suggests that changes in firm life cycle have notable influence on financial performance (Yahaya & Onyabe, 2020). Therefore, keeping in mind the importance of financial restructuring and distress in the literature, the aim of this study is to examine the role of the FLC and financial distress in determining corporate restructuring policies (Akbar et al., 2022).

The company life cycle is an important factor for management in determining the company's business strategy such as investment funding policies. Firms have different characteristics and qualifications in each stage of the company's life cycle (Zhang & Xu, 2021). These different characteristics cause companies in each company's life cycle to have different decisions about their debts. (Zhang & Xu, 2021) show that the company's life cycle affects the company's capital structure decision, for instance, they find that newly established companies tend to get funds from private equity or debt, while larger companies tend to use funding from the equity market.

Debt financing can be divided into two types based on maturity, which are long-term debt and short-maturity debt. Determining firm's debt maturity structure is important because it can be related to the survivability of a company (Ng & Cheng, 2020). Inappropriate company's debt maturity structure can result in illiquidity (Chiu et al., 2021). (Kolm et al., 2019) also argues that companies must pay attention to their debt maturity structure of their debt because corporate debt affects the possibility of default. In addition, the debt maturity structure of this debt can be used as a report on the company's quality, credibility, and future opportunities (Datta et al., 2019). (Habib & Hasan, 2017) show that investors also look at the company's life cycle by how the company ability to pays its debts. The debt maturity structure policies also can affect the value or value of the company itself. Good and ideal debt maturity limits can be useful for companies as a signal to reflect market situations.

The debt maturity structure is influenced by several firm characteristics (Choi et al., 2018) such as the company's financial flexibility, profitability and capital structure (Kolm et al., 2019; Zhang & Xu, 2021). Debt financing is necessary to secure an enterprise with a lack of funds that has to finance not only investment but also operating activities (Gajdosikova et al., 2023). Companies will tighten their finances by having long maturity debt and will try to minimize issuing more debt, especially if they already have high leverage. In other words, the company characteristics and the macroeconomy condition at that time will influence the debt maturity decision (Ng & Cheng, 2020). Moreover, to determine which components of firm leverage are most strongly impacted by credit shocks, we examine the effects of the crisis on debt maturity(D'Amato, 2020). Debt maturity has most often been examined in the literature as a result of internal governance configuration and how creditors perceive firms' debt-related agency costs (Martins et al., 2020).

Companies tends to use more debt when they are in the introduction phase to the growth phase, and issue less debt when they enter the mature and decline phases (Faff et al., 2016). Companies in the introduction phase usually use debt with longer debt maturity because the company is still in the stage of developing its business and it will need larger debt. Furthermore, the growth phase company tends to have long term debt because the company's ability to repay the loan is also high. During growth phase, company has an increase in cash flow so that the company has many sources of funds to pay its debts. On the other hand, companies in the mature phase tend to reduce their long-term debt due to decreased ability to finance its operational and its investment opportunities tend to be low (Faff et al., 2016). The most efficient way to reflect a company's economy and market activity is through its cash flow patterns (Khuong et al., 2022). The company will tighten and reduce the amount of their debt financing in the maturity phase. In addition, mature companies tend to distribute their money to shareholders in the form of dividends by utilizing a positive net investment value (Dickinson, 2011). Lastly, the decline phase companies experience high cashflow volatility, low investment opportunities, and low ability to repay their loans. Therefore, decline phase companies will tend to reduce their debt maturity structure in order to decrease costly external financing (Castro et al., 2016). The financial system's development has contributed significantly to economic growth, a large proportion of the population still lacks access to formal financial services (Chen & Yoon, 2022). Thus, this study aims to observe the relationship between the company's life cycle and the debt maturity structure of public companies in ASEAN countries, namely Indonesia, Malaysia, Singapore, Thailand, and Vietnam.

The study shows that firms in introduction and growth firms choose to take higher share of long-term debt compared to their mature and decline peers. It's possible that during introduction and growth stages, firms are overloaded with many investment opportunities that they want to invest. Internal funds might not be enough for them and they opt to acquire external debt such as long term debt. This study contributes to the literature by providing evidence on the corporate debt maturity structure policy across the firm life cycle stage in developing countries. The findings of this study can be useful for policymakers and managers in developing countries to make informed decisions about their corporate debt maturity structure. It highlights the importance of considering the firm's life cycle stage when making financing decisions.

2. Hypotheses Development

Previous research has state that the debt maturity structure is dynamic instead of static. In other words, companies adjust their debt maturity structure over time in response to changes in market conditions and their own financial situation, rather than being locked into a fixed structure. (Zhang & Xu, 2021) argue that the maturity structure of debt moves because there is a balance between long-term debt and short-term debt. Although it is very important to measure and manage a company's borrowing capacity, a company with a strong debt capacity does not always have a high actual debt ratio. It is necessary to conduct a deeper study of the company's financing policy on its investment plans and how the firm life cycle will affect its policy decision. The theory about the company's life cycle itself comes from the behavior of the organization. In this theory, states that the company develops linearly from the introduction phase to the decline.

Along with the development of financial theory and organizational behavior theory, firm life cycle theory is also increasingly being used to describe the transformation of economic and financial behavior of companies (Bakarich et al., 2019). In the introduction phase, the company will experience higher information asymmetry problem and it will be difficult to obtain funding from outside parties (Faff et al., 2016). The main financing sources in this phase are mainly from company owner's personal savings, funds from family and friends (Loderer et al., 2017). Furthermore, introduction company would want to avoid long term debt since it will increase their financial risk. If a company experiences a crisis where there is intense competition, it is possible that the company cannot continue to run (Keasey et al., 2015).

H_1: Introduction firms opt to use short-term debt rather than long-term debt.

Rapid growth cause companies in growth phase to experience low liquidity problems to cope with finance its investment opportunities. Short-term debt in this phase is not enough as main investment financing sources. Therefore, companies in the growth phase may need to seek alternative financing options such as equity financing or long-term debt to support their expansion plans and maintain adequate liquidity levels. As results, the company should take on long-term debt and increase the company's debt maturity structure (Zhang & Xu, 2021) (Zhang & Xu, 2021). With external equity, companies can execute their growth opportunities and have the potential to participate in developing products or services updated with latest technology.
H_2: Growth firms opt to use long-term debt rather than short-term debt.

When a company enters the mature phase, the company will increase its operational efficiency. The company's retained earnings indicate a high operational cash flow. Moreover, the company in the maturity phase is considered stable enough so that the investment opportunity will be reduced compared to the existing growth. The Mature stage company is likely to prioritize reinvesting in its own operations rather than seeking out new investment opportunities. Additionally, investors may expect consistent dividends from the company's retained earnings. High operational profitability and low investment opportunities level cause company to decrease their external funding (Faff et al., 2016; Habib & Hasan, 2019). Companies in the maturity phase will pay off their debts, distribute cash dividends to stockholders and decrease their long-term debt. However, Maturity companies will also increase their long-term debt to expand their business activities (Zhang & Xu, 2021).
H_3: Mature firms opt to decrease their debt financing.

When entering the decline phase, company will suffer a negative growth, a drop in product prices, and a decrease in the company efficiency on a large scale. This causes the company to expand its cost structure and produce negative operational cash flow. To mitigate the negative effects in the decline phase, companies may need to consider restructuring their operations, diversifying their product, or seeking out new markets. It is important for companies to be proactive in addressing these challenges to maintain sustainability and profitability. The company will need extra external funding to pay their operational expenses and cover their losses. Through its functions, the board of directors supports decision-making processes, as well as other areas of the business. Specifically, it helps the firm adopt appropriate measures to achieve strong performance and continue to operate smoothly. Some of these measures relate to the choice of an appropriate financial structure, thus preventing the firm's exposure to financial distress (García & Herrero, 2021). That way, companies tend to use short-term debt because with more long term debt cause higher financial distress, which resulting longer term financial difficulties in the future (Zhang & Xu, 2021).
H_4: Decline firms opt to use short-term debt rather than long-term debt.

3. Method, Data, and Analysis

The sample of this study is all public non-financial companies in five ASEAN countries namely, Malaysia, Indonesia, Singapore, Thailand and Vietnam. The research period used is from 2007 to 2020. The financial statement data used in this study were obtained from S&P Capital IQ database. Companies with incomplete financial data will be excluded from the sample. This study aims to observe the effects of firm life cycle to firm's debt maturity structure, for that the empirical model used is stated as follows:

$$DMS_{i,t} = \beta_0 + \beta_1 LC_{i,t} + \beta_2 Size_{i,t} + \beta_3 AM_{i,t} + \beta_4 MB_{i,t} + \beta_5 Prof_{i,t} + \beta_6 CR_{i,t} + \beta_7 AGE_{i,t} + \varepsilon_{i,t}$$

Note: DMS= Debt Maturity Structure; LC= Firm Life Cycle (LCintro, LCgrow, LCmature, and LCdecline); Size= Company size; AM= Asset Maturity; MB= Growth Opportunity; Prof= Profitability; CR= Current Ratio; Age= Firm's Age; Ind= Industry Dummy; Year= Year Dummy; ε= Error Term.

Table 1. Operationalization of variables

Variables	Variable names	Definitions
Firm Life Cycle	LC	*LC*= firm life cycle dummy. Firms are classified as Introduction (LCintro), growth (LCgrow), mature (LCmature) and decline (LCdecline) based on the cash flows pattern (Dickinson, 2011) present on table 2.
Debt Maturity Structure	DMS	the ratio of long-term debt to total debt
Firm Size	*Size*	Natural logarithm of total assets
Asset Maturity	AM	The ratio of long term assets to total assets
Growth Opportunity	MB	the ratio of market value of equity to book value of equity
Profitability	Prof	Net income / total assets
Current Ratio	CR	The ratio of current assets to current liabilities
Firm's age	AGE	Natural logarithm of (1 + established years)

This study follows previous studies (Ahmed et al., 2021; Alqahtani et al., 2022; Chuang, 2020; Park, 2021) to use the cash flow pattern in classifying the firms into 5 firm life cycle stages. Table 2 show the cash flow pattern criteria (Dickinson, 2011). On each year observations, the cash flow pattern are classified into Introduction, growth, mature, shake-out or decline firm life cycle stages.

Table 2. Firm life cycle classification: Cash flow pattern

	Intro	Growth	Mature	Shake-out	Shake-out	Shake-out	Decline	Decline
Operating cash flow	-	+	+	-	+	+	-	-
Investing cash flow	-	-	-	-	+	+	+	+
Financing cash flow	+	+	-	-	+	-	+	-

Sources: (Dickinson, 2011)

4. Results

Table 3 presents the descriptive statistic of all research variables used in the empirical model. The sample of this study are 446 non-financial companies listed on the Indonesia Stock Exchange from 2007 to 2020 with total overall 4195 firm-year observations. Table 3 shows that the debt maturity structure (DMS) has a mean of 0.244, meaning that the average long-term debt owned by companies in ASEAN is 44.4%. Moreover, the main independent variable is the company's life cycle which is classified into 5 phases: introduction, growth, mature, shakeout and decline. Introduction (intro) has a mean of 0.144, meaning that the average company in the introduction phase is 14.4% of all company data studied. Growth has a mean of 0.248, meaning that there are 24.8% growth companies from all the company data studied. Mature has a mean or average value of 0.439, meaning that 43.9% of all the companies studied are in the mature phase. Lastly, decline has a mean of 0.053, meaning that 5.3% of all the companies studied were in the decline phase. It can be seen that of all the samples studied, most of the companies in ASEAN countries are in the mature phase. The research variables are winsorize in 1% to hinder outlier effect.

Table 3. Descriptive statistics

Variables	Mean	Median	Max	Min	Std. Dev.
DMS	0.444	0.18	0.857	0	0.246
Intro	0.144	0	1.000	0	0.352
Growth	0.248	0	1.000	0	0.432
Mature	0.439	0	1.000	0	0.496
Shake-out	0.116	0	1.000	0	0.361
Decline	0.053	0	1.000	0	0.224
SIZE	28.411	28.390	32.210	24.562	1.669
AM	0.671	0.618	2.344	0.005	0.46
MB	2.276	1.197	7.068	-1.254	3.716
Prof	0.013	-0.013	0.375	-0.463	0.126
CR	2.559	1.491	30.376	0.089	3.798
Age	3.25	3.2	3.526	0.693	0.776

Table 4 presents the descriptive statistics of all variables used in this study for all five ASEAN countries. It is shown that the majority of the sample companies are classified as mature and growth firms. It is possible that this is because we use public companies that usually are already mature and experienced. Table 4 also show that companies in Indonesia tend to choose more long-term debt compared to companies in other countries. This could be due to the fact that Indonesian companies face higher interest rates on short-term debt, making long-term debt a more attractive option. Additionally, companies in Singapore are older and larger in terms of their assets compared to their peers in other countries. This could be attributed to Singapore's stable economic and political environment, which has allowed companies to establish themselves over a longer period and accumulate more assets. Furthermore, the larger size of Singaporean companies may also be due to the country's emphasis on international trade and investment.

Table 4. Descriptive statistics by Countries

Country	Obs.	Intro	Gro	Mature	Shake-out	Decline	DMS	size	AM	MB	Prof	CR	AGE
Malaysia	8521	0.12	0.19	0.45	0.16	0.08	0.19	27.75	0.32	0.76	0.04	0.51	3.24
Indonesia	3727	0.16	0.26	0.42	0.1	0.05	0.28	28.43	0.4	0.73	0.05	0.46	3.26
Singapore	3236	0.14	0.19	0.4	0.19	0.08	0.2	28.66	0.27	0.73	0.02	0.57	3.27
Thailand	4970	0.11	0.21	0.5	0.12	0.05	0.23	27.86	0.27	0.26	0.04	0.46	3.25
Vietnam	3058	0.15	0.2	0.37	0.2	0.09	0.22	26.97	0.28	0.6	0.06	0.56	3.04

Table 5 presents the result of Driscoll-Kraay Standard Errors regression. Performing the Driscoll-Kraay Standard Errors Regression is to overcome heteroscedasticity, crossdependency and auto-correlation problems that are common in panel data model. Based on the test results shown in table 5, it shows that the value of Prob > F is 0.000. Lastly, it can be seen in table 5 that there is no relationship between the decline dummy variable and the debt maturity structure. During the decline phase, the company will experience a decrease in sales and prices also increase in industry competition (Zhang & Xu, 2021). Decline firms' customers stop buying the products offered by the company and drop its revenue in this phase. Decline company can still manage its debt maturity structure effectively by adjusting their long-term debt to short-term debt. Additionally, implementing cost cutting measures during the decline phase can also help to mitigate the impact of decreased sales on the company's debt management. Thus, with decreasing profits during the decline phase, the company will prefer to reduce its debts to avoid financial distress and bankruptcy (Chang et al., 2017). Generally, companies that experience financial distress have a tendency to go bankrupt (Diah & Putri, 2021). The size of specific companies is the reason for the shrinking of other companies. Second, internal indicators where management cannot make business forecasts with analytical tools, so management has difficulty developing a proactive attitude (Rachma Sari et al., 2022).

Table 5. Multiple Linear Regression Results

	DMS
Intro	0.025**
	(0.01)
Growth	0.034***
	(0.007)
Mature	-0.011
	(0.009)
Decline	-0.014
	(0.016)
SIZE	0.037***
	(0.007)
AM	-0.026
	(0.016)
MB	0.004***
	(0.001)
FCF	-0.076**
	(0.034)
CR	0.002
	(0.001)
Age	-0.035**
	(0.015)
_cons	-0.722***
	(0.193)
Observations	4195
Prob > F	0.0000
Pseudo R^2	0.0899

All variables are winsorized in the 1% level; Standard errors are in parentheses; *** p<,01, ** p <,05, * p<,1

5. Discussion

The result study is there are relationship between debt maturity structure and the company's life cycle in 2769 non-financial companies in five ASEAN countries. Therefore, it can be concluded that the research model used is feasible to test the hypothesis in this study and the independent variables have an influence in predicting the maturity structure of debt. The result is there is positive relationship between the introduction dummy variable and the debt maturity structure. This is inconsistent with our research hypothesis. It is possible that in the introduction phase, companies tend to have greater growth opportunities in the future (Drobetz et al., 2015). Companies with high growth rates will invest more on their fixed assets, so that they require more funds and capital. However, introduction firms have insufficient internal cashflow and tends generate negative income. Thus, their retained earnings that are not sufficient to fund their growth opportunities. As results, these companies take more debt to protect the company's growth opportunities. İn conclusion, it is also possible that companies in the introduction phase tend to use long-term debt due to high growth opportunities.

Similarly, the result also shows a positive relationship between the growth dummy variable and the debt maturity structure. This is consistent with our research hypothesis that companies in the growth phase tends to use long-term debt. Growth phase companies that are growing rapidly must also prepare large capital for corporate spending and operational activities. Furthermore, long-term debt allows growth companies to spread out their payments over a longer period of time, reducing the strain on their cash flow and providing financial stability for future growth (Chiu et al., 2021). Thus, companies will increase their external funding sources, such as long term debt (Hasan & Cheung, 2018). Companies that have stable revenue will have more capacity to take on larger loans and pay higher expenses than unstable companies. Short-term debt in the growth phase is considered insufficient to meet the company's needs. Growth firms choose to take more long-term debt and increase their debt maturity structure (Zhang & Xu, 2021).

Furthermore, mature dummy variable has a negative relationship with the debt maturity structure. This is inconsistent with the research hypothesis, which states that companies tend to use long-term debt in the mature phase. The reason is that companies in the growth phase used a lot of debt to fund their investments. Companies in the mature phase tend to get higher profits from the investments made in the growth phase. Thus, in the mature phase, the company will use its generated cash holdings to pay off its debt and finance its operations rather than invest in new growth opportunities. This phase is characterized by stable earnings and a focus on maintaining market share and optimizing operations to increase efficiency and profitability (Faff et al., 2016; Habib & Hasan, 2017). Moreover, Mature companies use its cash holding to avoid and reduce the financial distress problems in the future if the amount of debt is too large.

6. Conclusion, Limitation, and Suggestion

Conclusion

This study aims to analyze the relationship between debt maturity structure and the company's life cycle in 2769 non-financial companies in five ASEAN countries. The observation period is from 2007 to 2020 and there are total 23512 firm-year observations. The research results obtained through the hypothesis testing show that the relationship between firm life cycle and debt maturity structure is dynamic. During the introduction and growth phases, companies choose to rely more on long term debt. On the other hand, mature and decline companies prefer to decrease their long-term debt financing. In the introduction phase, companies have higher growth opportunities that drives external financing such as long-term debt. When opportunities for growth are large, companies will tend to choose to use long-term debt. Meanwhile, growth companies use long-term debt external funding because short-term debt is insufficient to fund the company operations and its investment. On the other hand, mature companies prefer to reduce their debt and use cash holdings to fund their companies. Mature firms have low investment opportunities, and their rather positive profit are enough to finance their maintenance investment. Lastly, decline phase company has experienced a drastic decline in sales and suffer higher competition problem. Thus, the company will reduce long term debt to avoid the possibility of not being able to pay debts.

Limitation and suggestions

This study utilizes the data of public companies since their financial data is easy to access and obtain. The use of public companies also ensures that the data is reliable and unbiased, as it is subject to strict regulatory requirements and oversight. However, since we only observer public companies, the data we gather may not accurately represent the growth and development of smaller, private companies that are still in their early stages. It is important to keep this limitation in mind when analyzing our findings. In this study find that there is an effect of firm life cycle to the firm’s debt maturity structure. Future research may want to extend the study by expanding the cross countries data to observe different macroeconomic condition that may affect firm decision-making process. Countries with more developed financial markets should encourage firms to take more on external financing than those in less developed financial market countries. Moreover, future research may also want to consider adding private companies’ data that maybe reflects the introduction and growth companies. Analyzing data from private companies may reveal unique insights into the challenges and opportunities faced by emerging businesses.

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