Determinants of Debt Policy: Building Construction Firms Listed in Indonesia

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Abstract

The purpose of this study is to analyze the effect of non-debt tax shield (NDTS), firm growth, liquidity, and profit volatility whether simultaneously and/or partially towards debt policy in building construction firms listed on Indonesian Stock Exchange period 2016-2020. This study uses panel data regression with fixed effect model to estimate 60 samples from 12 companies selected through purposive sampling. The results show that NDTS, firm growth, liquidity, and profit volatility simultaneously have a significant effect on debt policy. Partially, firm growth and profit volatility have a positive significant effect on debt policy, while NDTS and liquidity have no significant effect. These findings suggest that Indonesian building construction firms do not consider liquidity and non-debt tax shield as a consideration of increasing or decreasing debt. Moreover, Indonesian building construction firms with strong firm growth and high profit volatility actually have a low proportion of debt.

Keywords
Debt Policy, Profit Volatility, Firm Growth, Liquidity, Non-Debt Tax Shield

1. Introduction

Over the past ten years, Indonesia's GDP has steadily increased, this indicate the economy of Indonesia is currently expanding. Gross domestic product (GDP) is one of the metrics used to assess how well the performance of the economy is. Firms in the infrastructure sector can be regarded as one of the pillars in fostering economic growth in Indonesia, as this sector can support the flow of economic activities (Yunitasari & Dewi, 2016). Infrastructure progress in Indonesia is reflected in the progress of infrastructure sector firms, because the progress of infrastructure sector firms can have an impact on infrastructure development in Indonesia. This research focuses on one of the ten sub-sectors of firms in the infrastructure sector, namely the building construction sub-sector. Building construction firms are more specific in providing their services, namely in construction services such as toll road construction, housing and hotel construction, concrete supply, contractor and civil service provision, electricity transmission, and so on. The building construction subsector is comprised of 23 firms. The number of registered building construction firms in 2016 to 2020 continues to increase. The increase in the of building construction firms aligns to the expansion in toll road construction in Indonesia. The construction of the toll road certainly has a good impact on building construction firms, but financing for large development projects requires large capital so that a good debt policy is needed for company management.

According to the data from the Ministry of Public Works and Public Housing (PUPR) in Yanwardhana (2020), the government expects 346 km of toll roads to be built by 2021, with 97 km already inaugurated and operational, and the remaining 249 km expected to be inaugurated before the end of 2021. However, based on the firms' financial report data, the average debt of building construction companies from 2016 to 2019 continued to increase, starting from 2016

worth IDR 9.2 trillion and then increasing by 56.5% in 2017 to IDR 14.4 trillion, then increasing by 26% in 2018 to IDR 18.1 trillion, and increasing again by 5.63% to IDR 19.12 trillion in 2019. Despite this, the average debt in 2020 fell by 1.46% to IDR 18.84 trillion. The increase in the average value of debt in 2016-2019 was caused by building construction companies that were quite aggressive in taking toll road construction projects which of course required large capital to peak in 2019 and early 2020. The company managed to reduce debt at the end of 2020 due to the company's efforts to divest projects and pay debts (Aldin, 2021). This event demonstrates the importance of debt policies in building construction firms.

Debt policy is a firm's external funding policy or decision that is determined by its capital structure. This policy specifies how much of the company's external funding is provided by debt, its percentage to total capital, and the length of the debt (Hertina et al., 2019). Excessive debt utilization will risk the firm since it will enter into the extreme leverage category (extreme debt), i.e., companies with high debt levels that are difficult to discharge. As a result, firms need to determine how much debt is acceptable and how debt can be repaid (Sunardi et al., 2020).

Previous studies on debt policy have been conducted by some researchers, Giaretta and Chesini (2021) investigate the factors that influence the debt financing of FinTech start-ups Using a new hand-collected multisource database that maps FinTech start-ups incorporated in the UK between 2010 and 2015, this study investigates how the features of FinTech start-ups affect the types of finance taken in the first three years after incorporation. Another study is conducted by Sulistiani and Agustina (2019) that explore the effects of sales growth, institutional ownership, and company size on debt policy, with profitability moderating variable. There is also a study that conducted by Sunardi et al., (2020) that aims to test the relationship between debt policies and company performance, which includes business risk, asset growth, firm size, and liquidity. A further study was conducted by Gan et al., (2022) that investigate the impact of heterogeneous debt structures on corporate financing and investment decisions in a dynamic trade-off model.

This study makes several contributions. The first is knowledge. For details, this is the first paper that examine the determinants of debt policy in Indonesia specifically for building construction firms that using the non-debt tax shield and earning volatility as an independent variable. Second, it will not only fill a gap in the literature, but will also help the board of directors and regulatory authorities in developing the debt policy. The rest of the paper proceeds as follows. Section 2 presents the literature review. Section 3 describes the research methodology. Section 4 about the data collection process. Section 5 presents the result/finding of the study and the discussion. Section 6 presents the conclusion and recommendations.

1.1 Objectives

The aim of this research is. determine the simultaneous and partial effect of non-debt tax shield (NDTS), firm growth, liquidity, and profit volatility on debt policy. Furthermore, the purpose also to find out non-debt tax shield (NDTS), company growth, liquidity, profit volatility, and debt policy for building construction sub-sector companies listed on the Indonesia Stock Exchange (IDX) for the 2016-2020 period statistically.

2. Literature Review

The pecking order theory and the trade-off theory are the basis for this study. The trade-off theory explains that when choosing financing with debt, there will be weaknesses and advantages that must be considered. Weaknesses or risks that must be borne by the company are the possibility of bankruptcy if the company fails to pay debts and interest costs on debt, while the benefits that can be received by the company are tax savings, because interest on debt can reduce taxable income (Nicodano & Regis, 2019; Yap, 2016). According to the pecking order theory, there are four assumptions, first, the theory indicates a strict or fixed structure that a firm first uses internal funding and only turns to external financing if internal financing is insufficient. This hierarchy makes the implicit assumption that the cost of internal funding is consistently lower than the cost of external financing, which may or may not be true. Second, the idea also presupposes that both internal and external funds are always available. The theory's third assume is that internal finance is under the firm's control, which may not be the case if the company has made a commitment to a specific payment strategy. In other words, financial stability internally does not always imply financial stability outside. Fourth, in the same sense, it is not always certain that external financing will be available (Eldomiaty et al., 2018).

2.1 Non-Debt Tax Shield

According to the trade-off theory, debt provides greater advantages than equity due to tax benefits. But there is also a tax benefit that does not come from the debt. That benefit is non-debt tax shield (NDTS), NDTS is a tax savings that does not come from debt but from the depreciation of company assets. This tax savings then becomes one of the reasons companies can reduce their use of debt, because the advantages of tax savings that come from using non-debt tax shields negate one of the reasons for using debt to produce tax savings and can reduce the risk of bankruptcy caused by the financial pressure brought on by debt (Yap, 2016). It follows that the non-debt tax shield can affect the use of debt by a firm, because the potential that a firm will use debt decreases as its non-debt tax shield increases, this statement is consistent with the findings of studies done by Yap (2016) and Tiara et al., (2018) that non-debt tax shield negatively affect the debt policy (DER).

H_1: Non-debt tax shield has a negative significant effect on debt policy

2.2 Firm Growth

Firm growth measures how much growth of the firm experienced in a certain year compared to the previous year. There are several proxies in measuring firm growth, such as assets, profits, and revenues. Assets were used as the proxy in this research. Growth from an asset perspective is the rate of change in the company's total assets which is calculated by comparing assets at a certain time with assets in the previous year (Suastini et al., 2016). When a firm expands, it requires more capital to support that growth. The firm will require more debt if the amount of investment it makes exceeds its retained profit. The trade-off theory states that businesses with high growth tend to need more debt to support their operational activities, leading to an increase in the firm's debt (Sumani, 2012). As a result, the corporation requires more debt as its growth rate increases. This statement is consistent with the findings of studies done by Hatem (2017), Surya & Rahayuningsih (2012), and Trisnawati (2016) that firm growth positively affect the debt policy (DER).

H_2: Firm growth has a positive significant effect on debt policy

2.3 Liquidity

Liquidity is a ratio that evaluates a company's ability to satisfy its short-term obligations or debts. investors and creditors need to know the company's liquidity in order to find out whether the funds invested or loaned can be returned in the short term (Prabowo & Sutanto, 2019). Companies with high liquidity, according to (Adhitya & Santioso, 2020), will find it easier to obtain loans, but they will also require fewer external capital from debt. This is consistent with the research results of Natasia & Wahidawati (2015), Nasution et al., (2017), Utami & Suprihati (2021), Wulandari & Artini (2019) which explain that liquidity has a significant negative effect on DER or debt policy.

H_3: Liquidity has a negative significant effect on debt policy

2.4 Profit Volatility

Profit volatility measures the consistency of a firm's profit, indicating that firms with a high level of profit volatility are riskier and decrease creditors' interest in providing debt loans (Adhitya & Santioso, 2020). Because of the use of foreign capital, any firm with consistent profit will always be able to meet its financial obligations. Firms with variable and uncertain profit, on the other hand, run the risk of not being able to pay interest expense or installments in years of unfavorable conditions, resulting in considerable losses. Firms that suffer from ongoing or significant losses may find themselves in financial difficulties, unable to pay their interest expenses or matured obligations, all of which would affect the creditors (Anwar, 2019). Companies with high profit volatility, on the other hand, require more money due to the uncertainty of the funds received, hence companies require external capital from debt. Utomo & Djumahir (2013) and Maulida & Ikhsan (2018) finds that profit volatility has a positive significant effect on debt policy.

H_4: Profit volatility has a positive significant effect on debt policy

Based on the explanation of the hypothesis, the research framework is depicted in the Figure 1.

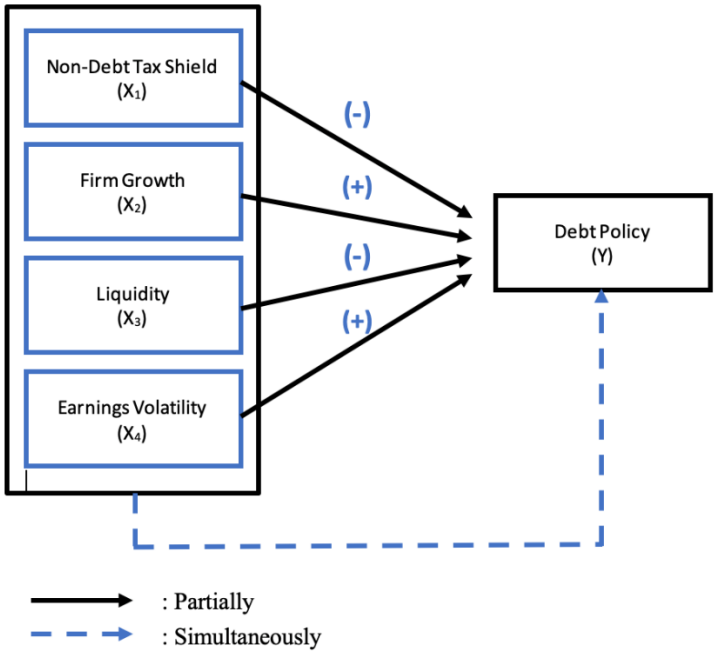

Figure 1. Research framework

3. Methods

3.1 Variables

This study examined the effect of four independent variables on the dependent variable. Debt policy was the dependent variable. The independent variables were non-debt tax shield, firm growth, liquidity, and profit volatility. Table 1 summarizes the definitions of the dependent variables and independent variables included in the study.

Table 1. Variable description

Variables	Definition
Dependent variable	
Debt policy (DER)	Total debt to total equity
Independent variables	
Non-debt tax shield (NDTS)	Depreciation to total assets
Firm growth (GROWTH)	(Total assets – total assets$_{t-1}$)/ total assets$_{t-1}$
Liquidity (LIQ)	Current asset to current liability
Profit volatility (PVOL)	Standard deviation of EBIT to total assets

3.2 Model Specification

Data panel regression was used as the data analysis technique. After the data collection process, the data is tested with the classic assumption test, consisting of a heteroskedasticity test and a multicollinearity test. Subsequently, the data was also tested with the Chow test and Hausman test to choose the best model for the panel data regression. The equation of the panel data regression in this study as follows:

$$\boldsymbol{DER = a + \beta_1 NDTS + \beta_2 GROWTH + \beta_3 LIQ + \beta_4 EVOL + e}$$

Description:

DER = Debt Policy
a = Constants

$\beta_1, \beta_2, \beta_3, \beta_4$ = Partial Coefficient Regression
NDTS = Non-Debt Tax Shield
GROWTH = Firm Growth
LIQ = Liquidity
PVOL = Profit Volatility
e = Error

4. Data Collection

This study is intended to define the effect of non-debt tax shield, firm growth, liquidity, and profit volatility on debt policy. The data used in this study is secondary data, specifically the financial statements of building construction firms listed on the Indonesian Stock Exchange (IDX) that which were audited for a 5-year period, from 2016-2020. The sample of the research was determined based on purposive sampling, as a result, 60 observations from 12 firms were selected. The sample selection process is shown in Table 2.

Table 2. Sample selection process

No.	Sample characteristic	Sample Size
1.	Building Construction firms listed on the IDX	23
2.	Delisted Building Construction firms during the 2016-2020 period	(11)
3.	Building construction companies that do not consistently submit audited financial reports on the IDX during the 2016-2020 period	(0)
Number of firms		12
Observation amount (firms x years)		60

5. Results and Discussion

5.1 Descriptive Statistics

Table 3 presents a summary of descriptive statistics of the variables, namely the mean, minimum, maximum, and standard deviation, as follows:

Table 3. Descriptive statistics

	NDTS	GROWTH	LIQ	PVOL	DER
Mean	0.09	0.13	1.55	0.06	2.49
Maximum	0.37	1.12	4.29	0.29	35.46
Minimum	0.01	-0.71	0.67	0.01	0.22
Std. Dev.	0.08	0.31	0.65	0.05	4.60

Based on Table 3, the mean of the dependent variable, namely debt policy, which was measured by the DER, was 2.49 which was smaller than the standard deviation of 4.60, this indicates that the debt policy data in this study is varied or was not grouped. The mean value of the DER also implies that the average building construction firms has a greater proportion than its equity value. For the 2016-2020 period, the average value of the non-debt tax shield for building construction firms is 0.09. This indicates the building construction firms has a tax savings value from fixed asset depreciation of 9.48 percent of total assets. The mean result of building construction firm growth from 2016 to 2020 is 0.13. This implies that on average, the building construction firms are growing. Building construction firms have a mean liquidity of 1.55. This signifies that the majority of building construction firms have a good liquidity value, or that the firm's current assets are able to cover its current debt since it has a greater number of current assets

than current debt. Building construction firms have an average profit volatility of 0.05 percent. This suggests that the majority of building construction firms have little low volatility.

5.2 Classic Assumption Test

This study's model is a fixed effect model (FEM) that employs the ordinary least squares (OLS) method. The classic assumption tests required in the OLS method are the multicollinearity tests and the heteroscedasticity test (Basuki & Prawoto, 2016).

5.2.1 Multicollinearity Test

The multicollinearity test aims to determine the linear relationship between the independent variables. The magnitude of the correlation between variables must be less than 0.09 so that the study is free from multicollinearity (Saptutyningsih & Setyaningrum, 2020). The results of the multicollinearity test are as follows.

Table 4. Multicollinearity test result

	NDTS	GROWTH	LIQ	PVOL
NDTS	1.0000	-0.4988	-0.0339	0.3951
GROWTH	-0.4988	1.0000	-0.1909	-0.0883
LIQ	-0.0339	-0.1909	1.0000	0.0634
PVOL	0.3951	-0.0882	0.0634	1.0000

Table 4 shows that the correlation value of the multicollinearity test results from non-debt tax shield (NDTS), firm growth (GROWTH), liquidity (LIQ), profit volatility (PVOL) is less than 0.09 (< 0.09), so it can be concluded that there is no multicollinearity between the independent variables.

5.2.2 Heteroscedasticity Test

Heteroscedasticity is a condition that occurs due to outliers in the overall data. If the probability value is less than (α = 5%) then the data is heteroscedasticity, whereas if the probability value is greater than (α = 5%) then the data is not heteroscedasticity (Saptutyningsih & Setyaningrum, 2020). The result of the heteroscedasticity test are as follows.

Table 5. Heteroscedasticity test result

Heteroskedasticity Test: White			
F-statistic	0.1887	Prob. F(10,49)	0.9963
Obs*R-squared	2.2247	Prob. Chi-Square(10)	0.9943
Scaled explained SS	39.5458	Prob. Chi-Square(10)	0.0000

Table 5 shows that the probability value of Obs*R-Squared is 0.9943, where the value is > 0.05, it can be concluded that in this study there is no heteroscedasticity.

5.3 Selection of Panel Data Regression Models

Prior to starting the panel data regression test, two tests were run to find the optimal technique for estimating panel data regression: the Chow test and the Hausman test (Basuki & Prawoto, 2016). Based on these two tests, the conclusions are in Table 6 as follows:

Table 6. Panel data regression model test results

No.	Methods	Testing	Result
1.	Chow Test	Common effect ↔ Fixed effect	Fixed effect
2.	Hausman Test	Fixed effect ↔ Random effect	Fixed Effect

The results of the Chow test that tested the common effect model versus the fixed effect model showed that the probability value (P-value) of the cross section F was 0.0003. This value was less than the 0.05 significance level, meaning that the best model to be used according to the Chow test was the fixed effect model. Furthermore, the Hausman test was carried out to determine between the fixed effect model and the random effect model. The results of the Hausman test that tested the fixed effect versus random effects showed that the probability value (P-value) of random cross section was 0.0000. This value was less than the 0.05 significance level, meaning that the appropriate model to be used according to the Hausman test was also the fixed effect model. After the two tests have been carried out, the model to be used is the fixed effect model, and the LaGrange multiplier test does not need to be carried out.

5.4 Panel Data Regression Analysis

5.4.1 Coefficient of Determination (R^2) and Simultaneous Test (F-Test)

Table 7. Coefficient of determination (R^2) and F-test results

Adjusted R-squared	0.4494
Prob (F-statistic)	0.0001

Based on Table 7, the R2 value obtained is 0.4494, or 45%, meaning that the independent variables consisting of non-debt tax shield, company growth, liquidity, and profit volatility can explain the dependent variable, namely debt policy, at 45%, while the remaining 55% is explained by other factors outside the study.

The obtained prob (F-statistic) value is 0.0001.The value 0.0001 is less than the significance 0.05, indicate that there is a simultaneous effect between the independent variables on the dependent variable, which means that the non-debt tax shield variables, company growth, liquidity, and profit volatility affect the debt policy in a building construction firms for the 2016 to 2020 period.

5.4.2 Partial Test (t-Test)

Table 8. Partial (t-test) results

Variable	Coefficient	Prob.
Constant	8.6189	0.0069
NDTS	-7.5918	0.6061
GROWTH	-4.9719	0.0184
LIQ	-0.3151	0.8747
PVOL	-74.2848	0.0003

The results of the partial test form the following regression equation:

$$DER = 8.6189 - 7.5918\,NDTS - 4.9719GROWTH - 0.3150LIQ - 74.2848EVOL$$

From the Table 8 and the equation, the results indicates that first, the constant value is 8.6189 with a probability level of 0.0069 less than significance 0.05, meaning that if the independent variable (non-debt tax shield, company growth, liquidity, and profit volatility) is 0 or constant, then the value of the dependent variable (debt policy) is 8.6189. Second, the regression coefficient value of the non-debt tax shield (NDTS) is -7.5918 with a probability value of 0.6061, more than 0.05, meaning that the non-debt tax shield (NDTS) has no effect on debt policy. Third, the regression coefficient value of the firm growth (GROWTH) is -4.9719 with a probability value of 0.0184 less than 0.05, meaning that the firm growth (GROWTH) has a significant negative effect on debt policy. Fourth, the regression coefficient value of the liquidity (LIQ) is -0.3150 with a probability value of 0.8747 more than 0.05, meaning that the liquidity (LIQ) has no effect on debt policy. Lastly, the regression coefficient value of the profit volatility (PVOL) is -74.2848 with a probability value of 0.0003 less than 0.05, meaning that the profit volatility (PVOL) has a significant negative effect on debt policy.

5.5 Validation

5.5.1 The Effect of Non-Debt Tax Shield on Debt Policy

The non-debt tax shield (NDTS) has no effect on debt policy, thus hypothesis H_{01} is accepted while H_{A1} is rejected. The results of this study are inconsistent with the findings of Fachri & Adiyanto (2019), Miraza & Muniruddin (2017), Nainggolan et al., (2017) which states that non-debt tax shields have a significant effect on debt policy or DER, however in line with the research of Mulyani & Agustinus (2022) and E. S. Wulandari et al., (2017) which state that the non-debt tax shield has no effect on DER or debt policy. The non-debt tax shield has no effect on debt policy because depreciation savings are not in cash, which has no effect on firm financing. Tax savings from depreciation have little effect on debt, implying that building construction firm debt is used to finance company operations rather than company assets.

5.5.2 The Effect of Firm Growth on Debt Policy

The regression coefficient value of the firm growth (GROWTH) is -4.9719 with a probability value of 0.0184 less than the significance 0.05, means that the firm growth variable has a significant negative effect on the debt policy, thus hypothesis H_{02} is accepted while H_{A2} is rejected. The results of this study support previous research which states that company growth has a significant negative effect on debt policy (Rubiyana & Kristanti,2020; Setiawati & Veronica, 2020).

Firm growth has a negative effect on debt policy, which means that the bigger the firm's growth (in this case characterized by the number of assets), the lower the DER value, or in other words, the proportion of the firm's debt compared to equity is decreasing. This is because growing firms with increasing asset values do not fund their assets with debt, but rather with retained profit or their own capital.

5.5.3 The Effect of Liquidity on Debt Policy

The liquidity (LIQ) regression coefficient value is -0.3150, with a probability value of 0.8747 greater than the significance 0.05. The value shows that the liquidity variable has no effect on debt policy, thus the hypothesis H_{03} is accepted while H_{A3} is rejected. This supports the previous study that has shown that liquidity has no effect on DER or debt policy (Adhitya & Santioso, 2020; Anzella et al., 2019). However, the findings of this study oppose those of Natasia & Wahidawati (2015), Nasution et al. (2017), Wulandari & Artini (2019), Utami & Suprihati (2021), who show that liquidity has a significant negative effect on DER or debt policy.

Liquidity does not affect debt policy because liquidity only represents the value of the company's current debt. The company's current debt will be financed by current assets, so the company's liquidity value will not affect debt policy because the payment of current debt comes from current assets, which are the company's internal funds. This is also supported by the pecking order theory, which explains that if the company's liquidity is high, then the company has large internal funds so that the use of the company's internal data will take precedence.

5.5.4 The Effect of Profit Volatility on Debt Policy

The regression coefficient value of the profit volatility (PVOL) is -74.2848 with a probability value of 0.0003 less than the significance 0.05. This value means that the profit volatility variable has a negative effect on debt policy, thus H_{04} is accepted while H_{A4} is rejected. This is inconsistent with the findings of Anwar (2019), Maulida & Ikhsan (2018), and Utomo & Djumahir (2013).

Profit volatility has a significant negative effect on debt policy, which means that the higher the level of volatility in the firm's profit, the lower the DER value, or in other words, the smaller the proportion of corporate debt compared to company equity. This is because firms with volatile profit are considered risky by creditors, making it more difficult to receive external capital especially debt.

6. Conclusion

Based on this research, we can conclude the following: (a) Non-debt tax shield, Firm growth, Liquidity, and Profit volatility simultaneously affect the debt policy of building construction firms listed in Indonesia for 2016-2020 period. (b) Non-debt tax shield and liquidity has no significant effect on the debt policy of building construction firms listed in Indonesia for 2016-2020 period. (c) Firm growth has a negative significant effect on the debt policy of building construction firms listed in Indonesia for 2016-2020 period. This indicates that the more the firm expanding, the debt decreasing (d) Profit volatility has a negative significant effect on the debt policy, the result indicates that a firms with volatile profit are considered risky by creditors, making it more difficult to receive external capital especially debt.

These findings will certainly have implications, be it for the firm, customers and investors. The firms is expected to increase the company's growth because based on research, companies that experience growth will reduce the amount of debt. For the investors and creditors of building construction firms in Indonesia, it is important to consider the the determinant factors of debt policy and the debt policy itself of the firms before investing and giving credits.

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