

Determinants of Optimal Debt Policy: Evidence from Indonesia and Taiwan

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— *Review of* —
**Integrative
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— *Research* —

ABSTRACT

This study examines the impact of capital structure determinants on the non-financial firms in Indonesia and Taiwan from 2011 to 2019. We used a simple linear regression model with a fixed and a random effect model to investigate the determinants of optimal debt policy for both countries. The study identified several determinants (Non-debts Tax Benefit, Tangibility, Profitability, Liquidity, Free Cash Flow, Growth, and Co. Tax) from the Trade-Off Theory, Pecking Order Theory, and Agency Cost Theory. We used these determinants as the independent variables and leverage as the dependent variable. Our research result supports the Pecking Order Theory for the Indonesian firms, whereas the Trade-Off Theory and Agency Cost Theory for the Taiwanese firms.

Keywords: Trade-Off Theory; Pecking Order Theory; Agency Cost Theory; Debt Policy from Indonesia and Taiwan.

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1. INTRODUCTION

1.1 Research Objectives

Many studies on capital structure discussed the invalidity of the M&M Proposition Theory. The determinants of capital structure for developing countries are still widely debated. As emerging markets, Indonesia and Taiwan share many similarities in their diversified and rising economies. Taiwan combines the elements of both developed and developing economies, while Indonesia is following in the footsteps of the region's strong economies.

A manager must select an appropriate capital structure given the risks and expenses associated with debt and equity financing. To optimize the businesses, a manager must understand how the capital structure works and the influences of it. Despite several studies on this subject, there is no clear picture on the key determinants of capital structure (Hezam Saleh et al. 2018).

In the case of Indonesia and Taiwan, we analyzed whether the business climate in Indonesia encourages their non-financial firms to engage in different financing practices than the Taiwanese firms. Note that we excluded 2007-2008 because of the global financial crisis's severe impact on the worldwide economy.

1.2 Research Importance

Capital structure is one of the most important and debated subjects in finance, academically and professionally. Debt and equity decisions on funding will directly impact firm values. How a company is funded is critical for its investors, management, and stakeholders. Hence it is imperative to define the capital structure's determinants clearly, and the potential impact of each. This will surely be useful in making financing decisions.

1.3 Academic Importance

Researchers seek the optimal capital structure because it lowers the capital cost while raising the business's market value (Bedeir, 2018). It's critical to find out whether the determinants of capital structure for developing countries can also affect Indonesian and Taiwanese firms, and whether these factors have different or similar effects. This research makes a contribution because it is the first to examine the capital structures of Indonesia and Taiwan.

1.4 Practical Importance

Capital structure decisions are crucial for the success of a firm because funding strategies can affect a company's valuation. Financing decisions are becoming vital and complicated these days. When a business decides to undertake a new project or upgrade an exciting technology, it must plan beforehand to lower the costs. Through this, the company achieves its primary goal of maximizing shareholder value and benefitting its valuation.

1.5 Research Question: What Determinants Influence The Non-financial Firms Listed On The Indonesian and Taiwanese Stock Exchanges?

Our study examined the three prominent capital structure theories (trade-off, pecking order, and agency cost) before responding to the key research issues.

2. LITERATURE REVIEW

Modern capital theories started from the M&M proposition theory (Modigliani & Miller, 1958), and proceeded with the three hypotheses that form the capital structure. They are the Trade-Off Theory, Pecking Order Theory, and Agency Cost Theory. We will synthesize and analyze the three concepts in this paper.

2.1. The Capital Structure Theories

M&M's study (1958) has been the foundation of capital structure research. It assumed that a firm's value remains unchanged whether it is leveraged, unleveraged, or both. The theory was based on a fully efficient market and supposed: 1) No bankruptcy and transaction cost; 2) No personal or corporate taxes; 3) Information is abundant between all parties; 4) The parties can borrow at a flat rate; 5) EBIT will not affect financing choices.

Their model was later adjusted to include the effect of taxes and led the theory closer to practice in reality.

2.1.1 M&M's Proposition Without the Tax Effect

According to Villamil (2008) and M&M (1963), eliminating tax opposes M&M's proposition on tax effect. Investors' expected return on the cost of equity is correlated with the debt-to-equity ratio. The estimated return on equity results in a trade-off that benefits from cheaper debt funding, while the weighted average cost of capital (WACC) remains unchanged (Ahmeti & Prenaj, 2015).

The figure below shows that WACC has no effect on capital structure. Therefore, financing choices do not affect a firm's value. A company can use any form of funding mixture of its capital composition in this method without affecting its valuation. (Rau & Rau, 2017).

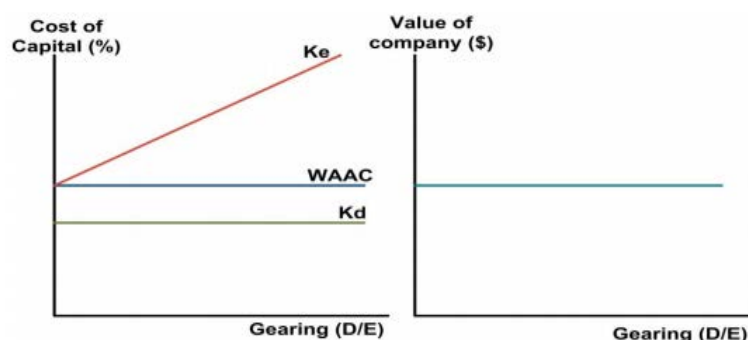


Figure 1. The Cost of Capital and Firm Value According to the M&M Theorem (Without Tax). Source: Kaplan Financial Knowledge Bank (2012)

2.1.2 The Concept of Trade-Off

The conventional static trade-off theory of capital structure gives companies two options of funding: optimal debt or equity. Analysis showed that firms with high debt and bankruptcy costs also have a high tax benefit. An ideal capital composition of a business can balance the value of the tax shield on debt and the cost of financial distress (Frank & Goyal, 2007). In empirical studies, tax advantage and insolvency expenditure are two of the most frequently used proxies to gauge the trade-off principle. The proxies must be used to manage the tax shields of non-debt and the risks of financial distress (Rödel, 2013). Figure 2 illustrates how debt financing impacts the value of a company under the trade-off model.

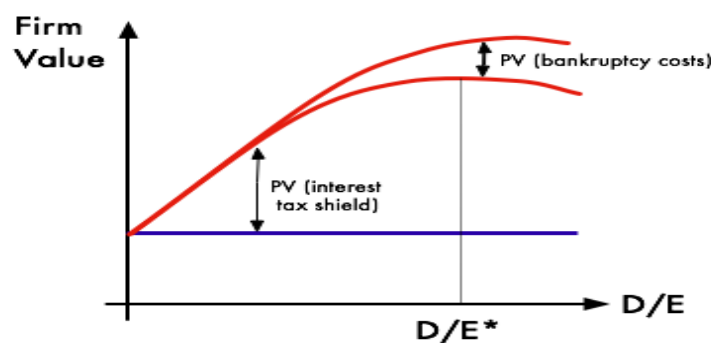


Figure 2. The Non-debt Benefit of Tax Shield Source: Hawaii & Viallet (1999)

Rödel (2013) proposed a model that combined corporate tax, income tax, and non-debt tax protection (depreciation). Since mortgage interest is tax deductible, companies tend to cover their deficits as a result. Non-debt tax shield (NDTS) is a replacement centered on the benefits of loan financing companies. To save company taxes, businesses are encouraged to use borrowing rather than equity financing. Depreciation can be used to reduce corporate taxes. Furthermore, Naoui et al. (2011) found that NDTS defined Indonesian firms' leverage. When the NTDS decreases, the debt of a company also decreases. Thus **a negative relation is foreseen between NDTS and financial leverage**. The tax deduction for depreciation, losses, and investment tax credits can be used to offset the tax benefits of debt financing, explaining

the negative relation between NDTs and long-term debt. Firms with a large NDTs are less likely to be leveraged.

2.1.3 Financial Distress Cost

The downside of debt is that it raises the risk of bankruptcy (Handoo & Sharma, 2014), and bankruptcy incurs both direct and indirect expenses for a company, such as administration and legal fees, revenue loss, operational costs, and etc. Financial distress can be reduced to some extent if tangible assets are used.

Naoui et al. (2011) and Haron & Ibrahim (2012) used tangibility as a proxy to assess the costs of financial distress, while De Jong et al. (2010) found evidence on how market risk affects a firm's financial leverage. Financial leverage and tangibility were correlated, according to the observational evidence obtained by Kalsie & Nagpal (2018), Hussainey & Al-Najjar (2013), De Jong et al. (2011) and Kakilli (2015).

2.1.4 Tangibility

In the trade-off principle, the cost of financial distress plays a major role. Tangible property and bankruptcy expenses can be minimized because real estate can be used as a leverage. When a company is in financial trouble, it will incur debt. However, its vulnerability will reduce when it presents collateral to the lenders. As a result, even if it is in a financial crisis, it may borrow more debt (Hussainey & Al-Najjar, 2013). **Positive correlation is assumed between financial leverage and tangibility for the listed companies in Taiwan and Indonesia (H1).** Companies can incur debt even in times of financial hardship because they have ample real assets that can be used as leverage.

2.2 The Theory of Pecking Order

Using asymmetry of information as the basis for financial hierarchy models, inside members can provide more information about the company than outside investors (Myers, 1984; Demirguc-Kunt & Maksimovic, 1994). Since the information is asymmetrical, there will be costs if additional funds are needed. Investors assume debt is less volatile than shares. According to the pecking order principle, companies tend to use internal funds first and would fund themselves with their retained profit. However, external funding and debt financing will become necessary if the internal fund is inadequate to support project financing.

Figure 3 briefly shows the pecking order hierarchy of financing sources. For external sources, the idea of pecking order relies extensively on information asymmetry. Managers typically provide better information than analysts and creditors about the company's performance, valuation and risks.

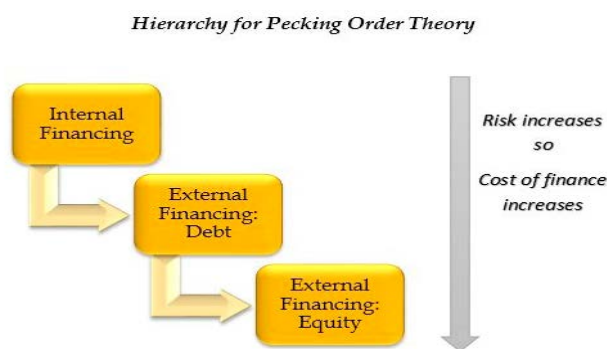


Figure 3. The Hierarchy of POT (Pecking Order Theory)

Furthermore, most buyers may believe that a company is overvalued if it chooses to do equity financing, which might undermine the company's image and economic survival. Evidence of the pecking order theory is mixed. A few scholars have found scientific proof that some organizations followed the rules of the pecking order, even though other researchers have not found enough proof to confirm the theory. For example, Thanh & Huong (2017) found that pecking order theory follows the organization hierarchy when it comes to obtaining funding. De Bie & De Haan (2007) analyzed the financing behavior of publicly traded companies in Malaysia, Indonesia and Singapore, and found that their funding choices aligned with the organization hierarchy. Öztekin (2015) discovered that there was a pecking order in some Asian companies, even though it was not particularly suitable for their capital system and the asymmetrical awareness did not follow the theory of the pecking order either. They also discovered that equity problems protect shortfalls rather than debt when a company has a financial deficit.

Researchers have used either profitability (Öztekin, 2015; Wessels & Titman, 1988), liquidity (De Jong et al., 2011; Frank & Goyal, 2007), or asset tangibility (Antoniou et al., 2016; Barton et al., 2016; Frank & Goyal, 2007) as a proxy for their studies of pecking order. Considering that all three factors are rather closely related, **listed companies on the Indonesia stock exchange and Taiwan stock exchange were analyzed for their asset tangibility, profitability, and liquidity** to verify the existence of the pecking order principle.

2.2.1 Profitability

Deesomsak et al. (2004) clarified that organizations with profits tend to use their retained earnings and internal funds on their developmental projects instead of raising equity for additional money. However, some studies (Afzal, 2012; Haan & Bie, 2007) argued that if an organization's benefit contributes to more retained profits, this might be detrimental to the company's financial leverage. As a result, profitable companies have lower financial leverage than unprofitable ones (Myers, 1983; De Jong et al., 2008). Firms tend to use their income as a means of internal funding and bigger companies use their benefit as retained earnings to decrease their debt volume (Titman & Wessles, 1988). **We expect Indonesian and Taiwanese companies' profitability and financial leverage to be negatively correlated. (H2A)**

2.2.2 Asset Tangibility

When a company's internal reserves are not enough to cover its entire financial deficit, it might choose to use their financial properties as leverage to raise loans. In this way, the lender's liability and their demanded risk premium would reduce since the company presents adequate collateral (Antoniou et al., 2008; M. Frank & Goyal, 2007). In contrast, investing capital becomes costly when acquiring loans without collateral. It can be more difficult to borrow with unsecured debt than with stable (collateral) debt (Kakilli, 2015). Though borrowing on unsecured debt increases the asymmetry of information (Deesomsak et al., 2004), firms with tangible assets still prefer to borrow with collateral. Companies make more money by doing this under the pecking order principle. Evans & Guy (2004) found that businesses draw leverage more effectively when they use their tangible assets, thus the favorable relation between leverage and asset tangibility (Öztekin, 2015). Ellis (2009) found that tangible assets typically have greater borrowing power. Chen & Jiang (2001) concluded that tangible assets are strongly linked to a firm's leverage under the pecking order principle. **We expect the hypothesis for the pecking order principle to create a constructive relation between asset tangibility and leverage (H2B).**

2.2.3 Liquidity

De Haan & Hinloopen (2003) found that based on Dutch organizations' hierarchy of funding priority, liquidity has been used as a proxy in addition to profitability. De Jong et al. (2011) also suggested that liquidity and internal and external finances are closely linked, both positively and negatively. Firms prefer to finance their projects and other expenditures from the existing fund so that the debt ratio is not affected. In this way, liquidity has a negative relation with the leverage of finance. Companies' liquidity reduces their borrowing (Deesomsak et al., 2004). **Therefore, we predict a negative relation between liquidity and financial leverage within those Indonesian and Taiwanese firms (H2C).**

2.3 Theory of Agency Cost

Jensen & Meckling (1976) and Hussainey & Al-Najjar (2013) assumed that an organization's capital structure is a combination of pecking order theory, trade-off theory, and agency issues. Managers' and shareholders' interests are not necessarily the same. And internal management generally has more information than their external investors.

Expenses of having agencies can come from multiple sources, such as when the agent uses the organization's funds for their own gain; or when external auditors are hired to prepare the financial statements (Chowdhury & Chowdhury, 2010). An ideal capital structure should be able to minimize the agency cost. There has been a continuing debate over the legitimacy of the expense hypothesis of agency. Some scholars suggested that the agency expense should be viewed as a part of the trade-off principle, focusing on the asymmetry of information between owners and managers (Hezam Saleh et al., 2018; Mahajan & Tartaroglu, 2008). Derwall et al., (2004) found that the expense of the department varies by countries and companies due to the variations of admin structures. Empirical evidence was found in the Netherlands that the agency cost theory is an acceptable theory that determines the composition of resources (Degryse et al., 2012; De Jong et al. 2011).

We took the cost philosophy of agency into account for the research of the capital structure in Indonesia and Taiwan and proposed that the agency cost is calculated by free cash flow, and prospects for growth. **We will analyze the free cash flow, and growth of the listed Indonesian and Taiwanese non-financial companies. This approach will allow us to show that agency costs can affect the capital structure in selected markets.**

2.3.1 Free Cash Flow (FCF)

M. Jensen (1986) indicated that the cost of agency increases as a result of free cash flow. According to his study, discounting all projects with positive net present value (NPV) at the appropriate capital cost results in free cash flow. Investors demand cash flow surplus to be spent on financing new projects or paying out as dividends on initiatives with a positive NPV. Since managers can invest in ventures that would raise their own income, they often prefer ventures in which the expected return is lower than the capital cost. The shareholders then recognize spending in such ventures is an over-investment. De Jong et al. (2011) proposed that debt usage would mitigate this issue and therefore minimize the expense of the agency. This is attributable to the obligatory servicing of loans to debt holders. This will enable administrators to repay the interest and other loan repayments with excess cash flow. M. Jensen (1986) concluded free cash flow is beneficial to a firm's leverage. When debt is reduced, the agency's expenses and the risk of management's over-investment are also lowered. Thus, **Indonesian and Taiwanese listed companies' free cash flow are expected to be negatively correlated with leverage (H3A).**

2.3.2 Opportunity Growth

Deesomsak et al. (2004) stated that when growth prospects are high while the business is heavily leveraged, the management does not have the incentive to spend due to the issues of over-investment and under-investment. When a company's growth potential is limited, but they commit to projects with a negative NPV, **we expect the relation between growth and leverage to be negative (H3B).**

3. CORPORATE TAX

According to the trade-off concept, corporate tax has a positive relation with debt policy since interest charges are tax deductible. Firms that have higher tax income expenses gain more benefit from debt financing. According to Medgalian & Miller (1963), for those firms to gain more tax benefit they have to pay higher corporate tax, which results in higher levels of debt too (Khémiri & Noubbigh, 2018). So, **we predict a negative relation between corporate tax and leverage (H3C).**

4. CONTROL VARIABLE

We assume a positive correlation between firm size and financial leverage (H3D). Pecking order theory suggests that firm size is positively related to financial leverage. Diversification is an advantage of bigger firms. Analysts and practitioners of the credit market generally pay greater attention to those larger companies. So there is less asymmetry in the data, which enables larger companies to attract external debt funding more readily (Degryse et al., 2012; De Jong et al., 2011). The level of information asymmetry is restricted by the size of the organization. Larger businesses usually have less data asymmetry (Myers, 1983), so outsiders may know more about the firms than when they were smaller. Many researchers have used firm size as a surrogate, in which several included it as a control variable. We will use company size as a control variable in this analysis. We define corporate size as the natural total asset logarithm (Shun-Yu Chen, 2011; Degryse et al., 2012).

5. RESULTS FROM PREVIOUS STUDIES

Capital structure has been extensively studied since the 19th century with regards to emerging capital markets. The findings were largely based on the trade-off theory, which suggested that leverage negatively affects growth potential. The relation among total debt, long- and short-term debt, and average annual growth is negative (Rajan & Zingales, 1995; Öztekin, 2015; Cheng & Battulga, 2019) and important. This correlation was found not only among the country group data, but also on individual countries (Eunice & Ibe, 2016; Öztekin, 2015). These findings were mostly consistent with Myers's previous research, excluding the results from the companies in Austria, Denmark, France, Ireland, Italy and Sweden. The growth prospects of them were found to be positive and strongly linked to long-term debt ratios, (Venanzi & Naccarato, 2017). In the meantime, Thanh & Huong (2017) found that among 42 countries across the world, a firm's basic determinants on the level of leverage differ.

Empirical studies from emerging capital markets are diversely dependent on the trade-off theory. The data from Nepal's listed companies showed that there was a negative relation between growth opportunities and leverage (Gajurel, 2011). Hezam Saleh et al. (2018) found a similar outcome in the case of Turkey, and concluded that developed countries' outcome could also be found in developing countries. The latest study by Chang-cheng & Battulga (2019) also showed that companies in Mongolia with high growth rates chose to borrow less. The capital structure of companies in these nations can be explained by the trade-off principle. In contrast, Narmandakh (2014) found that Mongolia's listed companies prefer borrowing

debt over equity in the period of 2010-2013, which casted doubts on the impact of growth opportunity on leverage in developing countries. Another study from India also demonstrated the impact of growth and book leverage (Handoo & Sharma, 2014), 870 listed private companies and government companies were tested in 2001-2010, and Paredes Gómez et al. (2016) tested the empirical outcome from 5 Latin American countries, while Thanh & Huong (2017) supported previous results by examining the debt structure of non-financial Vietnamese listed companies and discovered that their growth opportunity and leverage level are positively related.

Table 1 Empirical Studies from Developed Economics

Author	Period	Country	Outcome
Rajan & Zingales (1995)	1987-1990	G7 Countries	Trade-Off Theory
Cheng et. al (2010)	2001-2006 1986-1992	Taiwan U. S. A.	Trade-Off Theory Trade-Off Theory
De Jong et.al (2008)	1997-2001	42 Countries	Pecking Order Theory Trade-Off Theory
Vananzi & Naccarato (2017)	2000-2009	Western European Countries	Pecking Order Theory
Ozetkin (2015)	1950-2003	U. S. A.	Trade-Off Theory

Source: Author's Construction

Given the empirical evidence supporting a negative correlation between growth and debt, growth opportunities play a major role in the capital structure of companies. In comparison, a mixed outcome was found among developing countries: the trade-off theory was found to cover all of a company's debt policy and financing actions, and the pecking order theory was revealed from different studies to clarify a company's debt structure in developing countries. The explanation for the debt policy of developed countries relying on pecking order theory is that they have the collective characteristic of high-growth economies in emerging market countries. High-level leverage is required for the financing resources to support their growth economy.

Table 2 Empirical Studies from Developing Economics

Author	Period	Countries	Results
Gajurel (2011)	1992-2004	Nepal	Trade-Off Theory
Narmandakh (2014)	2010-2013	Mongolia	Pecking Order Theory
Handoo & Sharma (2014)	2001-2010	India	Pecking Order Theory
Köksal et al. (2013)	1996-2009	Turkey	Trade-Off Theory
Paredes Gómez et al. (2016)	2004-2014	5 Latin American Countries	Pecking Order Theory
Mursalim et al. (2017)	2008-2012	Indonesia, Malaysia, Thailand	Trade-Off Theory Pecking Order Theory
Thanh & Huong (2017)	2010-2014	Vietnam	Pecking Order Theory
Khémiri & Noubbigh (2018)	2006-2016	Sub-Saharan African Countries	Trade-Off Theory
Chang-cheng & Battulga (2019)	2012-2018	Mongolia	Trade-Off Theory

Source: Author's Construction

Previous studies have a mixed result between the theory of pecking order and trade-off, for both developed and developing countries. However, for developed countries most papers are consistent with the trade-off theory due to the tax benefit of borrowing for project financing. Another reason might be due to the capital structure of their firms, meaning that they have more liquid assets than developing countries. Despite the lack of previous research tested on

the agency cost, we will test the agency cost theory to determine its impact on the capital structure of Indonesia and Taiwan, and compare the results with other developing countries.

6. RESEARCH DATA AND HYPOTHESES

In this chapter, we describe the research issues, survey, calculation time and data sources of this analysis. In addition, we also present the theories that are based on the previous chapter's theoretical structure (chapter 3). All the variables needed to evaluate are taken into account. We will also clarify the research process in this chapter.

6.1 Data Sources and Sampling Period

This study used data from Taiwan and Indonesia to analyze their non-financial companies' capital structures and decisions. Financial institutions were exempt from the study, such as banks, insurance providers, insurers, and mutual funds. This was because there was a distinctive capital framework for financial corporations, and which means the factors determining the capital structure of financial firms are different from those in non-financial firms.

Table 3 Predicted Relation Among The Determinants of The Indonesian and Taiwanese Firms

Theories	Independent Variables	Indonesian And Taiwanese Non-financial Firms' Relation With Leverage
Trade-Off Theory	Non-Debt Tax Shield	Negative (-)
	Tangibility	Negative (+)
	Corporate Tax	Positive (+)
Pecking Order Theory	Asset Tangibility	Positive (+)
	Profitability	Negative (-)
	Liquidity	Negative (-)
Agency Cost Theory	Free Cash Flow	Negative (-)
	Growth Opportunity	Negative (-)
Control Variable	Firm Size	Positive (+)

Source: Author's Construction

The theories of trade-off, pecking order, and agency costs were tested using R-studio on the data from 2011 to 2019, which we collected from **Data Stream and Indonesia Stock Exchange (IDX)**, and **Taiwan Economic Journal (TEJ)**. 2020 was excluded because of the impact of Covid-19 on the international market.

6.2 Research Hypotheses

The literature review indicated that a firm's leverage may depend on several variables, thus a quantitative analysis is included in this review for a numerical evaluation. Capital structures were evaluated using the OLS regression method by Degryse et al. (2012) and Hezam Saleh et al. (2018). The three famous hypotheses suggest that financial leverage has an inverse relation with the independent variables.

We used Fixed Effects Model (REM) and Random Effects Model (FEM) as the estimation models and leverage as the dependent variable. To control for the time-invariant variables, FEM was used first, followed by REM. The Hausman test was used in this study on the assumption that the variance calculated by FEM and REM were equal.

For the panel data with both random and fixed effects, we have the following regression equation:

$$Y_{it} = \alpha + \beta X_{it} + u_i + \epsilon_{it}$$

Y_{it} = variable observed from individual I at time t

U_i = residual is the characteristic of a unit observation

ϵ_{it} = combination cross-sectional and time series residual

($\beta_{RE} - \beta_{FE} = 0$), Hypothesis in this test. H_0 : Random Effects

H_1 : Fixed Effects

The REM seems more efficient and steadier under the null hypothesis, meaning that the null hypothesis is accepted. However, when the alternative hypotheses are given, there would be varying random effects. On the other hand, the FEM remains stable whether the null hypothesis is accepted or not. Moreover, the other hypotheses might accept that there is no relation between the error term and individual effects if the Hausman test is significant.

The basis equation for the ordinary least squares (OLS) regression (equation 1) shows the correlation between the dependent variable and independent variables through financial leverage:

TRADE-OFF THEORY

$$Y_{it} = \alpha + \beta_1 \text{NDTS}_{it} + \beta_2 \text{TANG}_{it} + \beta_3 \text{CTAX}_{it} + \epsilon_{it}$$

$$Y_{it} = \alpha + \beta_1 \text{NDTS}_{it} + \beta_2 \text{TANG}_{it} + \beta_3 \text{CTAX}_{it} + \beta_4 \text{SIZE}_{it} + \epsilon_{it}$$

PECKING ORDER THEORY

$$Y_{it} = \alpha + \beta_1 \text{TANG}_{it} + \beta_2 \text{LIQ}_{it} + \beta_3 \text{PROF}_{it} + \epsilon_{it}$$

$$Y_{it} = \alpha + \beta_1 \text{TANG}_{it} + \beta_2 \text{LIQ}_{it} + \beta_3 \text{PROF}_{it} + \beta_4 \text{SIZE}_{it} + \epsilon_{it}$$

AGENCY COST THEORY

$$Y_{it} = \alpha + \beta_1 \text{FCF} + \beta_2 \text{GROW}_{it} + \epsilon_{it}$$

$$Y_{it} = \alpha + \beta_1 \text{FCF} + \beta_7 \text{GROW}_{it} + \beta_3 \text{SIZE}_{it} + \epsilon_{it}$$

Combination of the above theories gives us our main regression model:

$$Y_{it} = \alpha + \beta_1 \text{NDTS}_{it} + \beta_2 \text{TANG}_{it} + \beta_3 \text{LIQ}_{it} + \beta_4 \text{PROF}_{it} + \beta_5 \text{CTAX}_{it} + \beta_6 \text{FCF} + \beta_7 \text{GROW}_{it} + \epsilon_{it}$$

$$Y_{it} = \alpha + \beta_1 \text{NDTS}_{it} + \beta_2 \text{TANG}_{it} + \beta_3 \text{LIQ}_{it} + \beta_4 \text{PROF}_{it} + \beta_5 \text{CTAX}_{it} + \beta_6 \text{FCF} + \beta_7 \text{GROW}_{it} + \beta_8 \text{SIZE}_{it} + \epsilon_{it}$$

In the above regression model where:

Y_{it} = The Debt ratio of firm i at time t

NDTS_{it} = The non-debt tax shield of firm i at time t

TANG_{it} = In both pecking and trade-off theories, assets are tangible

LIQ_{it} = Firm i 's liquidity at time t

PROF_{it} = Firm i 's profitability at time t

TAX_{it} = Tax paid by firm i at time t

FCF_{it} = The free cash flow (for overinvestment and underinvestment cases)

GROW_{it} = The growth opportunity of firm i at time t

SIZE_{it} = Firm size as the control variable

7. EMPIRICAL RESULTS

The section provides an explanation of our empirical results, which include the descriptive statistics, correlation coefficient, multi-linear regression model, fixed and random effect models, and the Hausman test result of the data.

7.1 Empirical Results of Indonesia

7.1.1 Descriptive Statistics of The Indonesian Firms

Table 4 shows the summary statistics of the dependent and independent variables. The leverage of the non-financial firms in Indonesia has a minimum value of 0.00 and a maximum value of 1.12, with an average value of 0.13 and a standard deviation of 0.14. The mean value of the leverage is 13%, which shows that the Indonesian firms used an average of 13% debt for their businesses. They also faced a minimum loss of -1.70, a maximum profit on sales of 0.78, with an average standard deviation of 0.11, and an average profit on sales of 0.05.

Table 4 Descriptive Statistics of Data from Indonesia's Annual Financial Statement (2011-2019)

Variable	N	Mean	St. Dev	Minimum	Median	Maximum
Size	2,635	15.18	1.53	11.21	14.98	21.53
Lev	2,635	0.13	0.14	0.00	0.07	1.12
NDTS	2,635	0.36	0.24	0.00	0.34	0.97
POT (Tangibility)	2,635	0.36	0.23	0.00	0.34	0.97
Prof	2,635	0.05	0.11	-1.76	0.05	0.78
Liq	2,635	2.17	6.68	0.01	1.14	165.97
FCF	2,635	13.25	8.17	-1.67	1.65	127.07
Grow	2,635	2.70	6.83	-2.00	1.63	2.80
Co. Tax	2,635	331,307	2,619,923	-2,607,794	28,509	47,649,404

Source: Author's Construction

Note: **Size** was computed as the natural log. of total assets; **Lev.** was computed as long-term debt divided by total assets; **NDTS** was computed as depreciation divided by total assets; **POT (Tangibility)** was computed as total fixed assets divided by total asset; **Prof (Profitability)** was computed by dividing (ROA) net income by total asset; **Liq.** was computed by dividing current assets by current liabilities; **FCF** was computed by operating income before tax - tax divided by total asset; **Grow** was computed by dividing market value equity by book value equity; **Co. Tax** was computed by subtracting profit before tax from profit after tax. The significance levels are *** P<0.01, ** P< 0.05, and * P<0.1.

7.1.2 Correlation Analysis of The Indonesian Firms

This method allows us to analyze the relation between two variables in figurative terms. The rule of thumb is that, if the value of the correlation coefficient is > 0.8, this indicates a high presence of multicollinearity.

The correlation coefficient between the dependent variable (leverage) and all the independent variables for the non-financial firms listed in Indonesia is shown in Table 5. There is a negative relation among leverage, profitability, and liquidity, while all the other independent variables are positively related to leverage.

Additionally, the correlation analysis for the Indonesian firms indicates a positive relation between POT (asset tangibility) and firm size. This result is supported by previous studies that a growing firm is normally inclined to tangibility. The relation between firm size and

growth is also positive, which can be explained by the fact that a firm may increase its fixed assets to expand its size. Growth and profitability are positively related, whereas growth and tangibility are negatively related. It explains how tangibility growth can change the percentage of the fixed assets in total assets.

Table 5 Correlation Coefficient for The Data from Indonesia's Annual Financial Statement (2011-2019)

\hat{A}	<i>Lev</i>	<i>NDTS</i>	<i>POT</i>	<i>Prof</i>	<i>Liq.</i>	<i>FCF</i>	<i>Grow</i>	<i>Co. Tax</i>	<i>Control Size</i>
<i>Lev</i>	1								
<i>NDTS</i>	0.105 (<i><.001</i>)	1							
<i>POT</i>	0.278 (<i><.001</i>)	0.429 (<i><.001</i>)	1						
<i>Prof.</i>	-0.084 (<i><.001</i>)	-0.028 (<i>.152</i>)	-0.043 (<i>.026</i>)	1					
<i>Liq.</i>	-0.169 (<i><.001</i>)	-0.062 (<i>.001</i>)	-0.122 (<i><.001</i>)	0.013 (<i>.509</i>)	1				
<i>FCF</i>	0.160 (<i><.001</i>)	0.056 (<i><.004</i>)	0.081 (<i><.001</i>)	0.103 (<i><.001</i>)	-0.030 (<i>.119</i>)	1			
<i>Grow</i>	0.060 (<i><.002</i>)	0.016 (<i>.400</i>)	0.011 (<i>.559</i>)	0.027 (<i>.160</i>)	-0.006 (<i>.767</i>)	0.014 (<i>.477</i>)	1		
<i>Co. tax</i>	0.130 (<i><.001</i>)	0.061 (<i>.002</i>)	0.086 (<i><.001</i>)	-0.047 (<i>.015</i>)	-0.026 (<i>.177</i>)	0.895 (<i><.001</i>)	0.003 (<i>.871</i>)	1	
<i>Control Size</i>	0.496 (<i><.001</i>)	0.082 (<i><.001</i>)	0.160 (<i><.001</i>)	0.044 (<i><.023</i>)	-0.136 (<i><.001</i>)	0.378 (<i><.001</i>)	-0.011 (<i>.569</i>)	0.317 (<i><.001</i>)	1

Source: Author's Construction

Note: **Size** was computed as the natural log. of total assets; **Lev.** was computed as long-term debt divided by total assets; **NDTS** was computed as depreciation divided by total assets; **POT (Tangibility)** was computed as total fixed assets divided by total asset; **Prof (Profitability)** was computed by dividing (ROA) net income by total asset; **Liq.** was computed by dividing current assets by current liabilities; **FCF** was computed by operating income before tax - tax divided by total asset; **Grow** was computed by dividing market value equity by book value equity; **Co. Tax** was computed by subtracting profit before tax from profit after tax. The significance levels are *** $P < 0.01$, ** $P < 0.05$, and * $P < 0.1$.

7.2 Empirical Results of Taiwan

7.2.1 Descriptive Statistics of The Taiwanese Firms

Table 6 summarizes the dependent variable and all the independent variables. The average total leverage ratio is 0.10, which is a little below that of Indonesia. The minimum leverage of both countries is at the same level of 0.00, but the maximum leverage for Indonesia is a bit higher than Taiwan (0.85). The mean value of Taiwan stands at 10%, which means the non-financial firms in Taiwan could borrow up to 10% of debt to finance their business.

Table 6 Descriptive Statistics of Data from Taiwan's Annual Financial Statement (2011-2019)

Variable	N	Mean	St. Dev	Minimum	Median	Maximum
Size	7,621	15.71	1.54	11.53	15.48	21.95
Lev	7,621	0.10	0.10	0.00	0.08	0.85
NDTS	7,621	0.03	0.03	0.00	0.03	0.33
POT (Tangibility)	7,621	0.45	0.20	0.00	0.44	0.99
Prof	7,621	0.03	0.08	-1.03	0.03	0.67

Liq	7,621	2.04	2.53	0.08	1.67	156.59
FCF	7,621	16.10	10.89	-69.73	19.75	385.95
Grow	7,621	8.84	10.63	29.89	18.94	855.67
Co. Tax	7,621	325,076	1,846,621	-4,969,672	42,096	51,621,144

Source: Author's construction

Note: **Size** was computed as the natural log. of total assets; **Lev.** was computed as long-term debt divided by total assets; **NDTS** was computed as depreciation divided by total assets; **POT (Tangibility)** was computed as total fixed assets divided by total asset; **Prof (Profitability)** was computed by dividing (ROA) net income by total asset; **Liq.** was computed by dividing current assets by current liabilities; **FCF** was computed by operating income before tax - tax divided by total asset; **Grow** was computed by dividing market value equity by book value equity; **Co. Tax** was computed by subtracting profit before tax from profit after tax. The significance levels are *** P<0.01, ** P< 0.05, and * P<0.1.

7.2.2 Correlation Analysis of The Taiwanese Firms

Table 7 confirms that there is a negative correlation among leverage, and profitability, liquidity, firm growth, and corporate tax. A positive relation exists among leverage, firm size, NTDS, pecking order theory (assets tangibility).

According to Table 7, the relation between POT and firm size is positive. This result is in line with previous research, because a growing company is generally inclined towards POT, which leads to a positive correlation between both growth and firm size. We can interpret this result by assuming that when the firm size increases the companies need to increase their fixed assets (i.e., the growth). Furthermore, profitability and firm growth are negatively correlated, whereas tangibility and growth are positively correlated. This further explains that any percentage change in total assets will lead to growth in tangibility, and change in the fixed asset percentage.

The multi-collinearity among our independent variables is not severe as the VIF is not greater than 10.

Table 7 Correlation Coefficient for The Data from Taiwan's Annual Financial Statement (2011-2019)

\hat{A}	<i>Lev</i>	<i>NDTS</i>	<i>POT</i>	<i>Prof</i>	<i>Liq</i>	<i>FCF</i>	<i>Grow</i>	<i>Co. Tax</i>	<i>Control Size</i>
<i>Lev</i>	1								
<i>NDTS</i>	0.111 (<i><.001</i>)	1							
<i>POT</i>	0.442 (<i><.001</i>)	0.382 (<i><.001</i>)	1						
<i>Prof.</i>	-0.141 (<i><.001</i>)	-0.137 (<i><.001</i>)	-0.140 (<i><.001</i>)	1					
<i>Liq.</i>	-0.019 (<i><.096</i>)	-0.093 (<i><.001</i>)	-0.154 (<i><.001</i>)	-0.006 (<i>.599</i>)	1				
<i>FCF</i>	-0.063 (<i><.001</i>)	0.046 (<i><.001</i>)	0.020 (<i><.088</i>)	0.135 (<i><.001</i>)	-0.008 (<i>.487</i>)	1			
<i>Grow</i>	-0.000 (<i>.989</i>)	0.095 (<i><.001</i>)	0.047 (<i><.001</i>)	-0.021 (<i><.068</i>)	-0.014 (<i>.224</i>)	0.204 (<i><.001</i>)	1		
<i>Co. Tax</i>	0.063 (<i><.001</i>)	0.053 (<i><.001</i>)	0.003 (<i>.817</i>)	0.103 (<i><.001</i>)	-0.020 (<i><.084</i>)	0.929 (<i><.001</i>)	0.202 (<i><.001</i>)	1	
<i>Control Size</i>	0.120 (<i><.001</i>)	0.034 (<i>.003</i>)	0.132 (<i><.001</i>)	0.113 (<i><.001</i>)	-0.102 (<i><.001</i>)	0.341 (<i><.001</i>)	0.148 (<i><.001</i>)	0.381 (<i><.001</i>)	1

Source: Author's construction

Note: **Size** was computed as the natural log. of total assets; **Lev.** was computed as long-term debt divided by total assets; **NDTS** was computed as depreciation divided by total assets; **POT (Tangibility)** was computed as total fixed assets divided by total asset; **Prof (Profitability)** was computed by dividing (ROA) net income by total asset; **Liq.** was computed by dividing current assets by current liabilities; **FCF** was computed by operating income before tax - tax divided by total asset; **Grow** was computed by dividing market value equity by book value equity; **Co. Tax** was computed by subtracting profit before tax from profit after tax. The significance levels are *** P<0.01, ** P< 0.05, and * P<0.1.

7.3 Correlation Coefficient of Multiple Linear Regression

A regression model shows the relation between the dependent and independent variables. The coefficient value indicates the extent to which independent variables influence the dependent variables. Table 8 indicates the correlation regression analysis for both Indonesia and Taiwan. The result allows us to interpret all the independent determinants of both countries and explain their relation with the dependent variable.

Table 8 Trade-Off Theory: Indonesia and Taiwan

Variable	DEPENDENT VARIABLE: LEVERAGE			
	INDONESIA		TAIWAN	
	Without Control Variable	With Control Variable	Without Control Variable	With Control Variable
Constant	0.004 (0.004)	0.002 (0.003)	0.0003 (0.001)	0.001 (0.001)
NDTS	-0.011*** (0.013)	-0.012*** (0.012)	-0.339*** (0.063)	-0.300*** (0.065)
POT	0.149*** (0.013)	0.120*** (0.012)	0.193*** (0.011)	0.195*** (0.011)
Co. Tax	-0.000*** (0.000)	-0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)
Control Size		0.042*** (0.002)		0.010*** (0.004)
N	2,342	2,342	6,361	6,361
R²	0.077	0.258	0.051	0.052
F	0.076	0.257	0.05	0.051

Source: Author's construction.

Note: **Size** was computed as the natural log. of total assets; **NDTS** was computed as depreciation divided by total assets; **POT (Tangibility)** was computed as total fixed assets divided by total asset; **Co. Tax** was computed by subtracting profit before tax from profit after tax. The significance levels are *** P<0.01, ** P< 0.05, and * P<0.1.

NDTS is negatively correlated with leverage, but tangible assets (possibility of turnover) is positively correlated with leverage. Co. Tax on the other hand, is a bit more complicated. With or without the control variable, it has a negative relation with leverage with a significance level of P< 0.001 for Indonesia. While Co. Tax of the Taiwanese firms has a positive relation with leverage at a significance level of p*0.01, which means that the determinants support the trade-off hypothesis.

The trade-off theory supports the Taiwanese firms that benefited from the NTDS because they used more debt to finance their project. Our result is similar to the study of Chang-Cheng & Battulga (2019).

Table 9 Pecking Order Theory: Indonesia and Taiwan

Variable	DEPENDENT VARIABLE: LEVERAGE			
	INDONESIA		TAIWAN	
	Without Control Variable	With Control Variable	Without Control Variable	With Control Variable
Constant	0.003 (0.004)	0.002 (0.003)	0.001 (0.001)	0.002** (0.001)
POT	0.142*** (0.012)	0.109*** (0.011)	0.189*** (0.011)	0.195*** (0.011)
Prof	-0.087*** (0.024)	-0.116*** (0.022)	-0.087*** (0.013)	-0.098*** (0.013)
Liq	-0.003*** (0.004)	-0.002*** (0.004)	- 0.000*** (0.000)	- 0.004*** (0.000)
Control Size		0.040*** (0.002)		0.022*** (0.0003)
N	2,342	2,342	6,361	6,361
R2	0.085	0.273	0.079	0.084
F	0.084	0.272	0.078	0.084

Source: Authors construction

Note: **Size** was computed as the natural log. of total assets; **Lev.** was computed as long-term debt divided by total assets; **POT (Tangibility)** was computed as total fixed assets divided by total asset; **Prof (Profitability)** was computed by dividing (ROA) net income by total asset; **Liq.** was computed by dividing current assets by current liabilities. The significance levels are *** P<0.01, ** P< 0.05, and * P<0.1.

The analysis result of the pecking order theory for Indonesia and Taiwan is shown in Table 9. For both countries, POT has a positive relation with firm leverage, while profitability and liquidity have a negative relation with leverage. There is a significance level of $p < 0.01$. Our results about the Indonesian and Taiwanese firms support the pecking order hypothesis, which aligns with the study of Murasalim Melissa M, Kusuma (2017).

Table 10 Agency Cost Theory: Indonesia and Taiwan

Variable	DEPENDENT VARIABLE: LEVERAGE			
	INDONESIA		TAIWAN	
	Without Control Variable	With Control Variable	Without Control Variable	With Control Variable
Constant	0.003 (0.004)	0.002 (0.004)	0.0003 (0.000)	0.0005 (0.003)
FCF	0.000*** (0.000)	0.000*** (0.000)	- 0.000*** (0.000)	-0.0002*** (0.0001)
Growth	0.001*** (0.0004)	0.001*** (0.0004)	- 0.000*** (0.000)	-0.0003*** (0.0001)
Control Size		0.044*** (0.002)		0.0022*** (0.0003)
N	2,342	2,342	6,361	6,361
R2	0.032	0.227	0.005	0.022
F	0.031	0.226	0.005	0.022

Source: Author's Construction

Note: **Size** was computed as the natural log. of total assets; **Lev.** was computed as long-term debt divided by total assets; **FCF** was computed by operating income before tax - tax divided by total asset; **Grow** was computed by dividing market value equity by book value equity. The significance levels are *** P<0.01, ** P< 0.05, and * P<0.1.

Table 10 illustrates our test result on the agency cost to understand the impact of information asymmetry on the non-financial firms of Indonesia and Taiwan. A significant correlation of $P < 0.01$ exists between the free cash flow (FCF) and growth for Indonesian firms. This means that there might

be information asymmetry or agency problems. Moreover, our result for Taiwan shows that the leverage was negatively related to the independent variables when firm size was included as a control variable. Thus our result supports the hypothesis of the agency cost theory for the Taiwanese firms.

7.4 Multiple Linear Regression Model for Indonesia and Taiwan

Table 11 shows a negative relation among leverage and NTDS, profitability, and liquidity in both Indonesia and Taiwan. The correlation between corporate tax and leverage was negative in Indonesia, and positive in Taiwan. There is a significant relation between leverage and the result at a P value of $*0.01$. However, some of the independent variables have a negative relation to leverage in Indonesia while positive in Taiwan, or vice versa. The correlation among growth, FCF, and leverage in Taiwan was negative at a significance level of $P < 0.01$. It indicates a positive relation with leverage for the Indonesian firms at a significance level of $P < 0.01$. Firm size is the translog of the total assets, and it has a positive relation to leverage in both countries at a significance level of $P < 0.01$.

Similarity between the results of the two countries is that both show significant results. Furthermore, the significance level is either positively or negatively related to leverage. Our result is close to Muralism et al. 's (2017) research on Indonesia, Malaysia, and Thailand, which supports the trade-off and pecking order theories. For Taiwanese firms, our research supports the theory of trade-off, pecking order and agency costs. Whereas for the Indonesian firms, our research supports the pecking order theory.

Table 11 Multiple Linear Regression Model for Indonesia and Taiwan (Data from The Annual Financial Statements of Non-financial Firms in 2011-2019)

Variable	INDONESIA		TAIWAN	
	Without Control Variable	With Control Variable	Without Control Variable	With Control Variable
Constant	0.004	-0.545***	-0.0003	0.108***
	(0.004)	(0.025)	(0.001)	(0.012)
NDTS	-0.011***	-0.016***	-0.339***	-0.241***
	(0.013)	(0.011)	(0.063)	(0.004)
POT	0.149***	0.120***	0.193***	0.230***
	(0.013)	(0.011)	(0.011)	(0.006)
Prof.	-0.087***	-0.136***	-0.087***	-0.114***
	(0.024)	(0.021)	(0.013)	(0.014)
Liq.	-0.003***	-0.002***	-0.000***	-0.002***
	(0.0004)	(0.0003)	(0.000)	(0.0004)
FCF	0.000***	0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Grow	0.001***	0.001***	-0.000***	-0.000***
	(0.0004)	(0.0003)	(0.000)	(0.000)
Co. Tax	-0.000***	-0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Control Size		0.042***		0.008***
		(0.002)		(0.001)
N	2,635	2,635	7,621	7,621
R ²	0.130	0.031	0.212	0.223
F	0.127	0.308	0.211	0.222

Source: Author's Construction

Note: **Size** was computed as the natural log. of total assets; **Lev.** was computed as long-term debt divided by total assets; **NDTS** was computed as depreciation divided by total assets; **POT (Tangibility)** was computed as total fixed assets divided by total asset; **Prof (Profitability)** was computed by dividing (ROA) net income by total asset; **Liq.** was computed by dividing current assets by current liabilities; **FCF** was computed by operating income before tax - tax divided by total asset; **Grow** was computed by dividing market value equity by book

value equity; **Co. Tax** was computed by subtracting profit before tax from profit after tax. The significance levels are *** P<0.01, ** P< 0.05, and * P<0.1.

Table 12 Models with Fixed and Random Effect for Indonesia and Taiwan (Data From The Annual Financial Statement of Non-financial Firms in 2011-2019)

Variable	DEPENDENT VARIABLE: LEVERAGE			
	INDONESIA		TAIWAN	
	Fixed	Random	Fixed	Random
Constant	0.001***	0.545***	0.001***	0.110***
	(0.003)	(0.024)	(0.001)	(0.025)
NDTS	-0.013***	-0.016***	-0.423***	-0.350***
	(0.011)	(0.011)	(0.066)	(0.009)
POT	0.115***	0.120***	0.200***	0.218***
	(0.012)	(0.011)	(0.011)	(0.012)
Prof.	-0.134***	-0.136***	-0.108***	-0.123***
	(0.022)	(0.002)	(0.013)	(0.029)
Liq.	-0.002***	-0.002***	0.004***	0.003***
	(0.0004)	(0.0003)	(0.0003)	(0.001)
FCF	0.000***	0.000***	0.00000***	-0.00000***
	(0.000)	(0.000)	(0.000)	(0.000)
Grow	0.001***	0.001***	0.000***	-0.000***
	(0.0003)	(0.0003)	(0.000)	(0.000)
Co. Tax	-0.000***	-0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Control Size	0.041***	0.043***	0.017***	0.008***
	(0.002)	(0.002)	(0.004)	(0.002)
N	2,635	2,635	7, 621	7, 621
R ²	0.28	0.31	0.093	0.117
F	0.278	0.308	0.091	0.116

Source: Author's Construction

Note: **Size** was computed as the natural log. of total assets; **Lev.** was computed as long-term debt divided by total assets; **NDTS** was computed as depreciation divided by total assets; **POT (Tangibility)** was computed as total fixed assets divided by total asset; **Prof (Profitability)** was computed by dividing (ROA) net income by total asset; **Liq.** was computed by dividing current assets by current liabilities; **FCF** was computed by operating income before tax - tax divided by total asset; **Grow** was computed by dividing market value equity by book value equity; **Co. Tax** was computed by subtracting profit before tax from profit after tax. The significance levels are *** P<0.01, ** P< 0.05, and * P<0.1.

7.5 Regression Analysis Result of Fixed and Random Effect for Both Indonesia and Taiwan

The fixed model and random model were used to examine the panel data from Indonesia and Taiwan after the regression analysis. The Hausman and Lagrange Multiplier test was conducted to select the appropriate model that can predict the debt policy of our sample firms.

Table 13 Hausman Test Result for Indonesia and Taiwan

Hausman Test	Chi Sq.	Chi -Df	Prob:	Selected Model
Indonesia	10.129	7	0.2843	Random Effect
Taiwan	525.25	6	2.2	Not supported

Source: Author's Construction

Table 13 enables us to select the appropriate model for the null hypothesis analysis. The P value of the Hausman test is 0.2843, which is greater than 0.05. Thus we conclude that our model for Indonesia is significant and confirm that the random effect model is appropriate.

We further conducted an additional test, Lagrange multiplier Test (LMT), to help validate the random effect model indicated by the Hausman test (see Table 14 for the result of the LMT). The P value of the LMT result is 0.3728, which is still greater than 0.05. Thus, we conclude that our model for Indonesia is significant and confirm that the random effect model is significant.

Table 14 Lagrange Multiplier Test Result for Indonesia and Taiwan

Test Summary	Chi Sq.	Chi-Df	Prob
Cross-sectional	0.81838	1	0.3728

Source: Author's Construction

7.6 Hypothesis Test Results and Interpretations

Hypothesis 1A: Non-debt Tax Shield (NDTS). The correlation between NDTS and leverage is negative for both countries according to our result. When the NDTS is reduced, the revenue (income) for both countries does not go into a higher tax bracket. However, both countries have a fixed corporate tax rate on the firms' income. Hypothesis 1A is thus accepted as the result showed a significant negative correlation for both countries at a level of 0.01.

Hypothesis 1B: POT (Tangibility). Both Indonesia and Taiwan show a positive relation between POT and leverage. Tangibility is a resource for the firms to generate more shareholders equity, while having their fixed liability in line with the capital structure of the companies. Tangible assets can be used as collaterals to borrow debt. Hence some studies argued that larger firms can borrow debt more easily than small ones. For both countries, there is a significant positive relation at a level of 0.01. We confirm that both Hypothesis 1A and 1B are accepted under the predicted model. H1A supports the trade-off concept while H1B supports the pecking order theory.

Hypothesis 2A: Profitability. In our research, profitability is negatively related to leverage in both Indonesia and Taiwan at a significance level of 0.01%. This indicates that those non-financial firms that are profitable have more reliance on equity than debt. However, it can be explained as higher profitability levels prevent those firms from relying on debt. This evidence is supported by the previous study of Tariq and Hijab (2006).

Hypothesis 2B: Liquidity. We acquired a result that showed the Indonesian firms were not very liquid, so they depended more on external funding, instead of converting their assets into cash to generate more internal funds. However, for Taiwan there is a significant positive correlation at 0.01, which indicates that the Taiwanese firms preferred internal funding since they were more liquid, and could easily convert their assets for project financing.

Hypothesis 3A: Free Cash Flow (FCF). FCF and leverage are positively related for the Indonesian firms at a significance level of 0.01%, which means that they did not have enough FCF to support their projects with a positive NPV. This result does not support our Hypotheses 3A. However, for the Taiwanese firms, there is a significant negative relation between FCF and leverage. We conclude that the firms in Taiwan have adequate free cash flow to finance their projects. Managers need to avoid negative NPV projects to prevent agency problems.

Hypothesis 3B: Growth. Growth and leverage are positively correlated for Indonesian firms, while negatively correlated for Taiwanese firms. The Indonesian firms used more of their FCF to invest in growth opportunities. As compared to equity, Indonesian firms relied more on external financing for their new projects. However, the result is opposite for the case of

Taiwan, they depended more on external sources to fund their new projects to avoid agency problems, which gave them less growth opportunity. Both results are at a significance level of 0.01%.

Hypothesis 3D: Corporate Tax. Leverage and corporate tax are negatively correlated in Indonesia, but positively correlated in Taiwan. Despite the benefit of the tax shield when firms use higher debt to finance their projects, our result for Indonesia did not support the trade-off theory. Instead, they preferred to fund their projects with internal funds. The negative correlation may be due to the tax rate. In contrast, Taiwan's non-financial sectors do benefit from the tax shield under the trade-off theory. Our results for both countries are at a significance level of 0.01%.

Hypothesis 3E: Firm Size. In both countries, we found a positive correlation between leverage and firm size. We conclude that in both countries, the smaller firms are more likely to avoid borrowing, while the larger firms prefer borrowing. The result confirms that the larger firms had a higher leverage value compared to the smaller firms. It supports the theory of bankruptcy cost on leverage, stating that the fixed cost of bankruptcy contains a smaller portion compared to the whole firm's value. Furthermore, the cost of bankruptcy was less of a concern for the larger firms, so they were less hesitant to take on more debt for new project financing.

Table 15 Summary of Result In All Variables For Indonesia and Taiwan

Variables	Leverage	Theory		Variable	Leverage	Theory
NDTS	Negative	TOT		NDTS	Negative	TOT
POT	Positive	TOT		POT	Positive	TOT
Prof.	Negative	POT		Prof.	Negative	POT
Liq.	Negative	POT		Liq.	Positive	TOT
FCF	Positive	ACT		FCF	Negative	ACT
Grow.	Positive	ACT		Grow	Negative	ACT
Co. Tax	Negative	TOT		Co. Tax	Positive	TOT

Source: Author's Construction

Note: TOT stands for Trade-Off Theory; POT stands for Pecking Order Theory; ACT stands for Agency Cost Theory.

8. CONCLUSIONS

Based on the panel data from 2011-2019, we examined the determinants of capital structure for the non-financial firms listed on Indonesian and Taiwanese stock exchanges. The data were collected from the annual financial statements of these firms. Our sample data was collected from different databases: Compsat, Indonesian IDX, and Taiwanese Economic Journal.

The relation between leverage and profitability for the non-financial firms in both markets was consistent with the pecking order theory. Furthermore, the correlation between leverage and growth was positive in Indonesia, but negative in Taiwan. Our research concluded that internal funds generated by the Indonesian firms might not suffice their growth needs. External funding might thus be the best option for expansion. In contrast, Taiwan's evidence was consistent with our concept of agency costs. The research also confirmed a positive correlation between leverage and POT (tangibility), and a negative correlation between leverage and NDTS.

The result of the regression analysis for Indonesia showed a negative relation among NTDS, profitability, corporate tax, and the dependent variable leverage. However, our result for Taiwan showed that corporate tax was positively correlated with leverage and it supported

our research hypothesis. In addition, the results revealed that leverage, growth, tangible assets, free cash flow and firm size were positively correlated for the Indonesian firms. In Taiwan, leverage was negatively correlated with free cash flow, while corporate tax has a positive correlation with leverage in both countries. We conclude that leverage and profitability are negatively correlated, while growth in Taiwan and Indonesia has negative and positive correlation respectively with leverage.

9. LIMITATIONS

Our research only focuses on the context of the Indonesian and Taiwanese non-financial firms listed on their stock markets, without considering different sectors for sectoral analysis. We suggest future research to include the economic condition of these two countries by measuring the GDP growth, taxation effects, risk, and corporate governance. Also, the dividend that pays out to the ownership to address the agency problems. We recommend future research to collect data for the negative cash flow and study its impacts on firm leverage (debt policy). Furthermore, qualitative research should be conducted through in-depth interviews or focused group meetings between shareholders and managers to understand the impact of agency costs, and to better implement a better debt policy for their firms. Due to the data problems and limited timeframe, we did not collect data to analyze the impact of growth under overinvestment and underinvestment policy. Therefore, we recommend further studies to take a close look at this topic. Additionally, we suggest that future research should consider the impact of corporate governance on agency cost theory for both countries. This can be done with a structural interview with shareholders and other stakeholders. Also, analyze the governance within industries to determine if it will impact the capital structure debt policy.

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