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Stock Return, Capital Structure, and Inertia

Evidence from Indonesia

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Abstract

The primary focus of this thesis is to investigate whether Indonesian firms are inert towards the readjustment of capital structure. The Fama-Macbeth regression is utilized as a means to estimate the relevance of stock return towards the current leverage ratio. The findings suggest a near 1-to-1 co-movement between stock return and capital structure over a one-year horizon. While in the longer horizon the co-movement diminished, and past debt ratio, as well as a static target ratio, has become increasingly important. Thus, this suggests a non-readjustment behavior. Moreover, this behavior also persists in firms who experienced stock price changes continuity (current and future price changes in the same direction). Interestingly, Indonesian firms are actively issuing debt and equity, which can cut more than half of the stock return induced capital structure changes in the 5-year horizon. Thus, these findings suggest that Indonesian firms are not inert but instead have a slow readjustment behavior. However, corporate issuing motives remain to be a mystery.

Keywords: Capital structure, stock return, readjustment, inertia

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Chapter 1: Introduction

Modern capital structure theories suggest that firms will benefit from maintaining an optimal capital structure. These benefits are achieved by balancing the cost (e.g., bankruptcy cost and agency cost) and benefits (e.g., tax shield and capital gain) from the mixture of debt or equity as their source of financing.

However, the stock price fluctuates continuously, and thus, so does capital structure. Moreover, stock price changes can oftentimes last for a long time. In such cases, firms can benefit from a readjustment as suggested by dynamic trade-off theory (Fischer, Heinkel, & Zechner, 1989) and market timing timing theory (Baker and Wurgler, 2002). Oddly, although managers claim to have a target capital structure which they seek to maintain (Graham and Harvey, 2001), empirical evidence suggests that firms only did a minimal readjustment in response to these external shocks. Even in the event of a continuity in price changes (Welch, 2004; Drobetz & Pensa, 2007).

Thus, this behavior of making zero capital structure readjustment regardless of its stock price might indicate inertia[1], a concept first introduced by Welch (2002). Considering these research background and as the thesis will take Indonesian firms as the observation (explained in the next paragraph), an important question to ask is:

Are Indonesian firms inert towards a capital structure readjustment?

This paper revisits the discussion of whether firms alter their leverage ratio to undo the effect of changing stock price. In contrast to Welch's paper (which took the US as the subject country), this paper chose Indonesian firms as the research subject due to two main reasons.

First, in recent years (2019-2020), there has been a significant increase in the number of listed companies in the Indonesia Stock Exchange (IDX)[2]. Thus, this research would be relevant for the increasing number of managers in listed Indonesian firms. Especially in terms of determining its capital structure policies prior to and post IPO. The relevancy also extends to investment managers when dealing with company valuation as leverage ratio is essential in WACC calculation.[3]

[1] On an important note, inertia is different from non-adjustment as the latter has a wide variance of debt or equity issuance after the shocks (i.e., stock price changes). While inertia stipulates a zero variance, meaning a perfect non-adjustment

[2] Within the years 2019 and 2020, there is a significant increase of companies going public. There are >50 companies during the period compared to the last five years where on average, there are only ~30 companies listed per year

[3] WACC stands for the weighted average cost of capital. This metric is often used as a discount rate in equity valuation practices.

Secondly, Indonesia Stock Exchange (IDX) is one of the fastest-growing capital markets in the Asia Pacific region over the past ten years. Being a growing market, firms would have a higher probability to experience stock price changes continuity. Moreover, debt issuance has become cheaper over the past decade, as seen from the declining Indonesian lending interest rate. Thus, different from the US market, readjustment through debt issuance may be more cost-efficient and a more impactful benefit for Indonesian firms. Therefore, further research is needed to test whether Indonesian firms behave according to the existing capital structure theories.

Furthermore, there have been many studies that look at the effect of past stock return and how it influences the firms' active issuing decision (Baker and Wurgler, 2002), including in the Indonesian context (Setyawan & Frensidy, 2012). However, the main interest of this thesis is to tests whether Indonesian firms employ this debt or equity issuance to undo the effect of stock return. Despite the importance of this subject, no research paper has explicitly discussed this topic in the Indonesian context.

This study will take 127 listed Indonesian firms included in the KOMPAS100 index to see the relevance of stock return towards capital structure over a different time horizon. Furthermore, by isolating the dynamic component of leverage ratio, we can test whether Indonesian firms have an active issuance activity. Thus, through these analyses, we will check for inertia. Lastly, we will test for different stock price scenarios to test the consistency of the aforementioned findings.

Using the aforementioned methods, this thesis finds that Indonesian firms are not inert. The impact of stock return remains to be more important in explaining the current debt ratio relative to past debt ratio and a static target ratio, even in a 10 years horizon. Interestingly, Indonesian firms are shown to have a lively debt and equity issuance, which can counteract more than half of the stock return induced capital structure changes in the 5 years horizon. Moreover, this non-readjustment behavior is also seen even when current and future price stock price changes in the same direction.

The remaining part of the thesis will be structured in five sections. The second section will discuss relevant theories and empirical findings from previous studies on capital structure and stock return. This section will also introduces the hypothesis based upon the research objective. The third section explains the data and the research methodology, including the main regression model of this thesis. Next, the findings will be discussed and compared with Welch's findings in the US market. The last section will conclude this thesis.

Chapter 2: Theoretical Background

This section will first lay out the relevant theories regarding capital structure before diving deeper into discussing the relationship between stock return and capital structure. Lastly, we will contrast the difference between the US and the Indonesian stock market.

2.1. Leading Optimal Capital Structure Theories

Over the past five decades, various modern capital structure theories have suggested the benefit (and cost) of having an optimal capital structure. In this section, I have selected a few of the most influential capital structure theories, which may also be a suitable model to explain inertia.

2.1.1. Modigliani and Miller Irrelevance Theory

Franco Modigliani and Merton Miller's first proposition argues that financing structure is irrelevant for the value of a company in a perfect capital market[4]. Although it would be hard to test this theory (as a perfect market condition does not exist), MM's irrelevance theory serves its purpose as a benchmark between the value of a company in the perfect market setting relative to when a particular condition is violated (Myers, 2003).

Moreover, an addition to this theorem is that a tax shield may influence the company's value as interest is tax-deductible. Thus, with more debt, the value of a company increases (Modigliani and Miller, 1963). Miller's further development includes personal income and corporate tax rate and how it can influence its value (Miller, 1977).

2.1.2. Trade-Off Theory

This theory proposes that firms will seek a debt ratio that balances the benefit of utilizing leverage (i.e., tax shield) relative to its cost (i.e., risks from bankruptcy cost). Thus, according to this theory, firms can maximize their value by adjusting their capital structure towards a target debt ratio (Myers, 2003)

An important concept that is an extension of this theory is called the "target adjustment model." A study by Hovakimian, Opler, and Titman (2001) utilize this concept to estimate the firm's target ratio (influenced by stock return)[5] to estimate the target ratio and predict whether firms would issue (or retire) debt or equity to reach this target ratio. Moreover, in relation to this study, the trade-off theory also predicts that firms with high stock volatility are more likely to be in financial distress. Thus, they would use less debt (Scott, 1976).

[4] A perfect market setting refers to a competitive and frictionless market in which there is no brokerage cost, taxes, nor bankruptcy cost

[5] The study regresses the debt/asset ratio with the stock return, market to book ratio, and firm size

2.1.3. Agency Theory

The agency theory considers the misalignment of interest between shareholders (as principals) and its agent.[6]. The agents may seek private benefits such as higher-than-market salaries, while shareholders may be interested in capital gains by maximizing the firm's value (Myers, 2003).

Thus, this interest misalignment can influence the capital structure of a company. In the case of the firm seeking external funding, companies will prefer debt over equity. A reason for this is that equity issuance will create a significant agency cost as the new stockholder will bear the private benefits. While with debt issuance, the costs arising from private benefits are internalized (Myers, 2003). However, this preference over debt will shift up until the point in which raising excessive debt becomes expensive as it increases default risk.

2.1.4. Pecking Order

Introduced by Myers and Majluf (1984), this theory postulates that there is asymmetric information where investors do not have the complete information of the firm while managers do. Therefore, the pecking order explains that firms will first prefer financing through internal funding (e.g., retained earnings). But when it is not available, they will finance through debt, then equity as a last resort (Myers, 2003)

This theory can also explain Welch's findings on why companies make minimal adjustments to their capital structure. Because, in this theory, stock issuance can either be a positive (expected growth opportunity) or a negative signal (overvalued shares) to the investor. For example, in a significant increase in stock price, making the stock to be overvalued, managers should be reluctant to issue equity (Welch, 2004) due to the negative presumption by the investors.

2.1.5. Market Timing Theory

Market timing theory suggests that managers will seize the opportunity (of cost of equity fluctuation) when stock mispricing occurs (Baker and Wurgler, 2002). Thus, this theory would partially explain how stock price changes can motivate companies to change their capital structure in relation to this thesis.

[6] An agent refers to individuals who act on behalf of the shareholder, such as the company's managers.

This theory is supported with the findings from a survey by Graham and Harvey (2001), where share under/overvaluation (67% of respondents) and recent stock price increase (63% of respondents) are essential factors that managers consider when issuing new shares.

While Brav (2005) also shows a piece of empirical evidence to support this theory. The author finds that an undervaluation of the stock price is an essential factor in share repurchase decisions.

2.2. Stock Return and Capital Structure Relationship

With the capital structure theories explained previously, we can develop robust reasoning on the correlation between stock return and capital structure as the following.

2.2.1. Negative Correlation

Many studies have shown that companies will issue equity following an increase in price (Masulis & Korwar, 1986; Baker & Wurgler, 2002). The main explanation for this is similar to what the market timing theory predicts. In an inefficient market, only managers will know the company's intrinsic value and whether the stock is over or undervalued. Thus, firms would issue more equity in an increase of stock price when it is deemed to be overvalued (Stein, 1996; Baker & Wurgler 2002).

Another explanation for this can be explained by the pecking order theory and the changes in adverse selection costs (Frank & Goyal, 2008). As explained in the previous section, firms will prefer to issue debt over equity according to this theory. However, the pecking order made an exception that firms with no financial constraints may also issue equity over debt in a case of stock overvaluation (Dong, 2012).

Concerning this adverse selection, growth opportunities can also play a role in explaining this correlation. Market to book ratio (M/B) has been a standard proxy for growth opportunities (Frank & Goyal, 2009). However, M/B is also influenced by stock mispricing. Thus, an increase in M/B (to an overvaluation) due to an increase in stock price may also create lower leverage as firms exercise their growth opportunity through equity issuance (Dong, 2012).

2.2.2. Positive Correlation

A few authors also found a positive relationship between stock price and debt ratio. For example, the static trade-off theory argues that an increase in stock price will reduce the market debt ratio. Thus, especially for firms that already have a low market debt ratio, they will be more motivated to issue more debt as an attempt to achieve the optimum debt ratio (Frank & Goyal, 2009).

Moreover, firms are subject to hostile takeover and scrutiny/demand by the board members. As a result, firms are likely to adhere to their demand to maintain the optimal capital structure despite a decreasing stock price (Hovakimian, Opler, & Titman, 2001). Thus, the debt level would be constant, making the overall debt ratio to decrease

Despite two different correlations from the available theories, we can find a commonality that companies are seeking to achieve the optimal/target capital structure with a purpose to maximize its value (Fama & French, 2002). However, the capital structure (of listed companies) will also dynamically change following its stock price. Thus, the question is, do firms adjust their capital structure after a change in stock price, or do they let a fluctuating debt ratio?

2.3. Contrasting US and Indonesian Market

Welch's (2004) research took listed companies in S&P 500 (United States), while this thesis will look at listed Indonesian companies. Therefore, readers can expect the following differences of both stock markets that may influence firms' readjustment behavior.

2.3.1. The United States Stock Market

The US market is known to have transparency in terms of information dissemination/disclosure. Moreover, US firms are found to have a target capital structure they seek to achieve, although they tend slowly adjust towards it (Fama & French, 2002). While Huang and Ritter (2009) attempted to reconcile the mixed findings of US firms' adjustment speed towards the optimal capital structure. They find that US firms have a moderate SOA[7], faster than the findings by Fama & French.

[7] Huang and Ritter utilize the long differencing estimator and firm fixed effect

Other authors also find that firms dynamically rebalance their capital structure after accounting transaction cost (Leary and Roberts, 2005; Kayhan and Titman, 2007). Moreover, a survey by Graham et al. suggests that managers are not sensitive to these costs as long as they are able to obtain their optimal capital structure.

However, Welch (2004) argued that US firms make a minimal adjustment on their capital structure to undo the effect of stock price changes. Moreover, equity issuance is meant to amplify the stock return variation, not to undo the effect (Welch, 2004).

2.3.2. The Indonesian Stock Market

Haron (2016) also found that Indonesian firms do practice target capital structure. This finding is also supported by a survey by Baker and Powell (2012) that finds Indonesian listed firms to have a target capital structure to maintain, despite being rated in a low level of importance.

As mentioned previously, stock volatility increases the probability of financial distress (Scott, 1976). Moreover, being categorized as an emerging market (Morck, Yeng, & Yu, 2000), the Indonesian stock market has shown a volatile characteristic. This volatility is affected by macroeconomic variables, including exchange rate and interest rate (Rahmi, Muttaqin, & Jazil, 2016).

Therefore, it would be beneficial for Indonesian firms to have a rapid capital structure readjustment speed as suggested by a few authors (Reinhard & Li, 2010; Ameer, 2010; Kewal, 2019), thus supporting the dynamic trade-off theory (Haron, 2016). Moreover, market timing theory (Kusumawati and Danny, 2006; Setyawan & Frensidy, 2012) and pecking order theory are also found to be influential in Indonesian capital structure decisions, especially after the 1988 financial reformation (Haron, 2016). However, an important caveat with regards to capital structure readjustment (especially through equity) is the high gross spread as a measure for underwriting costs in Indonesia relative to Asia Pacific countries and the US (Torstila, 2003).

2.4. Hypothesis Development

The "stark" hypotheses by Welch (2004) are structured as follows:

1. Perfect readjustment hypothesis ($H_0 : \alpha_1 = 1, \alpha_2 = 0$)
   The null hypothesis proposes that firms will continuously/perfectly adjust their debt ratio according to the stock return to maintain their target capital structure.
2. Perfect non-readjustment ($H_1 : \alpha_1 = 0, \alpha_2 = 1$)
   On the other hand, this alternate hypothesis proposes that firms do not alter their capital structure despite the stock return dynamics.

However, this extreme hypothesis is not realistic, and Welch expects a convex combination strategy. Moreover, the primary purpose of this thesis is to identify whether Indonesian listed firms undo the effect of stock return towards their optimal capital structure. Thus, based on the research question, Welch's main hypotheses are modified as follows:

1. H_0 = Indonesian listed firms dynamically adjust their capital structure to undo the effect of fluctuating stock return.
   We have seen that Indonesian firms do have a target capital structure that they want to maintain (Haron, 2016; Baker and Powell, 2012). Moreover, previous studies have estimated the speed of adjustment (Reinhard & Li, 2010; Ameer, 2010; Kewal, 2019). However, there have been no studies that test whether Indonesian firms do this to undo the effect of stock return fluctuations.

2. H_1 = There is a capital structure non-readjustment behavior in Indonesian firms.
   Welch identified a few possible explanations on why firms make minimal capital structure adjustments to counteract the stock return influence, two of which are the direct and indirect transaction costs. However, other authors found that firms issuing activity have appropriately rebalanced the capital structure changes due to stock return shocks (Learly and Roberts, 2005). Thus, further research is needed.

Chapter 3: Data and Methodology

This chapter will first discuss the source of data and sampling selection processes. While the main regression specification and regression methods are discussed in the methodology section.

3.1. Data Source

The sample selected in this paper are publicly traded Indonesian companies included in the KOMPAS100 index throughout 2010-2020. The data are retrieved through financial market databases such as Bloomberg and Refinitiv, which are accessed through Erasmus Data Service Center (EDSC). Moreover, the regressions were performed through statistical software, Stata.

3.2. Sample Selection

The KOMPAS100 index is selected to include companies with large market capitalization, high liquidity, and thus overall solid fundamentals. Moreover, KOMPAS100 would be a representative index as it accounts for 70-80% of the total market capitalization of the Indonesia Stock Exchange. This index also selects firms with a high transaction value and trading frequency over the past 12 months. Therefore, it assures that it includes actively traded companies, reducing the risk of having irregularities in data sampling.

The year 2010-2020 is selected as it includes shocks and recovery throughout IDX history. This time frame includes political uncertainty due to the presidential election in 2014 and the Coronavirus pandemic in 2020. Therefore, we can take into account firms' behavior during various economic/market conditions. Moreover, prior to 2010, a considerable number of companies were delisted due to the 2008 financial crisis. Thus, making a higher probability for issues due to missing data.

Using the purposive sampling technique, 224 companies that have been (and currently) included in the KOMPAS100 index are selected within the specified period. Moreover, 16 delisted companies are filtered out to reduce survivorship bias and 50 companies with incomplete financial data. As this research revolves around capital structure, this study will filter out 31 companies included in the Banking and Insurance industry according to the Global Industry Classification Standard (GICS) as they are subject to strict regulations (Drobetz & Pensa, 2007; Rajan & Zingales, 1995). Lastly, as we will be testing for at least k of 1 year, this study will be including companies with historical data that is complete for at least two fiscal years. As a result, there are 127 companies included as the sample.

3.3. Methodology

Welch utilizes the Fama-Macbeth regression. Thus, this method takes the time series of cross-sectional regression of 127 companies in multiple points of time (2010-2020), as discussed in the previous section.

The main regression based on Ivo Welch's paper is as the following:

(1) $ADR_{t+k} = \alpha_0 + \alpha_1 \,.\, ADR_t + \alpha_2 \,.\, IDR_{t,t+k} + \epsilon_t$

Main variables explanation:

3.3.1. Actual debt ratio (ADR)

The variable is calculated by dividing the book value of debt with the sum of the book value of debt and the market value of equity combined at time t. The ADR coefficient (α_1) indicates the influence of past debt ratios towards the current ones.

$$(2)\ \mathrm{ADR}_t = \frac{D_t}{E_t + D_t}$$

3.3.2. Implied debt ratio (IDR)

This variable comes about if the company neither issues net debt or equity. This variable explains the debt ratio that is adjusted to the stock return net of dividend. IDR coefficient (α_2) implicates the drift of the firms' capital structure due to stock return fluctuations. Thus, it can be estimated with the following formula:

$$(3)\ \mathrm{IDR}_{t,t+k} = \frac{D_t}{E_t \,.\, \left(1 + x_{t,t+k}\right) + D_t}$$

*The "x" variable measures the stock returns net of dividend.

Key takeaway from the regression model

The primary regression model corresponds to the "stark" hypothesis of Welch's paper. It tests whether the future actual debt ratio (ADR_{t+k}) is influenced by the historical gearing ratio (ADR_t) or do companies adjust their debt ratios following their stock return fluctuation ($IDR_{t,t+k}$).

Therefore, an $\alpha_1 = 1$ and $\alpha_2 = 0$ indicates a perfect readjustment toward the optimal debt ratio at time t. In comparison, $\alpha_1 = 0$ and $\alpha_2 = 1$ indicate the alternate hypothesis of a perfect non-readjustment as firms would let a 1 to 1 co-movement between their capital structure and stock return. Moreover, including a constant of (α_0) represents the importance of a static/constant target debt ratio.

The following variables explain the dynamics of capital structure in terms of debt and equity:

3.3.3. Total debt net issuing activity (TDNI)

This variable includes new debt issuance and retirements. As a result, the book value of debt (at time t+k) is estimated in Equation 4 below. Thus, a positive sign of TDNI represents a net debt issuance. In contrast, a negative sign indicates a net debt retirement.

$$(4)\ D_{t+k} = D_t + TDNI_{t,t+k}$$

3.3.4. Net equity issuing (ENI)

Similar to TDNI, the market value of equity changes corresponding to net equity issuing activity (new stock issuance & repurchase) and its stock return (net of dividend). Thus, the market value of equity (at time t+k) would be as follows:

$$(5)\ E_{t+k} = E_t \,.(1 + x_{t,t+k}) + ENI_{t,t+k}$$

Therefore, the actual debt ratio (ADR) at t+k can be extended as follows:

$$(6)\ ADR_{t+k} = \frac{D_{t+k} + TDNI_{t,t+k}}{D_t + TDNI_{t,t+k} + E_t \,.\left(1 + x_{t,t+k}\right) + ENI_{t,t+k}}$$

3.3.5. The dynamic components of capital structure

By excluding return-induced effects (denoted in $x_{t,t+k}$), we can isolate the influence of financing activities as in Equation 7 below. Thus, the net debt and equity issuing activity can be estimated as in Equation 8 and 9, respectively.

$$(7)\ \frac{(D_t + \mathrm{TDNI}_{t,t+k})}{(D_t + \mathrm{TDNI}_{t,t+k} + E_t + \mathrm{ENI}_{t,t+k} - \mathrm{DIV}_{t,t+k})}$$

Net debt issuing activity:

$$(8)\ \frac{(D_t + \mathrm{TDNI}_{t,t+k})}{(D_t + \mathrm{TDNI}_{t,t+k} + E_t)}$$

Net equity issuing activity:

$$(9)\ \frac{D_t}{(D_t + E_t + \mathrm{ENI}_{t,t+k} - \mathrm{DIV}_{t,t+k})}$$

Chapter 4: Result and Discussion

This section will first present the sample's descriptive statistics, followed by the regression results from the main specification and robustness checks. Lastly, the section will end with an interpretation of the findings.

4.1. Descriptive Statistics

The following variables show a "pseudo" market value of the company. It is calculated using the book value of debt and market value of equity (denoted in D and M, respectively). Panel A of Table 1 shows that the average selected sample has a market value of 32 trillion rupiahs or ~2.2 billion US dollars. In comparison, the median reports a lower value of 11 trillion rupiahs or an equivalent of ~760 million US dollars. We can retrieve the actual debt ratio (ADR) as the dependent variable from the company's market value. Moreover, the ADR shows a mean of 33.2% and a median of 28.2%,

Panel B. shows the dynamics of debt ratio components, including debt and equity net issuing activity (denoted in TDNI and ENI, respectively). It is important to note that this "net" issuing activity does not differentiate between issuing and retiring activity. Moreover, these indicators are normalized by the firm size (measured in market value). To account for outliers, the sample firms are winzorized at a 5% cutoff.

Over ten years, Indonesian firms have shown a 16.4% average 1-year stock return (21% unwinsorized) and paid a 3.1% dividend payout (5% unwinsorized). As a result, there is a 12% stock price induced capitalization change (21% unwinsorized). Furthermore, Indonesian firms are shown to issue 4.4% of the debt, 2.1% equity, and 7% of total capital issuance. In the long run, this debt and equity net issuance has been more substantiated by 10.8% and 5.5%, respectively.

As dividend payments show a small dispersion (2.5%), we can expect both $r_{t,t+k}$ (total stock return) and $x_{t,t+k}$ (stock return net of dividend) not to influence our results (in the next chapter). Moreover, this small dispersion of dividend payment may also create a slight difference in the standard deviation of both net and total return induced equity growth of 35.5% and 35.3%, respectively. This more significant stock return-induced equity growth is larger than the managerial activity-induced capital expansion/issuance of 10.22%. From this, we can infer that firms are not inactive to issuing activity as proposed by a few studies (Welch, 2004; Drobetz & Pensa, 2007)

Table 1. Descriptive Statistics

		1-Year			5-Year		
		Mean	Median	Std. Dev.	Mean	Median	Std. Dev.
Panel A: Capital structure ratios (%) and firm size (in rupiah)							
Actual Debt Ratio	ADR_{t+k}	33.23	28.18	25.88			
Implied Debt Ratio	$IDR_{t,t+k}$	34.14	27.45	28.12	33.07	21.79	32.02
Market value of Firms	$E_t + D_t$	32,181	10,656	64,568			
Total Assets	Asset	18,767	7,425	33,752			
Panel B: Issuing activities (%) normalized by firm size and winsorized at 5% cut off							
Net Debt Issuance	$TDNI_{t,t+k}$	4.43	2.47	10.76	10.84	8.35	16.51
Net Equity Issuance	$ENI_{t,t+k}$	2.11	0.00	4.79	5.54	0.22	8.60
Total Capital Issuing Activity	$TDNI_{t,t+k} + ENI_{t,t+k}$	7.05	4.46	12.47	16.93	13.28	19.82
Dividend Payments	$DIV_{t,t+k}$	3.12	2.33	2.51	9.84	7.34	8.58
Managed Equity Expansion	$ENI_{t,t+k} - DIV_{t,t+k}$	0.88	0.00	2.45	2.05	0.00	4.15
Managed Expansion	$TDNI_{t,t+k} + ENI_{t,t+k} - DIV_{t,t+k}$	6.49	4.30	10.22	12.48	8.97	19.64
Total Rupiah Return	$r_{t,t+k} \cdot E_t$	16.38	4.35	35.32	158.90	59.39	2.3107
Net Return Induced Equity Growth	$x_{t,t+k} \cdot E_t$	12.02	0.00	35.55	114.39	22.26	1.9731

This table reported 127 listed firms in the Indonesia Stock Exchange between 2010 – 2020 which results in 1,147 firm-years. Actual debt ratio estimates the leverage ratio using book value of debt and the market value of equity. The variables in Panel B is normalized by total asset as a proxy for firm size. Moreover, the sample in Panel B are cut off at 5% and 95% to prevent influences from extreme values.

4.2. Main Regression Results

Table 2 reports the coefficient and standard error with the Fama-Macbeth regression of the main regression specification (Equation 1). This method takes the cross-sectional regression from 4 different time intervals[8]. The result is also reported in both with and without intercept. We can capture the importance of a static/constant target debt ratio by introducing the intercept. The constant should be understood as the additional weight in the convex combination of capital structure methods, not as the absolute level of the constant target ratio.

Table 2. Regression Results without Intercept

Horizon of k	Fama-Macbeth Regression of the Main Model			
	Constant	ADR_t	$IDR_{t,t+k}$	$Adjusted\ R^2$
1-year		0.047	0.950***	0.963
		(0.074)	(0.101)	
3-year		0.218***	0.791***	0.876
		(0. 065)	(0.106)	
5-year		0.313***	0.698***	0.785
		(0.061)	(0.105)	
10-year		0.412***	0.620***	0.687
		(0.053)	(0.050)	

*** p<.01, ** p<.05, * p<.1

This table presents the Fama-Macbeth regression of the main regression specification of $ADR_{t+k} = \alpha_0 + \alpha_1 . ADR_t + \alpha_2 . IDR_{t,t+k} + \epsilon_t$. The R^2 is adjusted to the number of predictors in the model. The 1-year horizon includes 128 companies and 1,147 firm-years. In comparison, the 10-year horizon includes 80 companies and 595 firm-years. A perfect lack of readjustment is indicated with a coefficient of 1 on IDR. In contrast, a coefficient of 1 in ADR implies a perfect readjustment.

The table above reports that firms do not seem to readjust towards their past debt ratio over a 1-year time interval (as can be seen with the ADR coefficient of 0.047). Moreover, stock return-induced capital structure can explain 95% of the actual debt ratio cross-sectional variations. However, in a longer horizon, we can see a readjustment starting to occur. Over a ten-year time interval, the past debt ratio has been increasingly important relative to the 1-year horizon (i.e., ADR coefficient has increased to 0.25). Despite the increasing explanatory power of ADR in the longer horizon, there is a significant difference to be noted. In contrast with Drobetz & Pensa's (2007) findings in the European market, the impact of stock return remains to be more influential for Indonesian firms relative to their past debt ratio, as shown from IDR and ADR coefficient of 0.620 and 0.412, respectively.

[8] As suggested by Welch, the time interval (represented in "k") consists of 1, 3, 5, and 10 years. This time interval is selected as it also represents the short and long-term readjustment behavior of the sample.

Table 3. Regression Results with Intercept

Horizon of k	Fama-Macbeth Regression of the Main Model			
	Cons.	ADR_t	$IDR_{t,t+k}$	$Adjusted\ R^2$
1-year	0.028***	0.001	0.941***	0.914
	(0.005)	(0.083)	(0.1)	
3-year	0.064***	0.122	0.756***	0.719
	(0.016)	(0.089)	(0.1)	
5-year	0.089***	0.183*	0.636***	0.537
	(0.024)	(0. 093)	(0. 094)	
10-year	0.118***	0.246***	0.526***	0.326
	(0.017)	(0.07)	(0.045)	

**** p<.01, ** p<.05, * p<.1*

The table presents the Fama-Macbeth regression of the main regression specification with the same number of observations as in Table 2. The intercept measures the importance of a constant target debt ratio as the additional weight of the convex combination strategy.

By adding an intercept (reported in Table 3), we can estimate the importance of a constant target capital structure. This intercept is small (0.028 in the 1-year horizon) and becomes increasingly important (0.118 in the 10-year horizon). Moreover, the enlarging ADR coefficient reflects a higher tendency for firms to revert to their debt ratio at time t. These findings are consistent with Welch (2004) and Drobetz & Pensa (2007), who took the study in the US and European context, respectively. In general, this finding suggests that the actual debt ratio is transient/temporary and is comoving with its stock return. Moreover, readjustment activity is more pronounced in the longer horizon.

4.3. Robustness Check

4.3.1. Change regression

As a part of the robustness check and to account for possible omitted variable bias, the main regression specification (Equation 1) can also be estimated with Equation 10 below. This equation estimates the first difference term of ADR.

$$(10)\ ADR_{t+k} - ADR_t = \alpha_0 + \alpha_1 \,.\, (IDR_{t,t+k} - ADR_t) + \epsilon_t$$

Table 4 is the regression estimation from the first differences, which has also shown consistency with the previous findings. As an example, the variable IDR remains to have a similar level of coefficient (although slightly higher) relative to the primary specification in Tables 2 and 3. This indicates that stock return remains to be a significant determinant of observed capital structure. Furthermore, this first difference specification results in an IDR coefficient closer to a one-to-one influence of stock return and capital structure changes (i.e., IDR coefficient is 0.973 in a 1-year time interval).

In a 10-year horizon, the variable IDR loses some of its statistical significance in this first difference specification. However, as argued by Welch (2004), we should rather focus on the economic significance of the coefficient. In general, we also see a decreasing IDR coefficient in a longer time horizon and the increasing importance of the target debt ratio. This applies both for the regression specification with and without an intercept.

Table 4. Change Regression

Horizon of k	Change Regression of the Main Model			
	Cons.	ADR_t	$IDR_{t,t+k}$	*Adjusted* R^2
			0. 950***	0. 370
			(0.101)	
1-year	0. 006		0. 920***	0. 349
	(0. 013)		(0.110)	
			0.716***	0.317
			(0.143)	
3-year	0. 017		0. 698***	0. 261
	(0. 021)		(0.140)	
			0.584***	0. 289
			(0.146)	
5-year	0.030		0.568***	0. 231
	(0. 022)		(0.134)	
			-0.022	0.082
			(0.175)	
10-year	0.198*		0.334**	0.094
	(0. 097)		(0.105)	

*** *p<.01,* ** *p<.05,* * *p<.1*

The presented coefficient and standard error are estimated using a Fama-Macbeth regression of the first difference term of ADR as explained in the following equation: $ADR_{t+k} - ADR_t = \alpha_0 + \alpha_1 . (IDR_{t,t+k} - ADR_t) + \epsilon_t$. The R^2 is adjusted to the number of predictors in the model.

4.3.2. Other Robustness Check

A few other regression methods have shown a consistent result of the main regression specification (Equation 1). The results are shown in Table 5 below. As reported in Panel A, a pooled OLS regression shows a similar result with the decreasing coefficient of IDR and increasing ADR over a longer time horizon. Panel B estimates a restricted pooled OLS regression where the sum of IDR and ADR coefficient is equal to one. Panel C reports a panel regression to account for heterogeneity across firms. Finally, through the Hausman test, fixed effect regression is selected over random effect and is presented in Panel D. Thus, it will account for time-invariant characteristics of the data (i.e., company specific differences). Moreover, to account for serial correlation, the sample is clustered by their respective industries.

In general, I found a consistent result with the main specification in Tables 2 and 3. An important point to note is that the ADR coefficient drops up to -0.165 in panel regression and fixed effect over a longer time horizon, which is also reported in other past studies (Welch, 2004; Drobetz and Pensa, 2007). However, the coefficient shows a generally steady level of around 0.3 in a 1-year horizon and increases over a longer time interval.

The variable IDR remains to be a more important determinant relative to the past debt ratio in almost all regression specifications. The magnitude is, however, reported to be smaller to a level around 0.6 in the 1-year horizon (relative to 0.9 in Fama-Macbeth regression). We can also see the decreasing IDR coefficient over a longer horizon in all model specifications.

Consistent with Tables 2 and 3, the target debt ratio is also increasingly important in a longer time horizon. Over a 5-years interval, the intercept is significantly higher in the panel and fixed-effect model specification to around 0.3 (compared to 0.09 in Fama-Macbeth). Furthermore, this constant target ratio is shown to be more important than stock return influence on debt ratio within the 5-year horizon with the panel and fixed effect regression.

Table 5. Robustness Check

		Robustness Check		
Horizon of k	*Cons.*	ADR_t	$IDR_{t,t+k}$	R^2
		Panel A: Pooled OLS Regression		
1-year		0.355***	0.656***	0.958
		(0.048)	(0.048)	
	0.026***	0.326***	0.635***	0.497
	(0.003)	(0.052)	(0.051)	
5-year		0.414***	0.644***	0.794
		(0.048)	(0.051)	
	0.116***	0.26***	0.55***	0.889
	(0.009)	(0.035)	(0.035)	
		Panel B: Constrained Pooled OLS		
1-year		0. 347***	0. 653***	
		(0. 023)	(0. 023)	
	0. 013***	0.351***	0. 649***	
	(0.003)	(0. 022)	(0.022)	
5-year		0. 387***	0. 613***	
		(0. 026)	(0. 026)	
	0. .059***	0.366***	0. 634***	
	(0.007)	(0. 024)	(0. 025)	
		Panel D: Panel Regression		
1-year	0.026***	0.328***	0.633***	0.889
	(0.003)	(0.049)	(0.048)	
5-year	0.285***	-0.044	0.347***	0.413
	(0.024)	(0.038)	(0.058)	
		Panel E: Fixed Effect Regression		
1-year	0.076***	0.216***	0.590***	0.888
	(0.005)	(0.069)	(0.068)	
5-year	0.337***	-0.165***	0.238***	0.143
	(0.024)	(0.040)	(0.070)	

**** p<.01, ** p<.05, * p<.1*

The table reports a time series of cross-sectional regression (Fama-Macbeth) of the primary regression model (Equation 1) throughout 2010-2020. The standard error is robust to heteroscedasticity (where applicable) reported in brackets. The R^2.reported in fixed effect regression is the overall R^2.

4.4. Variance Decomposition

The main regression specification can be decomposed to isolate the dynamic component of the net debt and/or equity issuance (such in Equation 7-9). Furthermore, this dynamic component can be utilized to predict $ADR_{t,t+k}$. As an example, instead of $IDR_{t,t+k}$, we can use total issuing and dividend activity (as in Equation 7) as a regressor (in addition to ADR_t).

Table 6. Variance Decomposition

			k = 1 year Average Adjusted R^2		k = 5 year Average Adjusted R^2	
			Levels	First Difference	Levels	First Difference
1.	Past Debt Ratio	$\frac{D_t}{E_t + D_t}$	0.823	-	0.314	-
2.	Implied Debt Ratio	$\frac{D_t}{[D_t + E_t \cdot (1 + x_{t,t+k})]}$	0.914	0.349	0.537	0.231
3.	Implied Debt Ratio with Dividend Payout	$\frac{D_t}{[D_t + E_t \cdot (1 + r_{t,t+k})]}$	0.900	0.040	0.460	0.037
4.	All Issuing Activity and Dividend Activity	$\frac{(D_t + \mathrm{TDNI}_{t,t+k})}{(D_t + \mathrm{TDNI}_{t,t+k} + E_t + \mathrm{ENI}_{t,t+k} - \mathrm{DIV}_{t,t+k})}$	0.854	0.380	0.505	0.195
5.	All Issuing Activity	$\frac{(D_t + \mathrm{TDNI}_{t,t+k})}{(D_t + \mathrm{TDNI}_{t,t+k} + E_t + \mathrm{ENI}_{t,t+k})}$	0.824	0.455	0.341	0.367
6.	All Net Equity Issuing Activity	$\frac{D_t}{(D_t + E_t + \mathrm{ENI}_{t,t+k} - \mathrm{DIV}_{t,t+k})}$	0.840	0.873	0.426	0.524
7.	Net Debt Issuing Activity	$\frac{(D_t + \mathrm{TDNI}_{t,t+k})}{(D_t + \mathrm{TDNI}_{t,t+k} + E_t)}$	0.838	0.445	0.370	0.346

The level columns imply that the regressor explains ADR at t+k. The first difference columns are the Fama-Macbeth regression estimation from the first differences term of ADR_t. Thus $ADR_{t,t+k}$ (as dependent variable) minus ADR_t is explained with the regressors minus $ADR_{t,t+k}$.

The findings in Table 6 suggest that stock return (i.e., IDR) remains to have the largest explanatory power relative to other dynamic components of capital structure. Furthermore, history also plays an integral part as 82.3% of the capital structure level can be explained by its past year's debt ratio. This indicates the stickiness of the debt ratio and thus is essential to estimate the first difference to account for serial correlation as suggested by Drobetz and Pensa (2007). However, most of these capital structure components lose their explanatory power when regressed in the first difference term of ADR. Implied debt ratios, however, have maintained their importance over a one and five-year horizon.

In contrast with Welch's (2004) findings in the US, net equity issuing activity has shown to be more capital structure relevant than debt issuing activity. Interestingly, net equity issuing also maintained its explanatory power over the 5-years horizon.

Moreover, corporate issuing activity has also shown a considerable explanatory power of 85.4%. The total issuing activity is also responsible for 38% of changes in debt ratio in the 1-year horizon. This is relatively larger when compared to stock return (represented through IDR) of 34.9%. This indicates that in a 1-year time interval, total issuing activity is sufficient to counteract stock return induced capital structure changes. While in the 5-years horizon, corporate issuing activity can be utilized to offset more than half of the stock return induced effect on capital structure. This implies that firms are not inactive from issuing activities, but instead, they did not utilize this issuing activity to undo the influence of stock return.

4.5. Does Stock Return Persistence Matter?

One can expect that stock price changes may only happen for a short period, thus making the capital structure transitory. An obvious explanation for this non-adjustment is that managers may omit these stock price changes from their capital issuance decisions. However, if the stock price has shown persistence long after the shock (and managers have insider information), it would be beneficial for them to readjust their capital structure actively.

Table 7. Current and Future Net Return

Future Stock Return ($x_{t,t+3}$)	Current Return ($x_{t,t+1}$)					
		Low	Medium-low	Moderate	Medium-high	Highest
	Low	0.11 0.85	-0.70 1.65	4.02 -3.24	0.30 0.55	0.03 1.02
	Medium-low	-0.30 1.25	0.38 0.59	-0.80 1.77	0.42 0.62	-0.31 1.29
	Moderate	-0.26 1.21	-0.44 1.40	-0.24 1.20	-0.54 1.58	-0.32 1.33
	Medium-high	-0.48 1.29	-0.55 1.45	0.22 0.64	-0.90 1.11	0.03 0.91
	Highest	-0.09 1.09	-1.78 2.69	2.30 -1.51	0.92 -0.01	0.03 0.96

The sample are sorted by their net stock return ($x_{t,t+k}$) at k=1 and k=3. A 1-year horizon represents the current return, and the 3-year horizon represents the future stock return. The average sample size in each cell is 38. The main regression specification (Equation 1) is performed using Pooled OLS with the sample in each category. ADR and IDR coefficient is reported in the top and bottom part of each cell, respectively.

Table 7 divided the sample into 25 classifications based on their current and future raw stock return (net of dividend). Firms in the top left and bottom right currently experiences a low (high) stock return and the same lowering (increasing) price in the future. In other words, they are the firms with persisting stock price changes in the same direction. Thus these firms will retrieve the most benefit from employing an active readjustment. On the other hand, firms in

the upper right and lower left are the firms that experience return reversals. Therefore, an active capital structure adjustment policy would not be as beneficial.

In general, Table 7 suggests that firms who experienced continuation (top left and bottom right) behave the same (in terms of readjustment) as those who experienced return reversal (top right and bottom left). This can be inferred from the larger IDR coefficient relative to ADR in general. Interestingly, there is some evidence of lower inertia and readjustment. However, it is scattered and does not show any clustering according to the aforementioned scenarios. Therefore, the rationality of a non-readjustment due to the managers' belief in a transitory stock price is not proven on the observed Indonesian firms.

4.6. Interpretation of Findings

The findings in Indonesia are generally consistent with a past study by Welch (2004) which takes the study in the US market. This thesis finds a positive correlation between stock return (i.e., through IDR) and debt ratio. This implies that Indonesian firms allow for drift in their capital structure to almost a 1-to-1 co-movement in the short term (i.e., as seen in the IDR coefficient). However, in a longer time horizon, this drift has been seen to diminish. This is also supported with the occurring readjustment behavior where past debt ratio and a constant target ratio have become increasingly important in explaining the current ones (i.e., as seen in the coefficient of ADR and intercept, respectively).

Furthermore, Welch (2004) also found that past stock performance is more important in explaining debt ratios even in a longer horizon. As presented in Tables 2 and 3, even in the 10-year horizon, IDR remains to be larger than the static target debt ratio for Indonesian firms. However, other past studies found that constant debt ratio to be more important in the long run than the stock return induced effect on capital structure (Leary & Roberts, 2005; Drobetz & Penza, 2007). In addition, the observed sample are not inactive from debt or equity issuance. However, these issuance activities are not used to undo the stock return influence on their capital structure, as presented in Table 6.

From these findings, we can conclude that Indonesian firms are not inert, but rather they did not immediately respond to stock return-induced capital structure changes. A continuous adjustment of capital structure can theoretically benefit the firms through a larger tax shield and capital gain from equity issuance. However, there are a few factors that prevent firms from undoing the effect of stock return.

a. *Transitory Stock Price*

An argument for non-readjustment may lie from the managers' belief that stock price changes are temporary. Thus, in the case of a persistence in the price level (after the price change), managers should be more inclined to readjust in accordance with the market timing theory (Baker & Wurgler, 2002). However, as shown in Table 7, there are no readjustment differences between Indonesian firms that experienced stock price changes continuity in the same direction (making capital structure adjustment beneficial) compared to those who experienced reversals (less benefit from adjustments). This finding is also consistent with Welch (2002), although it would not support past literature which found the existence of market timing theory in Indonesia (Kusumawati and Danny, 2006; Setyawan & Frensidy, 2012).

b. *Direct Adjustment Cost*

In contrast with the US, Indonesia strongly indicates a high cost of capital issuance or retirement. One indication for this can be seen through the capital structure adjustment speed in Indonesian firms. Nonetheless, there seems to be a dichotomy of studies that revolves around the topic. However, the finding in this thesis is consistent with a study by Nosita (2016) and Aisjah & Rahman (2020), which finds that Indonesian firms have a slow adjustment speed. The study finds that Indonesian firms require 7.81 years to adjust to their optimal capital structure (Nosita, 2016). This slow adjustment speed may indicate a high adjustment cost (Mahakud & Mukhrejee, 2011).

One may utilize the corporate interest rate to measure the direct adjustment cost through debt. Indonesian commercial banks' net interest margin has been shrinking over the past decade, following the decreasing lending facility interest rate (World Bank, 2021). Thus, debt issuance (and future retirement) has become cheaper.

In contrast, direct adjustment cost through equity can be measured using metrics such as the gross spread. The gross spread refers to the difference between the actual price offered in the market and the price received by the equity issuing company. Thus, this price difference estimates the fees paid to the underwriter. However, Indonesia is found to have a higher gross spread relative to its Asia Pacific peers (Torstila, 2003). Thus, this high equity issuance cost might hinder Indonesian firms to readjust, despite the cheaper interest rate.

c. *Indirect Cost*

Even when direct transaction cost is accounted for, firms are still subject to indirect costs that emerged from the risks of financial distress. Most of this cost lies from the agency cost due to the conflict between creditors (debt investors) and stockholders (equity investors).

Moreover, agency cost might play a role in this phenomenon due to information asymmetries between managers and investors (Myers, 2003). Wanzenried (2003) finds that higher executive compensation tends to have created more active capital structure readjustments. However, a study by Sugiri, Febrianto, and Kresnawati (2017) on Southeast Asian banks' executives (including Indonesia) finds that executive compensation has an anti-sticky characteristic with revenue. This means that a decrease in revenue would decrease the compensation in a larger magnitude than if there is a revenue increase. Thus, it would lead to a higher magnitude of non-readjustment in a case of decreasing revenue.

Furthermore, information asymmetry may cause managers to be reluctant in issuing equity. Following the pecking order theory, information asymmetry can negatively impact the stock price due to investors' possible perception that the stock is overvalued (Myers, 2003) . This impact from asymmetric information may be more pronounced in Indonesia as information disclosure quality negatively influences information asymmetry (Setiany & Wulandari, 2015).

Chapter 5: Conclusion

This chapter will summarize the main findings from this thesis to answer the main research question. Limitations of the research are then explained and followed with recommendations for further researches.

5.1. Conclusion

The findings suggest that Indonesian firms are not inert towards a capital structure readjustment. In fact, they are actively issuing debt and equity to finance their projects/operations. Oddly, these issuance activities are not used to counteract the external shocks, even when they can be used to counteract more than half of the stock return effect towards their capital structure.

As a result of this non-readjustment, the debt ratio fluctuates to almost a 1-to-1 co-movement with the stock return over a one-year horizon. While in a longer horizon, readjustments are starting to occur as historical debt ratio and a static target ratio became increasingly important in explaining the current capital structure. Moreover, the impact of stock return starts to diminish at a longer time interval. However, stock return remains to be a more influential factor in explaining the current debt ratio relative to its historical level. In general, these findings are consistent with Welch (2004) although slightly different from Drobetz & Pensa (2007), which finds a stickier debt ratio in European firms.

These findings implies that Indonesian firms do not dynamically readjust their target ratio to undo the effect of stock return. Therefore, this leads to a rejection of the null hypothesis. Although not inert, the findings also support the existence of a non-readjustment behavior which can be seen by the slow leverage ratio readjustment. Thus, the alternate hypothesis can be accepted.

5.2. Research Limitation

The primary focus of this thesis is to observe the corporate activity of listed firms in the Indonesian Stock Exchange between 2010 and 2020. Therefore, this limits the sample size, which may cause skewness in the data distribution. Moreover, the thesis uses purposive sampling from the KOMPAS100 index to prevent biases from firms with incomplete data and irregularities from possible outliers. The trade-off from this would be a further reduction in the sample size. Moreover, although the KOMPAS100 index represents >70% of total IDX market capitalization, the index lacks the inclusion of low-cap firms as it is mainly comprised of mid to large market capitalization firms.

The constant and coefficients of ADR and IDR as the main variable of interest are estimated using Fama-Macbeth regression. Despite the result consistency from the robustness check using (i.e., first differencing, pooled OLS, panel regression, and fixed effect), the Fama-Macbeth as the primary regression method is subject to its limitation. The Fama Macbeth procedure is subject to three issues that may cause a false statistics inference; lack of cross-sectional independence, estimation error, and lack of correlation due to inappropriate proxy (Pasquariello, 1999).

5.3. Recommendation for Future Researches

As a response to the limitation of this thesis, future researches can focus on a larger scope, such as Southeast Asia or Asia. With a more extensive scope, the research can have a larger sample size to achieve normality and reduce biases. However, the researcher should also consider the policy's differences in countries with different political systems. Especially for firms that are subject to a larger government intervention which may influence the firms' issuing decisions. Thus, further research may consider the fixed effect to control for time-invariant characteristics of the data (i.e., country effect).

Further research can also check for the relevance of stock return induced capital structure (i.e., IDR) compared to market to book ratio, profitability, asset tangibility, or other common proxies of capital structure determinants. Moreover, future research can test whether these proxies have a direct relationship with the capital structure or lose significance when IDR is introduced (thus, indirect relationship).

Although managers are actively issuing debt or equity and are shown to have a target capital structure, the thesis and previous research suggest non-readjustment behavior. Thus, firms issuing motives remain to be a mystery (Welch, 2005). An interesting research to answer this phenomenon would be to directly ask the managers through an interview or a survey regarding the non-readjustment issue. Especially in the Indonesian or Asian context in general, as these regions are lacking from high-quality surveys compared to the US region (i.e., Graham & Harvey survey).

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