Thin Capitalization Rules, Firm's Financing Decision, and Corporate Tax Avoidance in Developing Country: Evidence from Indonesia

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ABSTRACT

The purpose of this thesis is to investigate the effect of the implementation of thin capitalization rule on firm's financing decision and corporate tax avoidance in developing country settings. Based on the samples of 301 publicly listed Indonesian firms over the 2013-2016 period (1204 firm-year observations), using difference in difference approach, the regression results indicate that the implementation of thin capitalization rule affects only High DER (Debt to Equity Ratio) companies financing decision, but does not affect Low DER (Debt to Equity Ratio) firms financing decision. Regarding tax avoidance level, the implementation of the thin capitalization rule is found to be affecting Low DER firms effective tax rate negatively and significantly. This indicates that after the implementation of the rule, Low DER firms have a decreasing effective tax rate compared to the control group. Finally, the additional regression result shows that after the implementation of the thin capitalization rule, High DER firms which are multinationals have a lower debt level, while multinationals Low DER firms have a higher debt level. However, the result is insignificant. Related to tax avoidance level, both treatment groups show negative and insignificant result even though already interacted with multinationals.

Keywords: thin capitalization, firm's financing decision, corporate tax avoidance.

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1. Introduction

Until now, tax avoidance is still one of the important issues in the global economy that almost every country still struggles to fight (Turner, 2017). The article states that according to research by the IMF, tax avoidance by multinational companies cost governments $600 billion a year. There are two ways of avoiding tax: tax avoidance and tax evasion. Tax avoidance refers to the activity of legitimate use of legal loopholes and tax allowances in order to minimize the amount of tax liability, whereas tax evasion refers to illegal tax reductions (Gravelle, 2015). There are many practices performed by companies in order to reduce the amount of their taxes, one of them is to structure their financing plan by increasing debt instead of equity. The incentive to use more debt financing compared to equity financing relates to the tax-deductibility nature of interest expense (Egger et al., 2014).

Thin capitalization strategy allows firms to structure its capital by increasing debt instead of equity (OECD, 2012). The bigger the proportion of debt, the more interest expense the company should have to pay, thus the less taxable income since interest expense is tax-deductible. Moreover, thin capitalization strategy also might help multinational companies to finance its business by using intercompany loans. The parent which located in lower tax rate jurisdictions can provide loans to its subsidiary which located in the host country with higher tax rate jurisdictions. Consequently, the subsidiary can have a lower tax liability since the borrowing cost is tax-deductible. Therefore, many countries try to counteract the negative effect of thin capitalization strategy by issuing thin capitalization rule which restricts the tax-deductibility of interest expense above a certain debt level.

Meanwhile, developing countries are still having dilemma regarding the issuance of thin capitalization rule. On one side, the government intends to raise investment growth by providing many financing options and attracting foreign direct investment into the country to improve the nation's economic development. On the other side, taxation is the most important source of government revenue, as it provides the largest contribution to government revenue. Therefore, in order to be able to finance its public sectors to build better infrastructures to develop the country, the government also needs to increase its tax revenue. The issuance of thin capitalization rules is intended to save potential tax revenue by minimizing the probability of tax avoidance from using interest tax shield through excessive debt-financing. However, limiting interest deductibility to a certain debt level in

thin capitalization rule might also mean as limiting firms financing options which may harm investment growth.

Related to the abovementioned dilemma, many developing countries still do not have or have but not yet implemented the thin capitalization rule. Moreover, some countries have a tight rule and some have a less strict rule. For example, China has thin capitalization rule which limits the deductibility of interest expense to a maximum Debt-to-Equity Ratio (DER) 5:1 for financial institutions, and 2:1 for other entities (McKee, 2009). Brazil also limits its Debt-to-Equity Ratio (DER) to not exceed 2:1 for its thin capitalization rule (Deloitte, 2010). Taiwan limits Debt-to-Equity Ratio (DER) for 3:1 (Deloitte, 2017). In South East Asia, Brunei, Thailand, and Laos do not have thin capitalization rule, while Malaysia has a thin capitalization rule, but its implementation is currently being deferred until 2018 due to investment reasons. The government of Malaysia wants to protect foreign investment in the country. Meanwhile, after being deferred with the same reason for 30 years, Indonesia has reintroduced and lowered its thin capitalization rule from a DER of 3:1 in the old rule to 4:1 in the new rule. Debt-to-Equity Ratio (DER) is measured as total debt divided by total shareholders' equity. This ratio indicates the proportion of debt financing relative to equity financing in a company's capital structure.

From the tax authority perspective, attracting new investor by not having or have but lessening or not properly implementing the thin capitalization rule may harm the government potential tax revenue. It will give more flexibility to the companies to finance their capital structure by loan rather than equity in order to have a lower tax liability. The objective of this thesis is to investigate whether there is any relation between the implementation of thin capitalization rule on firms financing decision and corporate tax avoidance in developing countries. This thesis will take settings of Indonesian firms as one of developing countries in South East Asia which has just reintroduced its thin capitalization rule recently. Thus, this thesis attempts to answer the following research question:

RQ: Does the new thin capitalization rule influence Indonesian firms financing decision and corporate tax avoidance level?

As mentioned in an article in *telegraph.co.uk*, according to a recent survey in 2015 by CXC Global, a contractor management specialist, Indonesia has been identified as one of 10 most aggressive countries in the pursuit of tax evaders, of the 51 countries signed up in OECD agreement to the automatic exchange of tax information in 2015 (Steed, 2015). To

support its effort in fighting tax avoidance, Indonesia also had just reintroduced its thin capitalization rule in 2015. Originally, Indonesia's Ministry of Finance (MOF) has first introduced its thin capitalization rule in 1984 which prohibited the deductibility of borrowing costs for corporate income tax purposes if the Debt-to-Equity Ratio (DER) exceeded 3:1 (MOF, 1984). However, in 1985 the government decided to defer the application of this thin capitalization rule to undefined time due to investment reason. At that time, Indonesia still struggled to increase its economic development. 30 years later, in September 2015, the government finally re-introduced the new thin capitalization rule which implemented in the following year. However, the new rule sets the limit of Debt-to-Equity Ratio (DER) to not exceed 4:1 for the amount of borrowing costs that allowed to be deductible from taxable income, which means this will allow more debt in financing structure compared to the previous rule (MOF, 2015). The lessening of the new thin capitalization rule is also due to investment concerns. The government believes that if the thin capitalization rule is too tight, it will slow down the economic development since firms will have limited choices in choosing their source of financing. From tax authority perspective, the decision to lower the maximum allowed debt level may harm potential tax revenues which should be a concern too for the government, since Indonesia tax to GDP ratio is around 11%, which is still below the world average rate of 15.22% according to data from the World Bank in 2015. However, from taxpayer's perspective, the previous rule may seem to be idle or even did not exist since the implementation was deferred since 30 years ago. Before 2015, taxpayers or firms might free from choosing whatever financing options which benefited them and did not pay attention or even did not realized that this 1984 thin capitalization rule existed. However, after the implementation of the new rule 2015 taxpayers' flexibility in choosing financing methods will be limited.

This research analyzes Indonesian firms financing behavior regarding the utilization of thin capitalization strategy after the new thin capitalization rule implemented, and how is the implication to corporate tax avoidance level. Specifically, first, this thesis observes if there is any change in firms financing decision regarding the use of debt-financing in the capital structure after the new rule implemented. Second, this thesis investigates the effect of the rule on the corporate tax avoidance level. Thus, the result obtained can reflect the behavior of firms in Indonesia related to the use of thin capitalization as a tax-planning strategy, and the effectivity of the new thin capitalization rule in minimizing tax avoidance after being applied.

Using difference in difference approach on 301 publicly listed Indonesian firms (1204 firm-year observations), the regression results show that the implementation of thin capitalization rule only affects High Debt-to-Equity Ratio (DER) companies' decision to use debt financing method, but does not affect Low Debt-to-Equity Ratio (DER) companies. This thesis also finds that the implementation of thin capitalization rule has no effect on the effective tax rate of firms with High DER. In contrast, results show that Low DER companies are found to have decreasing effective tax rate after the new rule implemented.

The result of this thesis contributes to the corporate tax planning literature by examining the tax-planning behavior of firms in developing country regarding the utilization of thin capitalization strategy as a tax avoidance practice. Also, this thesis aims to help answering dilemma in developing countries regarding the importance of implementation of thin capitalization rule. Moreover, this thesis is also expected to give relevance specifically to the Indonesian tax authority regarding the effectivity of the new thin capitalization rule in minimizing the probability of tax avoidance. In addition, this thesis also hopefully can help the investors to increase their insights related to thin capitalization structure in tax planning strategy.

The structure of this thesis will be divided into 7 parts. Section 1 presents the research question, motivation, as well as the contribution from this research. Section 2 explores theoretical background related to the research question. Section 3 presents several prior research which supports the theoretical background. Section 4 discusses the research design, explanations of variables used, as well as the regression model. Section 5 explains data acquired and samples selection for the tests. Section 6 discusses the result of the tests as well as the empirical analysis. And last but not least, section 7 concludes the result of the analysis and provides limitations as well as suggestions for further research.

2. Theoretical Background

2.1 Tax Avoidance

2.1.1 What is Tax Avoidance?

Nowadays, tax avoidance is considered a worldwide problem that should be faced by almost all tax system. Despite the importance of tax in generating revenue for the government, a relatively high tax rate may create enough motivations for taxpayers to pay less tax. Tax avoidance can be broadly defined as the reduction of explicit taxes (Hanlon and Heitzman, 2010). The act of avoiding tax can involve two actions: tax avoidance and tax evasion. Although the purpose of those actions is the same which is to reduce the tax burden, actually tax avoidance and tax evasion have a different concept. The essential difference is that while tax evasion is an illegal one, tax avoidance still takes place within the confines of the fiscal law (Van Dijck, 2016).

OECD defined tax avoidance as "a term that is generally used to describe the arrangement of taxpayer's affairs that is intended to reduce his tax liability and that although the arrangement could be strictly legal, it is usually in contradiction with the intent of the law it purports to follow." As defined by Black's Law Dictionary, the practice of tax avoidance involves the attempt to minimize the amount of tax liability through employing legal means, usually by taking advantage of weaknesses or ambiguities in the tax law. Even though the actions involved are legal, the results of the actions are still considered improper.

Tax evasion is usually associated with a criminal offense which consists of willful and conscious non-compliance with the law of a tax jurisdiction (United Nations, 2011). It usually involved an action by which taxpayer tries to escape legal obligations by fraudulent and other illegal means. According to UN, some common examples of tax evasion include the failure to notify the tax authority regarding the existence in the country when it is actually involved in taxable activities; the failure to report the full amount of income; the failure to report items or sources of taxable income profits or gain when there is an obligation to provide such information or if the tax authorities have made a request to provide such information.

However, the borderline between evasion and avoidance sometimes are difficult to define due to the subjectivity of the interpretation and implementation of tax avoidance. In addition, the difference in criminal laws between countries makes it

difficult to define the degree of criminality of a certain behavior. Some behavior can be considered criminal in one country, while it is not in another country.

In order to not breaking the law, but still neglect to pay a high amount of taxes many people and corporations choose tax avoidance over tax evasion. They could minimize their tax burden while still comply with the law. Since evasion is illegal there are penalties associated with it depending on the authority in which the evasion takes place. However, since the purpose of this thesis is to examine the use of legal loopholes in the tax regulation to minimize tax burden by using thin capitalization strategy, therefore this thesis will not provide a more detailed explanation about tax evasion, instead it will focus on the 'legal' tax avoidance.

2.2 Thin Capitalization, Capital Structure, and Financing Decisions

2.2.1 Thin Capitalization Definition

Thin capitalization refers to a condition when a company is financed through an extensive level of debt relative to equity. OECD (2012) defines thin capitalization as the strategy of a company to structure their financing with relatively high level of debt instead of equity, which sometimes referred to as 'highly leveraged'. High level of debt caused the company to pay a high amount of interest expenses. Since the tax regulation typically allows interest expenses to be tax-deductible, the income of the company that is subject to taxation can be lowered. As a consequence, by using this strategy company's tax burden will also be reduced. Before jumping further to explore thin capitalization strategy, this thesis would like to explain more about the theory behind thin capitalization strategy.

2.2.2 Taxation and Capital Structure Theory

A large number of studies have examined the effects of taxes on corporate decisions. Majority of these studies found that taxes influence a wide range of corporate financial decisions such as financing policy or investment policy. Feld et al. (2013) found that the choices of capital structure are positively affected by taxes. Tax rates are shown to be correlated with corporate capital structure choices, which suggests that firms may increase value through optimal debt choice. Graham (1996) found that

marginal corporate tax rate influenced the debt policies of US firms. Alworth and Arachi (2001), Kunieda et al. (2011), Hartmann-Wendels et al. (2012) and Sinha and Bansal (2013) also found a positive relation between firm-specific marginal tax rates on company debt policy, for Italian, Japanese, German, and Indian firms, respectively.

The following are some well-known theories related to tax and capital structure:

a) Modigliani-Miller Theorem II (1963).

   Their first paper which widely known as Modigliani-Miller Irrelevance Theorem (1958) hypothesized that, in perfect market (where they assumed there are no taxes, no bankruptcy cost), it does not matter what capital structure a company uses to finance its operations, instead what matters the most is the ability of the firm in creating profit and the risk of its underlying assets. However, in the real world, taxes and bankruptcy cost do significantly affect firm value. So in their subsequent paper (1963), Modigliani and Miller relaxed the assumption that there are no corporate taxes. The tax law typically allows firms to deduct interest payment, while dividends to stockholders are not deductible. In Modigliani and Miller (1963), results showed that when corporate income is taxed and interest from debts are tax-deductible, using debt financing can increase more firm value rather than funding the business entirely with equity. In other words, firms with greater proportion of debt are more valuable because of the interest tax shield (Brigham & Ehrhardt, 2011).

b) The Trade-off Theory of Leverage

   The trade-off theory addressed the idea that firms will choose how much debt finance to use by balancing the costs and benefits of that decision (Babberich, 2009; Brigham & Erhardt, 2011; Shahar et al. 2015). Firms will choose to leverage within a capital structure up until the optimal capital structure is reached, since they have to trade off the benefits of favourable tax treatment from debt financing against higher interest rates and bankruptcy costs. The optimal level of leverage is achieved when marginal tax shelter benefit equals the marginal bankruptcy and agency costs associated with debt. The theory recognizes that since interest expense is tax deductible, issuing bonds will be more preferable in order to reduce company's tax liability, while paying dividends on equity will give no tax benefit to the company. However, increasing debt also increases the risk of bankruptcy to a company.

Therefore, trade-off theory suggested a mix of debt and equity financing to offset the increasing financial risk to a company.

c) Pecking Order Theory

Pecking Order Theory was first introduced by Gordon Donaldson in 1961 and then modified by Myers and Majluf in 1984. Pecking order theory suggested that companies prioritize their source of financing started from internal financing using retained earnings. Then, if external financing is required, firms will start by issuing the safest security. They will begin with debt with the least financial risk, then goes to debt with higher risk, then hybrid security such as convertible bonds, and lastly by issuing preferred stock equity and common stock as a last resort. This hierarchy is based on the order of the least financing cost that should be incurred by the company.

However, in the real world, there are companies which do not use the hierarchy as explained in Pecking Order Theory while choosing its financing decision. Prior research by Singh and Hamid (1992) and Singh (1995) found that firms in developing countries prefer equity financing to debt financing. This finding is contrasts with pecking order theory which suggested that firms will choose to issue debt first rather than equity when external financing is required.

2.3 Thin Capitalization Strategy and Tax Avoidance Planning

As explained by the capital structure theory above, from the company's tax-purpose-related perspective, debt financing is seen as a more attractive financing decision compared to equity financing. In debt financing, a company with high level of debts incur high interest expenses which are tax-deductible according to the tax law. The higher tax-deductible items, the lower pretax income, thus the lower tax burden. In equity financing, company which issue stocks give dividends to shareholders. Not only will be taxed for the profit that the company creates, but the shareholders will also be taxed for the dividends they received. Similarly, the creditor or shareholders in debt financing (if it is an intercompany loan) will also be taxed for interest income they received. What makes it different is that by using debt financing, at least company can have more tax benefit by using interest expense to minimize tax liability from their profit. Thus, the tax burden for the company will be lower compared to when they use

full equity financing where there is no interest expense as a tax-deductible item for pretax income. This creates an incentive for tax planning strategy by corporations in order to minimize the amount of tax burden by using interest tax shield, which known as thin capitalization strategy.

Laconick & O'Sullivan (2000, p.987) on Gajewski (2012) showed evidence which gives highlights on the thin capitalization phenomenon. They found that more and more companies operating in the European and international markets funded its operation by seeking external financing sources in the capital market or by taking out bank loans. Also on Gajewski (2012), Overesch & Wamser (2010, p.569) addressed that tax advantage arising from debt financing is perceivable not only on the domestic level, where the shareholder and the financed company are residents of the same country with the same tax-jurisdictions, but also on the international level, where these entities are residents of two different tax jurisdictions.

Moreover, firms can use tax-rate differentials between two tax-jurisdictions in order to perceive tax benefit from this kind of financing strategy. Webber (2010) suggests that thin capitalization is often used by multinational entities (MNEs) when initiating business overseas where there are tax rates differences. MNEs usually form a local subsidiary to conduct business. Thus, when an investment in a higher-tax jurisdiction is financed by intercompany debt from a lower-tax jurisdiction, then the profit will be shifted to the country which imposed lower taxes. Therefore, the subsidiary can have lower taxable income due to its higher amount of tax-deductible item from debt financing since it is located in a higher-tax jurisdiction, while the MNEs as the parent (or the creditor which received interest income) will incur lower tax expense from that income since it is located in a lower-tax jurisdiction. Overall, the MNE can minimize its tax burden without incurring additional trade expenses.

This is consistent with prior research which supported that international tax differentials have an impact in multinational's financing structure in a way that is consistent with overall tax minimization (Haufler, and Runkel, 2008). Therefore, this can shed light that tax-related aspects are the main reasons companies frequently adopted debt financing method. All in all, thin capitalization can be perceived as an instance of tax avoidance which classified as choosing financing option that resulted in the least tax burden.

The fact that excessive debt financing might cause an erosion of income subject to taxation since interest expenses are tax-deductible urges the government of many countries to impose tax regulations limiting this financing method by issuing thin capitalization rule. Thin capitalization rules limit firm's Debt-to-Equity Ratio (DER) to control highly leveraged financing structures. This will, in turn, limit the tax deductibility of interest expense a firm can recognize to a certain point or ratio. Firms can only deduct interest expense from its income if its debt level does not exceed the maximum allowed limit according to the thin capitalization rule. However, banks, insurance companies, and other financial industries in their operation usually rely more significantly on debt than non-financial services firms, such as manufacturing and retail industries. As a consequence, financial services firms have higher DER ratio compared to other industries. Therefore, some countries usually establish separate thin capitalization policies for these firms.

On his research about the role of financial development in causing differences in thin capitalization rules between countries, Mardan (2016) found that a host country has two stages in designing thin capitalization rule. First, the country decides the type of thin capitalization rule, and on the next stage, decides about the tightness of the rule. The result of his analysis shows that, as the financial development of a country increases, tax deductibility for internal interest payments become tighter, on average. On the other words, countries which are financially less-developed implement more generous thin capitalization rules. Mardan (2016) stated that one reason could be due to the limited access to external financing sources causing firms to use internal sources to finance investment.

2.4 The Indonesian Background

2.4.1 Indonesian corporate tax system

Similar to other developing countries, one of the major tax revenue sources in Indonesia is the corporate income tax which comprise of ±53.33% of the total tax revenue (Ministry of Finance, 2017). Indonesian corporate income tax is ruled by Law No. 7 of 1983 regarding Income Tax as amended by Law No. 36 of 2008. Indonesian applicable standard corporate income tax rate is 25% for the fiscal year 2010 onward. The basis of corporate taxation in Indonesia is resident companies which are taxed on

worldwide income, while nonresident companies are taxed only on income derived from operations in Indonesia, including income generated from the permanent establishment in the country. Taxable income is defined as computable income less tax-deductible items. Dividends which are received by a resident company are considered as ordinary income. Interest incurred in the ordinary course of business is tax-deductible as long as the related loan is used for business purposes. To limit interest deduction from debt financing activity, Indonesian fiscal authorities issued thin capitalization rule.

2.4.2 Indonesian Thin Capitalization Rule

Historically, Indonesian thin capitalization rule originally issued by Ministry of Finance (MOF) on October 1984 under ministerial decree number 1002/KMK.04/1984, which stipulated a debt-to-equity ratio (DER) of 3:1 as a limit of interest expense deduction for income tax calculation purposes. However, within 6 months, on March 1985 the MOF issued another decree number 254/KMK.04/1985 which postponed the implementation of the previous thin capitalization rule with a consideration that the regulation could harm investment growth in Indonesia.

After 30 years of postponement, finally, Indonesian MOF reintroduced the new thin capitalization rule on 9 September 2015 through Minister of Finance Regulation Number 169/PMK.010/2015 titled "Determination of Company's Debt and Equity Ratio for Income Tax Calculation Purpose," which provides detailed guidance on the scope of related parties, definitions of debt and equity, a prescribed threshold for the debt-to-equity ratio (DER), and other compliance requirements. This regulation is effective from the fiscal year 2016.

PMK-169 sets the amount of borrowing costs that are tax-deductible to not exceed the maximum debt-to-equity ratio (DER) of 4:1 (except for certain sectors). Therefore, if firm's DER exceeds the 4:1 threshold, any borrowing costs on debt that exceed the ratio will be non-deductible for income tax calculation. This rule applies to both related and third-party debt, whether obtained domestically or from foreign sources. Debts are including both short term and long term debt, as well as interest-bearing trade payables. While equity includes shareholder's equity, share premiums, retained earnings, and non-interest bearing loans from related parties. Furthermore, the regulation emphasizes

that the entire borrowing costs will be prohibited to be deducted from income tax calculation if the taxpayers have zero or negative equity balance.

The maximum threshold of DER 4:1 under PMK-169 is applicable to all taxpayers established or domiciled in Indonesia, except for certain entities that are subject to special rules, which are:

1. Banks
2. Financing institutions
3. Insurance and reinsurance companies
4. Mining, oil, and gas enterprises that are subject to production-sharing agreements and contracts of work, or coal contracts of work, that specifically include a provision on the debt-to-equity ratio;
5. Companies subject to final income tax
6. Infrastructure companies.

The intention of Indonesian tax authorities with respect to the issuance of PMK-169 is to tackle tax avoidance by limiting the tax base erosion from the using of interest tax shield by excessive debt-financing activities. The government expects that by issuing this new thin capitalization rule, Indonesian tax authorities potentially will be able to collect more tax from companies whose debt-to-equity ratios exceed the prescribed limit, thus increasing government tax revenue.

3. Prior Research into Thin Capitalization, Financing Decision, and Tax Avoidance

This chapter will provide literature review associated with the relation between thin capitalization, firm's financing decision, and corporate tax avoidance. First, this thesis will discuss some findings in previous research regarding the utilization of thin capitalization as means of corporate tax avoidance strategy in developed countries as well as developing countries. Secondly, this thesis will continue with some findings in the existing literature related to the effectivity of thin capitalization rules to control the use of debt financing.

3.1 Thin Capitalization Strategy and Corporate Tax Avoidance Studies

3.1.1 Thin Capitalization Studies in Developed Countries

Prior research by Slemrod (2001) and Rego (2003) find that US firms with higher level of leverage have lower Effective Tax Rate (ETR) due to the use of interest deductions to reduce taxable income. This is in line with the findings of Beuselinck et al., (2005), Graham and Tucker (2006), and Dyreng et al., (2008), which found that US firms that are successful on long-term tax-avoidance have significantly higher debt instead of equity in their capital structure composition. Shackelford & Shelvin (2001) also found that the excessive use of debt financing in the form of thin capitalization by subsidiary firms which located in higher tax rate jurisdiction create an important international corporate tax avoidance technique which performed by multinational firms.

Taylor & Richardson (2012) investigates the international corporate tax avoidance practices of 203 publicly listed Australian firms over the period 2006-2009. Their research found that the utilization of thin capitalization and transfer pricing are the main drivers of tax avoidance, and thus may be considered as the most important tax-planning tools for firms to carry out international tax avoidance, while income shifting and tax haven utilization are less important.

3.1.2 Thin Capitalization Studies in Developing Countries

A study by Ogundajo & Onakoya (2016) who investigates the influence of corporate tax planning on financial performance of manufacturing firms listed in Nigerian Stock Exchange from the period 2005-2014 found that aggressive tax planning strategies such as thin capitalization, tax law incentives and other tax planning strategies which taking benefit of loopholes in the tax regulations have not been fully utilized by Nigerian firms. Results show that most of the Nigerian firms are mainly financed by equity, thus they do not use excessive debt financing in order to have tax shield benefits from the deductibility of interest. They found that majority of Nigerian firms still have not enough understanding regarding thin capitalization as a tax-minimization strategy and do not employ the service of tax consultants in order to help them utilizing tax benefit from loopholes of the tax law.

Rohaya et. al (2010) examines the corporate tax planning of Malaysian listed companies during official assessment system and self-assessment system around period 1993-2006. The results found that lower Effective Tax Rates (ETRs) are significantly related to highly leveraged companies, greater investment in fixed assets and lower investment in inventory. ETR was negatively associated with leverage during both tax systems. The result of this study suggested that highly leveraged companies can take advantage from the deductibility of interest expenses to reduce their taxable income.

3.2 Thin Capitalization Rule Effectivity Studies

Almendros & Mira (2016) examine the impact of the Spanish new thin capitalization rule in 2012 on financing decision of Spanish listed firms. They identified companies that in theory would have been affected by the new rule and compare their financing behavior to a group of companies that were not affected. Using difference and difference approach, they found that there are differences between debt policy of potentially affected firms and their non-affected counterparts, with a negative and statistically significant treatment effect. Their empirical evidence supported the existence of a tax reform effect, where companies affected by the rule reduce their leverage more than companies that are not affected. There appears to be a clear effect on the debt policy of Spanish listed companies due to the application of the new thin capitalization rule in 2012.

Buettner et. al (2006) investigates the role of thin capitalization rule on multinationals' capital structure and investment decision by analyzing German multinationals in 24 countries between period 1996-2004. They found that thin capitalization rules are effective in limiting debt-financing. Overesch and Wamser (2010) also investigate the effectiveness of thin capitalization rule on tax-planning behavior based on German investment data. They confirm a significant impact of tax-rate differentials on the use of intercompany debt. The result suggested that thin capitalization rule (TCR) significantly reduced internal borrowing, hence it can be concluded that tax-planning behaviour via internal finance is effectively limited by TCR.

Blouin et. al (2013) examine the impact of thin capitalization rules on the capital structure of foreign affiliates of US multinationals between 1982-2004. They find that thin capitalization rules affect multinational firm's capital structure significantly. Furthermore, they find that the implementation of thin capitalization rule creates aggregate firm effects: on one side it can reduce the firm's aggregate interest expense, but on the other side it might lower firm valuation. They conclude that implementation of thin capitalization rule not only influence the capital structure within multinational firms, but it also has impact on the firm's market valuation.

Although most prior studies found that thin capitalization rules can minimize tax avoidance by reducing excessive debt financing, some studies also provide evidence that thin capitalization rules are not always effective in curbing tax avoidance. Babberich (2009) studied whether the introduction of Dutch thin capitalization rule in 2004 would have an impact on multinational firms' capital structure and investment decisions. He found that firms did react with a significant reduction of internal debt ratio. However, firms reduced their internal debt ratios by increasing their equity levels and not by reducing their excessive internal debt levels. Hence, it can be concluded that the Dutch thin capitalization rule did reduce internal debt ratios, but was not effective in curbing tax planning via intra-firm financing.

4. Hypotheses Development

From the capital structure theory explained in the previous chapter, it can be seen that taxation has an effect on firm's capital structure. The higher proportion of debt in capital structure, the more tax benefit a firm can achieve. From tax authority's perspective, this excessive debt financing may harm potential government tax revenue since firms might use this strategy to avoid tax. Therefore, the government issue thin capitalization rule in order to minimize this tax planning strategy.

Proper implementation of thin capitalization rule should limit the ability of firms to engage in corporate tax avoidance. Indonesia originally issued its first thin capitalization rule in 1984. However, as the implementation of the regulation is deferred it can be assumed that firms do not aware or even do not know that there is a restriction regarding maximum debt allowed related to interest deductibility of taxable income before, until the new thin capitalization rule has reintroduced in 2015.

Therefore, in order to see the impact of the new thin capitalization rule on Indonesian corporate tax avoidance, I will see the implications from two steps of analysis. First, I will test the effect of thin capitalization rule on firms financing decision after the implementation of the new rule. Second, I will see how effective the new thin capitalization rule in minimizing tax avoidance. Furthermore, in order to see the behaviour of Indonesian firms in taking advantage of loopholes in the tax regulation, I will divide the sample firms which might potentially be affected by the new thin capitalization rule into two parts: firms with Low Debt-to-Equity Ratio (far below the maximum allowed ratio), and firms with High Debt-to-Equity Ratio (far above the maximum allowed ratio).

4.1 Thin Capitalization Rule and Firm's Financing Decision

Lowering the thin capitalization rule might give more flexibilities to the companies to choose debt financing to minimize their tax liability. Even so, since the previous rule implementation is deferred since 30 years ago, it can be assumed that firms mostly do not know that this rule actually exists until the new one came up. Thus, it can be expected that the new thin capitalization rule implemented in Indonesia will decrease the propensity of companies engage in tax avoidance through thin capitalization strategy. Therefore, in this thesis, I expect that firms with Debt-to-Equity Ratio (DER) above the limit will reduce its debt level in order to comply with the new thin capitalization rule. In addition, considering

the nature of the firms mostly is to pay tax as lower as possible, I also expect that firms with DER far below the limit provided by the new rule will take advantage of the legal loopholes by increasing DER up to the maximum allowed. Thus, these firms can enjoy the tax benefit while still in comply with the law.

The logic behind the assumption that Low DER companies will increase their debt level after the implementation of the rule is because previously they have a lower debt level or choose equity financing more than debt financing, which is found to be more common in developing countries (Ogundajo & Onakoya, 2016; Singh & Hamid, 1992; Singh, 1995; Mardan, 2016). The reason could be because they find that equity financing is more beneficial for them; due to the limited access to external financing; or because they still have not enough understanding regarding the benefit of debt financing in tax-minimization strategy. Therefore, the issuance of the new thin capitalization rule might also become an alarm for these firms who do not realized yet that they can use interest tax shield to avoid tax. Moreover, this can be a trigger for these Low DER firms who have not utilized thin capitalization strategy to increase debt level to take advantage of the legal loopholes. Based on the trade-off theory of leverage, these Low DER firms will increase debt as long as it is still safe within the maximum level and as long as the marginal cost from debt financing do not exceed the marginal tax benefit arising from it. Therefore, I propose the following hypothesis:

H1a: After the new thin capitalization rule implemented, firms with high DER will decrease their debt level to reach the maximum DER allowed by the rule.

H1b: After the new thin capitalization rule implemented, firms with low DER will increase their debt level to reach the maximum DER allowed by the rule.

4.2 Thin Capitalization Rule and Corporate Tax Avoidance

The higher the level of debt, the higher interest the firm have to pay, thus the lower the taxable income and the lower the tax liability. A firm with DER exceeded the thin capitalization rule can be categorized as a thinly capitalized company. I expect that company which thinly capitalized have the propensity to engage more in corporate tax avoidance. The proper implementation of thin capitalization rule is expected to have an impact in reducing corporate tax avoidance related to the utilization of interest tax shield associated with debt financing as tax planning strategy. Consequently, I expect that the new thin capitalization rule implemented in Indonesia will have an influence on corporate tax avoidance level in the country. Since firms with low debt to equity ratio might increase

its debt up until reaching the maximum limit allowed, it can be expected that those firms will use interest tax shield associated with debt financing to minimize its tax liability as long as it is still safe within the law. In contrast, as the new thin capitalization rule implemented, high debt to equity ratio firms are expected to lower their debt position in order to comply with the law. Therefore, I expect that high debt to equity ratio firms will have an increasing tax burden since their flexibility in using interest tax shield is now limited. Thus, I propose the following hypothesis regarding the implementation of the new thin capitalization rule:

H2a: After the new thin capitalization rule implemented, firms with High DER will have a decrease in corporate tax avoidance level (higher ETR)

H2b: After the new thin capitalization rule implemented, firms with Low DER will have an increase in corporate tax avoidance level (lower ETR)

5. Research Design

5.1 Dependent Variables

5.1.1 Financing Decisions

To measure how the implementation of new thin capitalization rule affect firm's financial decision on using debt financing in the capital structure, this thesis will use proxy firm's debt level as measured with total leverage ratio, following Blouin et al (2013). Total leverage is measured as total debt divided by total assets. As explained in Indonesian thin capitalization rule PMK-169, interest deductibility is limited by a certain debt-to-equity ratio level, where debt is defined as total debt including short-term debt, long-term debt, as well as interest-bearing trade payables. If a firm has debt-to-equity ratio above the maximum limit allowed, thus the borrowing costs related to the excess debt will not be tax-deductible. Thus, it is assumed that after the new rule implemented there will be changes in firms' debt level that reflected in leverage ratio which indicates companies financing decision regarding the use of debt financing strategy in order to comply with the law.

5.1.2 Corporate Tax Avoidance

Measuring corporate tax avoidance in accounting research has always been problematic since data from company tax return is not directly observable due to its confidential characteristics (Hanlon and Heitzman, 2010). Thus, most accounting research usually utilize proxy measures obtained from data which are available in the financial statements. The most widely used proxy for measuring corporate tax avoidance is effective tax rates (ETR). ETR is measured as income tax expense divided by pre-tax accounting income (GAAP earnings). ETR measures the ability of a corporation to reduce its tax liability relative to its pre-tax accounting income. Therefore, ETR may reflect the relative tax burden across firms.

There are some consistent findings across ETR studies related to the associations between ETR and some certain firm characteristics. Stickney and McGee (1982) analyze the possible causes of corporate tax burden differences and found that capital intensity, leverage, and natural resource activities create variation in ETRs across firms. Gupta and

Newberry (1997) examine other determinants of variation in ETRs using panel data and conclude that ETRs are systematically related to a firm's capital structure, asset mix, and return on assets. Mills, Erickson, and Maydew (1998) also find a negative relation between ETR and leverage as well as between ETR and capital intensity.

GAAP ETR uses total income tax expenses which include both current and deferred tax expenses. To control for deferred tax expenses, GAAP ETR can be converted into Current ETR by including current tax expense only in the numerator (Hanlon and Shevlin, 2002; Chen et al, 2012; Cheng et al. 2012). Current ETR measured as current tax expense divided by pre-tax accounting income. Current ETR are based on company's current income tax obligation which are adjusted for the effect of income tax transfer between different periods, for example deferred tax expense. To measure how the change in debt level following the implementation of new thin capitalization rule might affect company's tax liability in current period, it can be reflected in company's current tax expense. However, due to limited data availability in Compustat regarding current tax expense from Indonesian sample companies, this thesis will use the GAAP ETR since it is more publicly available and most often used in prior research.

5.2 Independent Variable

5.2.1 Thin Capitalization Rule Implementation

To measure whether financing decision and tax avoidance level is affected by the implementation of thin capitalization rule, the effect has to be operationalized. The effect of thin capitalization rule will be measured with a dummy variable, which equals 1 for firms that are more likely to be affected by the rule, and 0 for firms that are less likely to be affected by the rule. To measure whether the firms are considered affected or not, this thesis uses DER limit provided by PMK-169, which is 4:1. More detail on the grouping of this sample firms will be explained in the research model section.

5.3 Control Variables

5.3.1 Control Variables for Financing Decisions

This research includes some control variables in the first regression to control for other factors that are likely to influence the measurement of dependent variable financing decision. The first control variable that will be used for testing the first hypothesis is probability of bankruptcy (RISK), following Almendros & Mira (2016), Mackie-Mason

(1990) and Graham (1996). The trade-off theory of capital structure assumed that debt financing decision, besides affected by tax, also influenced by bankruptcy cost. Therefore, if the probability of bankruptcy is high, then the expected bankruptcy cost is also higher, which induced firms to lower debt ratio. Probability of bankruptcy (RISK) in this thesis is measured using Altman Z-Score as total assets divided by the sum of 3.3 times EBIT, 1.0 times sales, 1.4 times retained earnings and 1.2 times working capital.

The second control variable is Tangibility (TANG). The trade-off theory assumed that debt financing decision might also influenced by agency cost of debt. Tangible assets are important to businesses since they can reflect the company's worth. Asides from being used to provide product and services to meet its objective and goals, firms can also use tangible assets as a collateral for loans. Thus, if higher tangibility ratio implies a lower probability of bankruptcy, then it may lead to higher debt ratios. Tangible assets are any assets that can be identified and have physical form including current assets, such as inventory; and fixed assets, such as machinery, property, plant, and equipment. Tangibility is calculated as percentage of tangible assets over total assets (Almendros & Mira, 2016).

The third control variable is Size (SIZE). This thesis uses firm size to control for the effect of company size on debt financing decision. It is assumed that bankruptcy probability of larger firms is lower due to their widely diversified business and sophisticated accounting system. Therefore, it is expected that larger firms will have higher debt ratios. Size is measured as natural logarithm of total assets. This is in line with Almendros & Mira (2016).

The fourth control variable is Profitability (PROF). Profitability controls for the effect of company's operating performance. Since profitable companies generate more cash than less profitable firms for a given leverage level, they have a lower probability of default and a lower expected bankruptcy costs. Therefore, following Almendros & Mira (2016) it is expected that more profitable companies will have more flexibility to use debt financing. Profitability measured as ROA which is pre-tax profit divided by total assets.

The last control variable is Multinational Operations (*multi*). Multinational is a dummy variable which equals to 1 if the company have at least one foreign incorporated subsidiaries, otherwise is zero. It is expected that multinational companies have more flexibility to use thin capitalization strategy by taking advantage from tax differentials

between two tax jurisdictions through intercompany loan (Webber, 2010). Therefore, multinationals are expected to have more probability to use debt financing.

5.3.2 Control Variables for Corporate Tax Avoidance

Next, to control for other factors that might influence dependent variable corporate tax avoidance, this thesis will also include some following control variables in the analysis. The first control variable which may relate to tax avoidance is Capital Intensity (CINT). Capital Intensity controls for high capital intensive firms (Stickney & McGee, 1982; Taylor & Richardson, 2012). According to Taylor & Richardson (2012), CINT is negatively associated with ETRs due to accelerated depreciation charges based on asset lives. This is to control for non-debt tax shield that can be provided by depreciation expense. CINT is measured as net property, plant, and equipment divided by lagged total asset.

The second control variable is Inventory Intensity (INVINT). Inventory Intensity is included as control variables for high inventory intensive firms (Stickney & McGee, 1982; Taylor & Richardson, 2012). Inventory intensive firms are considered to be less tax avoidant, so INVINT is expected to be positively associated with ETRs. INVINT is measured as inventory divided by lagged total assets. Rohaya et al. (2010) also found that ETR was positively associated with inventory intensity, which indicated that inventory-intensive company faced higher ETR. The reason is that inventory-intensive companies did not have tax shields like capital-intensive companies that could enjoy tax benefit from depreciation charges.

The third control variable is company size (SIZE). This second test will also use firm size to control for the effect of company size in measuring corporate tax avoidance level. Since it is expected that larger firms will have higher debt ratios, thus it may also lead to flexibility in avoiding tax using interest tax shield. Size is measured as natural logarithm of total assets. This was in line with Taylor & Richardson (2012).

The fourth control variable is company profitability (PROF). Profitability also used again in this second test to control for companies operating performance. Profitability will be measured using ROA, which calculated as pre-tax income divided by total assets. There are mixed findings regarding the relation between profitability and ETRs. Rego (2013) find that companies with greater pre-tax income have lower ETRs, while Taylor & Richardson (2012) find positive relation between ROA and ETRs.

Finally, the last control variable which may affect corporate tax avoidance level is multinational operations (*multi*). Multinational is a dummy variable, which equals to 1 if the company have at least one foreign incorporated subsidiaries, otherwise is zero. It is expected that multinational companies are negatively associated with ETRs., since multinationals has the opportunity to use the advantage from tax differentials between two different tax jurisdictions. This is in line with prior research by Taylor et al. (2015); Taylor and Richardson (2012); Rego (2003); and Mills and Newberry (2004).

5.4 Difference in Difference Approach

This thesis will use difference in difference approach to look for the effect of exogenous changes in the tax policy, and to analyse how companies react to those changes. Difference in difference approach is typically used to estimate the effect of a specific treatment or policy by comparing the changes in outcomes overtime between a population that is affected by the policy (the treatment group) and a population that is not (the control group).

The treatment group is designed by identifying those companies that are likely to be affected by the new thin-capitalization rule, which is the group of companies with DER far above and far below the maximum allowed DER according to the rule. It is assumed that companies with DER far below the limit will take advantage of the legal loopholes by increasing their DER up until reaching the safe haven point. In contrast, companies with DER far above the limit are assumed to decrease their DER down until being within the safe haven point, in order to comply with the law.

For the control group, this thesis will include the companies that are less likely to be affected by the new rule, which is the group of companies with DER around the limit 4:1. Since the company's DER is already around the maximum limit, thus it can be assumed that the implementation of the new rule will not encourage them to change their debt position. Therefore, the classification relates to the following:

- First Treatment Group (TREATED1) consists of firms with DER between 0 – 3.7:1
- Second Treatment Group (TREATED2) consists of firms with DER above 4.3:1
- A company is assigned to Control Group if its DER is between 3.7:1 – 4.3:1

5.4.1 Regression Formula

To test for the effect of thin capitalization rule on debt financing decision as reflected in hypothesis 1a and 1b this research uses this regression model below:

$$DEBT_{it} = \alpha_{it} + \beta_1 POST_{it} + \beta_2 TREATED1_{it} + \beta_3 TREATED2_{it} + \beta_4 POSTTREATED1_{it} + \beta_5 POSTTREATED2_{it} + \beta_6 RISK_{it} + \beta_7 TANG_{it} + \beta_8 SIZE_{it} + \beta_9 PROF_{it} + \beta_{10} multi_{it} + \varepsilon_{it}$$

The coefficient of interest of hypothesis 1a and 1b are β_4 and β_5, which describes the change of company debt level in treatment groups after the implementation of the thin capitalization rule.

To test for the effect to tax avoidance level after implementation of the new rule in hypothesis 2a and 2b, this research follows this regression model:

$$GAAPETR_{it} = \alpha_{it} + \beta_1 POST_{it} + \beta_2 TREATED1_{it} + \beta_3 TREATED2_{it} + \beta_4 POSTTREATED1_{it} + \beta_5 POSTTREATED2_{it} + \beta_6 CINT_{it} + \beta_7 INVINT_{it} + \beta_8 SIZE_{it} + \beta_9 PROF_{it} + \beta_{10} multi_{it} + \varepsilon_{it}$$

where the coefficient of interest for hypothesis 2a and 2b are β_4 and β_5, which reflect the effect of the thin capitalization rule on treatment groups tax avoidance level after the implementation. The list of variable descriptions will be explained in Appendix A of this thesis.

5.5 Sample Selection and Data Source

The sample of this thesis comprised of Indonesian firms that are publicly listed in Indonesian Stock Exchange over the 2013 – 2016 period. Publicly listed companies are chosen due to the availability of data which are needed to calculate dependent and explanatory variables. The sample period selected in this thesis is 1 year after implementation and 3 years prior to the implementation. Since the new thin capitalization rule is applied starting from the year 2016, therefore the availability of post-implementation-rule data is limited to until 2016 fiscal year report. Moreover, to obtain the trend of debt and tax level of the firms before the new rule applied, this thesis chose sample period 3 years before implementation. All variables are obtained from the financial statement data available in Compustat Global through WRDS, except for multinationality variables. Data related multinationality is hand collected from company's annual report

which available in Indonesian Stock Exchange website. There are some criteria applied in selecting sample firms:

(1) Consecutive financial data should be available for the 2013-2016 period;
(2) Firms must active and have a continuous listing on Indonesian Stock Exchange over the 2013-2016 period.
(3) Following the thin capitalization rule exemptions from PMK-169/2015, firms related with these industries are excluded from the sample selection: banks; financial service institutions; insurance and reinsurance companies; infrastructure industries; oil, gas, and mining industries.
(4) Observations with duplicates and missing data are dropped from the sample

Using Compustat Global, financial data required from all the active companies located in Indonesia are downloaded from the period 2012-2016. An overview of this sample selection process can be found in Table 1. Financial year 2012 is included since it is needed to account for lagged total assets in 2013. Next, firms that are classified in industry exemption based on Indonesian thin capitalization rule (PMK-169) are excluded from the sample selection. This thesis used 6 digit GIC code to identify firm's industry classification. From the amount of 2606 initial firm-year observations downloaded, after excluding firms from industry exemptions, firms with duplicates data, firms with missing data, and firm data from the year 2012, a total 1204 firm-year observations can be achieved. Next, the classification of treatment and control group needed for the difference-in-difference test are based on company debt to equity ratio. From the 1204 observations, 45 are classified as having a High DER (TREATMENT GROUP1), and 1148 are classified as having a Low DER (TREATMENT GROUP2).

Table 1

Sample Selection Process

Initial Number of obtained firms (2012-2016)		2606
Industry exemption based on PMK 169		
Energy Companies	35	
Oil & Gas Companies	185	
Mining Companies	85	
Banks	215	
Finance Companies	80	
Securities Companies	80	
Insurance Companies	79	
Real Estate Companies	200	
Transportation & Infrastructure Companies	35	
Utility Companies	5	
Total firm-year from excluded industries		999
Duplicates Data		3
Firm data from year 2012 (used only to count for lag total assets)		367
Firms with missing data		33
Final Samples of Observation		1204
Control Group		11
Treatment Group 1		45
Treatment Group 2		1148

6. Empirical Results & Analysis

6.1 Descriptive Statistics

Table 2 presents descriptive statistics for all the variables used in the study. From the table, it can be seen that the company debt level is 31%, on average, compared to total assets. This indicates that most Indonesian listed companies use more equity financing rather than debt financing. For the tax avoidance dependent variables, GAAP ETR shows average value of 19%. This rate is much lower than Indonesian statutory tax rate 25%, which indicates that, on average, firms are successfully utilizing strategies to alleviate their overall tax burden. In terms of control variables, the probability of bankruptcy, measured by Altman Z-score shows an average value of 0.71. Average tangible assets owned by the companies is on average 54%. Company size shows an average value of 13.16, while average ROA is around 0.05. Average capital intensity ratio is shown to be 47%, while inventory intensity is around 17%.

Table 2
Descriptive Statistics

Variables	N	Mean	Std. Dev.	Quantiles				
				Min	Q1	Median	Q3	Max
Continuous:								
DEBT	1204	0.31	0.39	0.00	0.09	0.25	0.44	3.11
GAAP ETR	1204	0.19	0.39	-1.95	0.10	0.24	0.29	1.68
RISK	1204	0.71	2.06	-4.57	0.33	0.54	0.88	10.62
TANG	1204	0.54	0.23	0.00	0.38	0.58	0.72	0.93
SIZE	1204	13.16	3.40	4.04	12.55	14.09	15.29	17.97
PROF	1204	0.05	0.13	-0.45	0.00	0.04	0.10	0.50
CINT	1204	0.47	0.75	0.00	0.20	0.41	0.63	17.23
INVINT	1204	0.17	0.21	0.00	0.02	0.13	0.25	4.86
Dummy:								
POST	1204	0.25	0.43	0.00	0.00	0.00	0.50	1.00
TREATED1	1204	0.04	0.19	0.00	0.00	0.00	0.00	1.00
TREATED2	1204	0.95	0.21	0.00	1.00	0.00	1.00	1.00
POSTTREATED1	1204	0.01	0.09	0.00	0.00	0.00	0.00	1.00
POSTTREATED2	1204	0.24	0.43	0.00	0.00	0.00	0.00	1.00
multi	1204	0.56	0.50	0.00	1.00	1.00	1.00	1.00

Note: All variables are winsorized at the 1st and 99th level.

Table 3 Panel A shows the Pearson correlations between dependent variable DEBT, and all the explanatory variables related. The correlation reflects a linear relation between the variables. Variable TREATED1 is positive and significantly correlated with DEBT level, as well as TREATED2 which is negative and significantly correlated with DEBT level. Those indicate that before implementation of the rule, high DER firms (TREATED1) has a positive relation with DEBT, while low DER firms (TREATED2) has a negative relation with DEBT. Variable POSTTREATED1 is also positive and significantly related to DEBT. This contradicts the expectation in hypothesis 1. Hypothesis 1 expects that POSTTREATED1 has a negative relation with DEBT, since it is assumed that high DER companies will reduce its debt level after the implementation of the rule. Variable TANG shows a positive and significant correlation with DEBT, while SIZE and profitability shows a negative and significant correlation with DEBT.

Table 3 Panel B illustrates the correlation between GAAPETR and all the explanatory variables. Of all the explanatory variables, only POSTTREATED2 and PROF that demonstrates a significant amount. POSTTREATED2 is negative and significantly related to GAAPETR. This supports hypothesis 2b which suggests that low DER firms will have a lower effective tax rate after the implementation of the rule. Among the control variables, PROF has a positively significant correlation with GAAPETR. This support the assumptions that more profitable firms pay higher tax since the pretax income is also higher.

Table 3
Pearson Correlation Matrix

Panel A ***Correlation Matrix for Hypothesis 1***

Variables	DEBT	POST	TREATED1	TREATED2	POST TREATED1	POST TREATED2	RISK	TANG	SIZE	PROF	multi
DEBT	1.0000										
POST	0.0051	1.0000									
TREATED1	0.1746*	-0.0126	1.0000								
TREATED2	-0.1933*	0.0000	-0.8922*	1.0000							
POST TREATED1	0.0758*	0.1585*	0.4644*	-0.4144*	1.0000						
POST TREATED2	-0.0178	0.9690*	-0.1102*	0.1236*	-0.0512	1.0000					
RISK	-0.0492	0.0424	-0.0242	0.0349	-0.0360	0.0507	1.0000				
TANG	0.1036*	0.0071	-0.0014	0.0326	-0.0001	0.0103	0.0472	1.0000			
SIZE	-0.1161*	0.0192	-0.0900*	0.0591*	-0.0203	0.0216	0.1164*	-0.1469*	1.0000		
PROF	-0.3327*	-0.0552	-0.1287*	0.1201*	-0.0766*	-0.0407	-0.0137	-0.0940*	0.1567*	1.0000	
multi	0.0366	-0.0029	-0.0033	0.0126	0.0067	-0.0073	-0.0866*	0.0668*	-0.0195	0.0723*	1.0000

*Significant at 5%, two-tailed.

Table 3 (continued.)
Pearson Correlation Matrix

Panel B Correlation Matrix for Hypothesis 2

	GAAP ETR	POST	TREATED1	TREATED2	POST TREATED 1	POST TREATED 2	CINT	INVINT	SIZE	PROF	multi
GAAPETR	1.0000										
POST	-0.0629	1.0000									
TREATED1	-0.0553	-0.0126	1.0000								
TREATED2	0.0465	0.0000	-0.8922*	1.0000							
POST TREATED1	-0.0201	0.1585*	0.4644*	-0.4144*	1.0000						
POST TREATED2	-0.0631*	0.9690*	-0.1102*	0.1236*	-0.0512	1.0000					
CINT	0.0048	0.0132	-0.0015	0.0134	-0.0007	0.0164	1.0000				
INVINT	0.0563	-0.0537	0.0046	-0.0036	-0.0351	-0.0500	0.0177	1.0000			
SIZE	0.0459	0.0192	-0.0900*	0.0591*	-0.0203	0.0216	0.0002	0.0076	1.0000		
PROF	0.1319*	-0.0552	-0.1287*	0.1201*	-0.0766*	-0.0407	-0.0428	0.1145*	0.1567*	1.0000	
multi	-0.0255	-0.0029	-0.0033	0.0126	0.0067	-0.0073	-0.0795*	0.0734*	-0.0195	0.0723*	1.0000

*Significant at 5%, two-tailed.

6.2 Regression Result

6.2.1 The effect of implementation of thin capitalization rule on Financing Decision

Table 4 shows the result of the regression for the first hypothesis. The first column measures the effect of implementation of thin capitalization rule on company financing decision which measured by debt level after being applied for all sample firms regardless the classification of control and treatment groups. Variable POST captures the difference between pre and post thin capitalization rule implementation for all sample firms. The positive coefficient in variable POST shows that on average, overall company debt level is increased the year after the implementation of the rule. However, since the result is insignificant thus it cannot be concluded that the overall change in debt level is due to the effect of implementation of the rule.

The second column reflects the effect of thin capitalization rule implementation after distinguishing the sample firms by high DER firms (TREATED1), low DER firms (TREATED2), and the control group. The treatment variables (TREATED1 and TREATED2) describe the mean difference between the treatment groups and the control group before the rule applied. The first treatment variable (TREATED1) shows a positive relation with DEBT. This means that, on average, high DER firms have debt level 4.6% higher than the control group before the new rule applied. However, the result is insignificant. The second treatment group (TREATED2) shows a negatively significant relation with DEBT. This reflects that low DER firms have 33.2% lower debt level compared to the control group before the new rule implemented. Next, the variable POSTTREATED1 and POSTTREATED2 captures the effect of implementation of the thin capitalization rule after being applied on firms with high DER and low DER compared to the control group, respectively. From Table 4, it can be seen that after the implementation of the rule firms with high DER will decrease their debt level around 15.1% compared to the control group. Moreover, firms with low DER will also lower their debt level around 9.4% after the new rule implemented, compared to the control group. The result is significant for both variable POSTTREATED1 and POSTTREATED2. This suggests that the implementation of the rule affects both high DER and low DER companies to lower their debt level.

In order to provide a more accurate result, the third regression added control variables which might also affect the dependent variable DEBT. In the third regression,

the TREATED2 group still shows a negatively significant amount of 33.4% which is slightly lower than in the second regression. This means that on average, after controlling for other factors, the low DER firms has 33.4% debt level lower than the control group in the preceding years before the new rule implemented. POSTTREATED1 shows a negatively significant relation with DEBT with the coefficient -0.181. This means that compared to the control group, high DER companies will reduce their debt level around 18.1% after the implementation of the rule. On the other hand, even though POSTTREATED2 shows the same negative coefficient as the second regression, but the result is become insignificant. This suggests that the decrease of debt level in low DER companies after the rule applied is due to another cause other than the effect of the implementation of thin capitalization rule. Therefore, hypothesis 1a can be accepted since high DER companies will have a decreasing debt level after the implementation period, while hypothesis 1b can be rejected since low DER companies shows no increase in debt level after the implementation period.

The first control variable RISK shows a significantly negative amount of -0.007. It means that probability of bankruptcy has a negative relation with company debt level. The higher the probability of bankruptcy, the lower the company debt level. As the risk of bankruptcy increase, the solvency risk is also increase. Solvency risk is the risk when a company is not capable to pay its maturing debt. Thus when the risk of bankruptcy is high, company will decrease its debt level. Moreover, creditor will also refuse to provide debt to the company with high bankruptcy risk in order to avoid loss. Related to the trade-off theory of leverage explained in section 2, this result also gives insight that companies will choose debt financing method up until marginal tax benefit from debt financing equals to marginal bankruptcy cost. If adding more debt means adding solvency risk to the companies, then lowering debt level will be more beneficial for companies with high bankruptcy risk. This result is in line with the prior research that cost of bankruptcy has negative relation with debt financing decision (Almendros and Mira, 2016; Mackie-Mason, 1990; Graham, 1996).

The second control variable, tangibility (TANG), measures the agency cost of debt which influence company decision to use debt financing. It is expected that the more tangible assets owned by the company, the higher the debt level. A higher ratio of tangible assets besides reflecting a company's business worth and a lower probability of bankruptcy, tangible assets can also be used as a collateral for loan. Table 4 shows a positively significant amount of tangibility with coefficient of 0.107. It means that as the

amount of tangible assets increases, the company debt level increase by 10.7%. This is also in line with prior research by Almendros & Mira (2016) which suggest that tangibility has positive relation with debt level.

The third control variable SIZE shows a negative relation between company size and debt level. In other words, the bigger the company, the lower the debt level. However, since the value is insignificant, thus it can be implied that company size has no effect on company debt level. Profitability (PROF) is a variable that controls for the effect of company's performance on company's decision to use debt financing. Table 4 shows that company profitability has a negatively significant coefficient in relation to debt level. This result is in contrast with Almendros & Mira (2016) which suggested that company with high performance will have lower bankruptcy risk, which in turn give more flexibility to use debt financing. However, according to Pecking Order Theory, it suggests that company follows a specific order in financing decision. First, company will use internal financing, and follows by external financing if it is required. The negatively significant result from table 4 suggests that the higher the profitability, the lower the debt level. The reason could be that since the profitability of the company is higher, thus the company is able to finance its operations using internal financing from its retained earnings rather than using external financing.

From table 4, multinational company (*multi*) has a positively significant amount. This suggests that if a company is classified as multinationals, the company might have more flexibility using debt financing. This provides insight that multinational company have more flexibility of borrowing loan from different countries since its operations are widely spread around the world. This result is in line with Webber (2010).

The regression model without including control variables has an adjusted R^2 0.050, which means that the independent variable only able to explain 5% of the variation of the dependent variable, which is relatively low. Furthermore, after including the control variables, the adjusted R^2 increased to the level of 0.148. This means that the explanatory power of the model in explaining how the independent variables captures the change in company debt level is 14.8%.

All in all, according to the results provided in Table 4, it can be concluded that the implementation of thin capitalization rule in 2016 has an effect on Indonesian publicly listed companies with High DER in choosing financing method. The results from both models with and without control variables provide significant evidence that High DER companies tend to lower their debt level after the implementation of the thin capitalization

rule in 2016, compared to the control group. The reason could be that High DER companies want to comply with the rule since their level of DER ratio has exceeded the maximum limit allowed by the rule if they want to use the interest tax shield benefit. Therefore, hypothesis 1a can be accepted.

On the other hand, the inconsistency of significance in variable POSTTREATED2 on both model with and without control variables provide weak evidence that the implementation of the rule has an effect on low DER companies' debt level. Therefore, hypothesis 1b cannot be accepted. The negative relation showed by the coefficient might be caused by other unexplained factors which are not included in the model. Seeing that the proportion of low DER companies in overall sample firms is much higher than high DER companies, it can be inferred that Indonesian publicly listed firms are mostly funded by equity financing rather than debt financing. Therefore, the change in policy regarding thin capitalization strategy will not give much impact to these low DER firms, since it seems that they have not utilize the interest tax shield benefit from using debt financing yet. The other reason could be because the implementation of the rule is relatively new. The rule was issued in 2015 and the implementation was started in 2016. Therefore, the financial data available which can be analysed regarding the effect of the policy change is limited to only from the year 2016. In addition, the company decision regarding the change of financing method usually takes a meticulous consideration which may require more time. Including more sample period after implementation in the following year might help to reflect the effect of change in the policy more accurately.

Table 4

Regression Result for Financing Decision

Variable	*All Firms Test* DEBT **Coefficient [p-value]**	*Tests without control variables* DEBT **Coefficient [p-value]**	*Tests with control variables* DEBT **Coefficient [p-value]**
POST	0.014	0.111	0.101
	[0.662]	[0.006]***	[0.116]
TREATED1		0.046	-0.041
		[0.153]	[0.492]
TREATED2		-0.332	-0.334
		[0.000]***	[0.000]***
POSTTREATED1		-0.151	-0.181
		[0.040]**	[0.081]*
POSTTREATED2		-0.094	-0.105
		[0.043]**	[0.123]
RISK			-0.007
			[0.041]**
TANG			0.107
			[0.038]**
SIZE			-0.005
			[0.263]
PROF			-0.939
			[0.000]***
multi			0.043
			[0.071]*
Constant	0.303	0.609	0.630
	[0.000]***	[0.000]***	[0.000]***
N-observations	1204	1204	1204
R-squared	0.024	0.062	0.163
Adj. R-squared	0.015	0.050	0.148
Industry Fixed Effect	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes

*, **, *** indicates significance at 0.10, 0.05, 0.01 levels, respectively

Table 4 presents the results from an OLS regression of the application of thin capitalization rule using DEBT as dependent variable. Variable definitions are given in Appendix A.

6.2.2 The effect of implementation of thin capitalization rule on Corporate Tax Avoidance

Next, this thesis tests for the effect of implementation of thin capitalization rule into corporate tax avoidance level which measured by GAAP ETR. The result of this test can be found in Table 5. Hypothesis 2a and 2b in this thesis expected that after the implementation of the new rule firms with high DER (POSTTREATED1) will have an increasing ETR, while low DER firms (POSTTREATED2) will have a decreasing ETR.

First, this thesis will test the effect of implementation of thin capitalization rule to all firms before and after the rule applied. Variable POST from the first column in Table 5 shows negative coefficient, which means that on average all firms will have a lower ETR after the rule applied. This result is indeed contrast to the purpose of the implementation of the rule which is to reduce tax avoidance level. However, since the result is insignificant therefore I will not take any conclusion regarding the effect of implementation of the thin capitalization rule in corporate tax avoidance level based on this model solely.

As shown on the next columns in Table 5, in both tests which excludes and includes control variables, it can be seen that variable POST provides a positively significant value. Variable POST here captures the aggregate factors that would cause change in ETR in the absence of thin capitalization rule implementation. The coefficient shows the expected mean of change in outcome before to after implementation of the rule among the control group. Result shows that there is a positive and significant relation between variable POST and GAAP ETR. This means that in the absence of thin capitalization rule implementation, GAAP ETR will still increase. In other words, it can also mean that the control group has a positive ETR compare to the treatment groups.

In both tests without control variables and with control variables, variable POSTTREATED1 shows a negative but insignificant coefficient. The negative coefficient means that after the implementation of the rule the average ETR of High DER firms will decrease around 22.7% and 20.1% compared to the control group in test without control variables and with control variables, respectively. However, since the result is insignificant thus it cannot be inferred that this decrease in ETR is due to the effect of implementation of the thin capitalization rule. It can also be seen from the previous test with debt level in Table 4 that High DER firms will indeed decrease their debt level after implementation period, thus ideally this matter will lead to increasing ETR for High DER firms. In contrast, Table 5 shows that the ETR of High DER companies is negative after the implementation period. Thus, it can be concluded that the implementation of the thin capitalization rule

has no effect on corporate tax avoidance level of High DER firms. Therefore, hypothesis 2a cannot be accepted.

Variable POSTTREATED2 shows a negative and significant coefficient at 95% confidence level. As already explained before in hypothesis development, firms with low DER are expected to have a decreasing ETR compared to the control group after the implementation of the new rule. It is assumed that firms with low DER will increase its debt level to take advantage of the legal loopholes until reaching the maximum limit of DER based on the rule. Therefore, the tax liability can be minimized through interest tax shield. The negative coefficient of POSTTREATED2 in Table 5 which remains significant in both tests with and without control variables show that after the implementation, firms with low DER will have a decreasing ETR compared to the control group. Therefore, hypothesis 2b can be accepted.

In addition, this matter is interesting because recalling the result of the first hypothesis in Table 4, it can be seen that low DER companies tend to lower its debt level after the implementation of the rule. Ideally, when a low DER company decreases its debt level, its effective tax rate should be increased since the company capability to use interest tax shield which already low (because of low DER) became lower. However, the result from Table 5 implied that the ETR of low DER companies in the period after implementation is lower than the control group. Even though hypothesis 2b can be accepted, but these two contrasting result related to the use of debt financing and the outcome of ETR after implementation period show weak evidence that the lower ETR is due to the use of thin capitalization strategy by low DER firms through increasing debt financing. The lower ETR after the implementation period could be the implication of using another practice of tax avoidance strategy other than thin capitalization.

Regarding control variables, the coefficient of capital intensity (CINT) in Table 5 shows that there is a positive relation between capital intensive firms and ETR. This is in contrast with what already expected that firms with high capital intensity will have a lower ETR since capital intensive firms can use depreciable assets as a non-debt-tax shield to reduce tax liability, as depreciation expense is also one of the tax-deductible items. In line with the predicted sign, inventory intensive firms (INVINT) has a positive relation with ETR. As expected, since inventory intensive firms do not have as much flexibility as capital intensive firms to use non-debt-tax shield from depreciable assets, therefore inventory intensive firms has a positive association with ETR. From Table 5, it can be seen that even though both coefficient provide the same positive correlation to ETR, the

coefficient of CINT is smaller compared to INVINT. While high inventory intensive firms result in 8.2% increase of ETR, high capital intensive firms only provide 0.2% increase of ETR. In other words, inventory intensive firms have more contributions in predicting positive ETR compared to capital intensive firms. However, the result of both predictors are insignificant. Thus, I cannot draw any conclusion regarding the relation of both capital intensity and inventory intensity to ETR.

Control variable SIZE has a positive but insignificant value. It means that company size has no significant effect on company ETR. Control variable profitability (PROF) provides a positive coefficient which is highly significant. This means that profitable firms has a positive association with ETR. The more profitable the company the higher the tax burden, since the pre-tax income will also higher. This result is similar with the findings in Taylor and Richardson (2012) which suggests that ROA has a positive relation with ETR.

The last control variable multinational (*multi*) provides a negative but insignificant value. The negative coefficient indicates that there is a tendency of multinational company to have a lower ETR, as they can use tax advantage from transactions between different tax jurisdictions. However, since the result is insignificant therefore the relation between multinational and company ETR in this model cannot be predicted accurately.

Furthermore, the adjusted R^2 for this GAAPETR model is 0.006 and 0.020 for test without controls variables and test with control variables, respectively. This means that the capability of this model to explain the variance of ETR to predict corporate tax avoidance level is relatively low. There might be some other correlated variables that are not captured by the model which may affect the company ETR. In addition, the relatively small sample size and narrow sample period might also influence the low value of adjusted R^2 in this model. Specifically, because the rule has just been issued in 2015 then the financial data after the year of implementation that can be obtained is limited to only from the year 2016. Therefore, the effect that can be captured from the implementation of the rule is also limited.

Table 5

Regression Result for Corporate Tax Avoidance

	All Firms Test	*Tests without control variables*	*Tests with control variables*
	GAAP ETR	GAAP ETR	GAAP ETR
Variable	**Cofficient [p-value]**	**Cofficient [p-value]**	**Coefficient [p-value]**
POST	-0.048	0.252	0.252
	[0.139]	[0.048]**	[0.061]*
TREATED1		- 0.061	- 0.032
		[0.654]	[0.814]
TREATED2		0.065	0.063
		[0.459]	[0.481]
POSTTREATED1		- 0.227	- 0.201
		[0.383]	[0.440]
POSTTREATED2		- 0.308	- 0.295
		[0.017]**	[0.030]**
CINT			0.002
			[0.874]
INVINT			0.082
			[0.133]
SIZE			0.002
			[0.557]
PROF			0.371
			[0.000]***
multi			- 0.027
			[0.235]
Constant	0.149	0.091	0.045
	[0.001]***	[0.354]	[0.703]
Observations	1204	1204	1204
R-squared	0.014	0.018	0.036
Adj. R-squared	0.005	0.006	0.020
Industry Fixed Effect	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes

*, **, *** indicates significance at 0.10, 0.05, 0.01 levels, respectively

Table 5 presents the results from an OLS regression of the implementation of thin capitalization rule using GAAP ETR as dependent variable. Variable definitions are given in Appendix A.

6.3 Additional Analysis

Webber (2010) suggests that thin capitalization strategy is often used by multinational companies to minimize tax burden using tax rate differentials between two different tax jurisdictions. When multinational companies have subsidiary which located in higher tax jurisdictions which financed by intercompany debt from the parent located in lower tax jurisdictions, then the profit can be shifted into the country which imposed lower tax. This way, by using intercompany debt, the subsidiary in higher-tax jurisdictions can reduce its taxable income due to the deductibility of interest expense associated with debt financing. Thus, the subsidiary can have a lower tax liability. Moreover, the interest paid to the parent located in lower tax jurisdictions which recognized as interest income are imposed to lower tax rate. Therefore, these two conditions will lead to lower tax payable to the authority.

In the first regression model regarding the effect of the implementation of the thin capitalization rule on company debt level, multinationality variable provides positive and significant amount. This means that multinational companies tend to have more preferences in using debt financing method. In the second regression related to the thin capitalization rule effect on corporate tax avoidance level, it can be seen that multinationals provide negative relation with company ETR. This means that multinationals have a lower effective tax rate compared to non-multinational companies. However, the second regression provide insignificant p-value for multinationals. Thus, this thesis would like to conduct an additional analysis to consider the interaction effects of multinationality to the treatment groups to determine if the implementation of thin capitalization rule has an impact on financing decision and corporate tax avoidance level of treatment companies which are multinationals. After interacting variable multinationality (*multi*) and both treatment groups, the regression model for both tests can be modified as follows:

$$DEBT_{it} = \alpha_{it} + \beta_1 POST_{it} + \beta_2 MULTITREATED1_{it} + \beta_3 MULTITREATED2_{it} + \beta_4 POSTMULTITREATED1_{it} + \beta_5 POSTMULTITREATED2_{it} + \beta_6 RISK_{it} + \beta_7 TANG_{it} + \beta_8 SIZE_{it} + \beta_9 PROF_{it} + \varepsilon_{it}$$

$$GAAPETR_{it} = \alpha_{it} + \beta_1 POST_{it} + \beta_2 MULTITREATED1_{it} + \beta_3 MULTITREATED2_{it} + \beta_4 POSTMULTITREATED1_{it} + \beta_5 POSTMULTITREATED2_{it} + \beta_6 CINT_{it} + \beta_7 INVINT_{it} + \beta_8 SIZE_{it} + \beta_9 PROF_{it} + \varepsilon_{it}$$

Table 6 shows the additional analysis results regarding the effect of implementation of thin capitalization rule on multinational treatment groups. MULTITREATED1 in both tests provide a positive and significant value. This shows that multinational high DER companies have a relatively high debt level before the implementation of the rule, compared to the control group. Control variables RISK, TANG, and PROF remains significant with the same sign of coefficient value as the main regression in Table 4.

In both tests without and with control variables, variable POSTMULTITREATED1 provides negative coefficient. This means that after implementation of thin capitalization rule, multinational High DER companies will decrease their debt level compared to the control group. Variable POSTMULTITREATED2 provides positive coefficient in both tests. It can be inferred that after implementation of the rule, multinational Low DER companies will increase their level of debt compared to the control group. In general, these results are in line with my first hypotheses where High DER companies are expected to decrease their debt level and Low DER companies are expected to increase their debt level after the implementation of the rule. As High DER companies are willing to comply with the rule, thus they decrease the company debt level. For Low DER companies, since they still far below the limit, they will increase their debt level up until reach to the limit to take advantage of the interest tax shield from debt financing as long as it is still safe within the rule. Being multinationals add more benefit for the company to take advantage of tax differentials between two tax jurisdictions. Thus, including multinationality as a moderating variable in the treatment groups will add more evidence to the hypotheses. However, unfortunately these results are still insignificant. Therefore, the evidence is still not enough to corroborate that the change in debt level in both treatment groups are due to the effect of the implementation of the rule. Providing more sample firms and sample period post-implementation in the future research may provide a more accurate result in analyzing the effect of this tax policy change on company debt level.

Table 7 explained the additional analysis regression result for the effect of implementation of thin capitalization rule on corporate tax avoidance level on multinational treatment groups. After interacting multinationality into both treatment groups, result shows that both multinational treatment groups will have a lower effective tax rate after the new rule implemented. For High DER companies, the results are the same with the main regression in Table 4 where multinationals are not included as a moderating

variable. Multinational High DER companies provide a lower ETR compared to the control groups after the implementation period, and the result is statistically insignificant. This implied that thin capitalization rule implementation has no effect on multinational High DER companies corporate tax avoidance level. Although they might decrease their debt level after the implementation of the rule, but this does not result in a lower ETR. The reason could be that they use another tax avoidance strategy to lower their tax liability other than thin capitalization strategy.

For low DER multinational companies, it makes sense that they have a lower ETR, as they might use thin capitalization strategy to minimize its tax burden as long as it is still within the safe haven limit. However, since the result is insignificant, this result cannot be concluded as the effect of implementation of thin capitalization rule on multinational treatment groups either.

The relatively low adjusted R^2 0.022 suggested that the model does not capture the relation between independent and dependent variable really well. For future research, it is suggested that the researcher use more variables related to the factors affecting corporate tax avoidance level, and to use bigger sample size and longer post-sample period.

Table 6

Additional Analysis Regression Result for Financing Decision using Multinationals

Variable	*All Firms Test* DEBT **Coefficient [p-value]**	*Tests without control variables* DEBT **Coefficient [p-value]**	*Tests with control variables* DEBT **Coefficient [p-value]**
POST	0.014	0.012	-0.011
	[0.662]	[0.778]	[0.800]
MULTITREATED1		0.380	0.295
		[0.000]***	[0.000]***
MULTITREATED2		0.009	0.025
		[0.724]	[0.362]
POSTMULTITREATED1		-0.015	-0.046
		[0.822]	[0.917]
POSTMULTITREATED2		0.001	0.006
		[0.980]	[0.909]
RISK			-0.007
			[0.064]*
TANG			0.097
			[0.063]*
SIZE			-0.005
			[0.229]
PROF			-0.963
			[0.000]***
Constant	0.303	0.281	0.333
	[0.000]***	[0.000]***	[0.001]***
N-observations	1204	1204	1204
R-squared	0.024	0.042	0.145
Adj. R-squared	0.015	0.030	0.131
Industry Fixed Effect	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes

*, **, *** indicates significance at 0.10, 0.05, 0.01 levels, respectively

Table 6 presents the results from an OLS regression of the application of thin capitalization rule using DEBT as dependent variable using multinationals as moderating variable between treatment group (TREATED1) and time variable (POST). Variable definitions are given in Appendix A.

Table 7

Additional Analysis Regression Result for Corporate Tax Avoidance Level using Multinationals

	All Firms Test	*Tests without control variables*	*Tests with control variables*
	GAAP ETR	GAAP ETR	GAAP ETR
Variable	**Coefficient [p-value]**	**Coefficient [p-value]**	**Coefficient [p-value]**
POST	-0.048	-0.020	-0.006
	[0.139]	[0.649]	[0.891]
MULTITREATED1		-0.163	-0.139
		[0.205]	[0.279]
MULTITREATED2		-0.002	-0.009
		[0.946]	[0.709]
POSTMULTITREATED1		-0.203	-0.181
		[0.353]	[0.402]
POSTMULTITREATED2		-0.045	-0.048
		[0.419]	[0.385]
CINT			0.001
			[0.894]
INVINT			0.082
			[0.122]
SIZE			0.002
			[0.566]
PROF			0.366
			[0.000]***
Constant	0.149	0.158	0.096
	[0.001]***	[0.001]***	[0.204]
Observations	1204	1204	1204
R-squared	0.014	0.021	0.038
Adj. R-squared	0.005	0.009	0.022
Industry Fixed Effect	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes

*, **, *** indicates significance at 0.10, 0.05, 0.01 levels, respectively

Table 7 presents the results from an OLS regression of the implementation of thin capitalization rule using GAAP ETR as dependent variable using multinationals as a moderating variable in treatment group variable. Variable definitions are given in Appendix A.

7. Conclusions

The purpose of this thesis is to investigate the effect of Indonesian new thin capitalization rule on company financing decision to use debt financing and also the effect on corporate tax avoidance level. This thesis observes financial data from Indonesian listed companies from the year 2013 through the year 2016, which is three years before and one year after the implementation of the rule.

The first regression result shows that the implementation of the thin capitalization rule only affects High DER companies' decision but does not affect Low DER companies' decision in using debt financing method. High DER companies are found to have decreasing debt level after the implementation period, since they might want to comply with the rule. The findings only support the alternative hypothesis 1a, but not hypothesis 1b. Therefore, it can be concluded that Low DER companies' financing decision whether to use debt financing method or not is not affected by the implementation of the thin capitalization rule. The reason could be because most of Indonesian listed companies still prefer equity financing to debt financing. This is reflected in the grouping of treatment and control groups, which comprises of only 45 observations which have a high debt-to-equity ratio, while 1148 observations show a low debt-to-equity ratio. As a result, a restriction in thin capitalization strategy does not give much implication for the low DER companies since they are not engaged much in thin capitalization practice to reduce tax. The decreasing debt level in Low DER companies could be due to other reasons other than complying with the new rule. Providing a longer post-implementation period probably will give a different result, as switching from equity to debt financing requires more time to analyze the cost and benefit arising from the switch in financing method.

With regards of the effect of thin capitalization rule implementation on corporate tax avoidance level, the second regression result supports only the alternative hypothesis 2b. The corporate tax avoidance level of High DER companies is found to be not affected by the implementation of the new thin capitalization rule. In contrast, Low DER companies are found to have a lower ETR after the year of implementation of the rule. However, since the result regarding corporate tax avoidance level is in contrast with the related result with company debt level, therefore I cannot conclude that the decreasing ETR or the increasing in tax avoidance level in Low DER firms after the implementation of the rule is due to the

utilization of thin capitalization strategy. The results of the additional analysis also found that both multinational High DER and Low DER companies show a decreasing ETR after implementation of the thin capitalization rule, although the result is insignificant. All in all, the results of this study suggest that the implementation of thin capitalization rule is found to be not effective yet to curb tax avoidance level in Indonesian publicly listed companies. The reason could be because of unexplained variables that might also affect corporate tax avoidance level, for example another tax planning strategy other than thin capitalization, or also because of limited time period post-implementation which is only 1 year after.

This study contributes to the corporate tax planning literatures by analyzing how thin capitalization rule restricts companies to use more debt financing method to engage in corporate tax avoidance while minimizing tax liability. The result of this study reflects firm behavior in developing country regarding the use of thin capitalization strategy in avoiding tax. The finding of this study add insights to existing literatures regarding firm behavior in developing country which shows that most of publicly listed firms in Indonesia still prefer more equity financing to debt financing. This supports the findings of developing country studies by Ogundaja & Onakoya (2016) which found that Nigerian firms are mainly financed by equity and do not use excessive debt financing to use interest-tax-shield benefit.

In regards to reduce dilemma in developing country whether to issue thin capitalization rule or to increase investment growth, this study may also give insights related to the reason why Indonesian authority issued a less strict rule compared to the previously issued rule in 1984. After distinguishing high DER firms and low DER firms from overall sample firms, the reason why Indonesian authority provides a less strict rule can be found reasonable. On one side, the implementation of the thin capitalization rule is intended to reduce the use of excessive debt financing as a corporate tax avoidance strategy. This might be aimed to those companies who have High DER. On the other side, the implementation of the thin capitalization rule might alarm the Low DER companies who previously were not engaged in thin capitalization strategy that they still have a chance to use debt financing method if they want to minimize their tax liability as long as it is still below the maximum limit. Although from tax perspective this might harm potential tax revenue, but looking from the investment perspective this rule might also

increase investment activity by Low DER companies. Therefore, while protecting the tax base, the government can also still increase investment activities.

This research is subject to several limitations. First, the post period implementation is only one year. Being issued in 2015, the new Indonesian thin capitalization rule is applied in 2016. Therefore, the available financial data that can be obtained to analyzed the effect of the change in the tax policy is limited. On the other hand, the company decision to change financing method usually requires rigorous analysis which needs longer time. Therefore, it is hard to measure the variation of company debt level based on one year after effect of the implementation of the rule. Second, the calculation of total debt in this thesis only consist of total short-term debt and total long-term debt, while in PMK-169 total debt is also includes interest-bearing trade payables. The data which can be obtained from Compustat Global only consist of total current debt and total long-term debt. Data related to interest bearing trade payables are not provided in Compustat Global. Therefore, it is excluded in calculating total debt in measuring the variables. Third, this thesis only used financial data to measure the dependent variables debt level and corporate tax avoidance. This could also be the reason why the explanatory power of the model to explain the variation in dependent variables are relatively low.

For future research, it is suggested to use post-sample period two or three year after implementation to provide a clearer trend of the effect in policy change. Moreover, regarding the measurement of the variables, it would be more accurate if the measurement also includes interest bearing trade payables to measure total debt. Thus, the analysis can provide a more precise result. Regarding the variables used, future research might include other variables which may affect debt level and corporate tax avoidance level. Related to tax avoidance level, future research may include measurements other than from financial data, such as corporate governance variables since it is also widely used in studies investigating tax avoidance level. In addition, it is also suggested to measure the effectivity of the implementation of thin capitalization rule in one country by comparing the effect in the country which apply thin capitalization rule as a treatment group and other country which do not apply thin capitalization rule as a control group.

References

Almendros, J.A.C., & Mira, F.S. (2016). The effect of taxes on the debt policy of Spanish listed companies. *Journal of the Spanish Economic Association*, *7*, 359-391.

Alworth, J., & Arachi, G. (2001). The effect of taxes on corporate financing decisions: Evidence from a panel of Italian firms. *International Tax Public Finance*, *8*, 353–376.

Babberich, N.P.M. (2009). The thin capitalization rules and multinationals financing and investment decision: Evidence from Dutch legislation. (Master's thesis). Erasmus Universiteit Rotterdam, Rotterdam.

Beuselinck, C., Bysschaert, A., & Deloof, M. (2005). Business groups, taxes, and earnings management. *European Accounting Association Congress.*

Blouin, J., Huizinga, H., Leaven, L., & Nicodeme, G. (2013). Thin capitalization rules and multinational firm capital structure. *Taxation Papers Working Paper,* N.42.

Brigham, E. F., & Ehrhardt M. C. (2011). Financial management: Theory and practice (13 Ed.). South-Western: South Western CENGAGE Learning.

Buettner, T., Overesch, M., Schreiber, U., & Wamser, G. (2006). The impact of thin-capitalization rules on multinational's financing and investment decisions. *Centre for European Economic Research*, 06-068.

Committee of Experts on International Cooperation in Tax Matters. (2011). *Revision of the Manual for the Negotiation of Bilateral Tax Treaties*. United Nations: Seventh Session.

Deloitte. (2010). Brazil Tax Alert. Retrieved from: http://mobile.deloitte-tax-news.de/steuern/internationales-steuerrecht/files/uis-brazil-tax-alert-15062010.pdf

Deloitte. (2016). Indonesian Tax Guide. Retrieved from: https://www2.deloitte.com/id/en/pages/tax/articles/indonesian-tax-guide-2016.html

Deloitte. (2017). International Tax Taiwan Highlights 2017. Retrieved from: https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Tax/dttl-tax-taiwanhighlights-2017.pdf

Desai, M.A., Foley, C. F., & Hines, J.R. (2006). Do tax havens divert economic activity? *Economics Letters, 90*, 219-224.

Dharmapala, D., & Hines, J. R. (2009). Which firms become tax havens? *Journal of Public Economics, 93*, 1058-1068.

Directorate General of Taxes. (2015). *Annual Report 2015*. Jakarta: Ministry of Finance.

Dyreng, S.D., Hanlon, M., & Maydew, E.L. (2008). Long-run corporate tax avoidance. *The accounting Review, 83*, 61-82.

Egger, P., Keuschnigg, C., Merlo, V., & Wamser, G. (2014). Corporate taxes and internal borrowing within multinational firms. *National Bureau of Economic Research*.

Feld, L., Heckemeyer, J., & Overesch. (2013). Capital structure choice and company taxation: A meta-study. *Journal of Banking & Finance*, *37(8)*, 2850-2866.

Gajewski, D. (2012). Tax-related and economic consequences of selecting the method of debt financing of companies with regard to thin capitalization in OECD member countries. *Contemporary Economics Journal*, *7*.

Graham, J. R. (1996). Debt and the marginal tax rate. *Journal of Financial Economics*, *41*, 41–74.

Graham, J.R, & Tucker, A. (2006). Tax shelter and corporate debt policy. *Journal of Financial Economics, 81*: 563-594.

Gravelle, J.G. (2009). Tax havens: International tax avoidance and evasion. *Congressional Research Service, Report for US Congress*.

Gupta, S., & Newberry, K. (1997). Determinants of the variability in corporate effective tax rates: Evidence from longitudinal data. *Journal of Accounting and Public Policy*, *16*, 1-34.

Hanlon, M., & Heitzman, S. (2010). A review of tax research. *Journal of Accounting and Economics, 50*, 127-178.

Hartmann-Wendels, T., Stein, I., Stöter, A. (2012). Tax incentives and capital structure choice: evidence from Germany. (Discussion Paper). Deutsche Bundesbank.

Haufler, A., & Runkel, M. (2008). Multinational's capital structures, thin capitalization rules', and corporate tax competition. (Working Paper). European Tax Policy Forum.

Kunieda, S., Takahata, J., Yada, H. (2011). Japanese firms' debt policy and tax policy. (Discussion Paper). Tokyo: Hitotsubashi University.

Lazonick, W., & O'Sullivan, M. (2000). Maximising shareholder value, a new ideology for corporate governance. *Economy and Society*, *29(1)*, 13-35.

Mackie-Mason, J.K. (1990). Do taxes affect corporate financing decisions? *Journal Finance*, *45(5)*, 1471-1493.

Mardan, M. (2016). Why countries differ in thin capitalization rules: the role of financial development. *European Economic Review*, *91*, 1-14.

McKee, M. (2009). Preventing excessive debt: China's developing thin capitalization regime. *Tax Notes International*, *54 (13)*, 1123.

Mills, L. F., & Newberry, K. J. (2004). Do foreign multinationals' tax incentives influence their US income reporting and debt policy? *National Tax Journal, 57(*1*)*, 89-107.

Minister of Finance of Republic of Indonesia. (2015). *Peraturan Menteri Keuangan Republik Indonesia No 169/PMK.010/2015 tentang Penentuan Besarnya Perbandingan Antara Utang dan Modal Perusahaan Untuk Keperluan Penghitungan Pajak Penghasilan*. Jakarta: Ministry of Finance of the Republic of Indonesia.

Minister of Finance of Republic of Indonesia. (1984). *Keputusan Menteri Keuangan Republik Indonesia Nomor 1002/KMK.04/1984*. Jakarta: Ministry of Finance of the Republic of Indonesia.

Minister of Finance of Republic of Indonesia. (2015). *Annual Report 2015*. Jakarta: Ministry of Finance of the Republic of Indonesia.

Modigliani, F., & Miller, M. H. (1963). Corporate income taxes and the cost of capital: a correction. *American Economic Review*, *53(2*), 433–443.

Myers, S.C. (1984). The capital structure puzzle. *Journal Finance*, *39*, 575–592.

Ogundajo, G. O., & Onakoya, A. B. (2016). Tax planning and financial performance of Nigerian manufacturing companies. *International Journal of Advanced Academic Research, 2,* 2488-9849.

Organization for Economic Cooperation and Development (OECD). (2006). The OECD's Project on Harmful Tax Practices: 2006 Update on Progress in Member Countries. Retrieved from: *http://www.oecd.org/dataoecd/1/17/37446434.pdf*.

Organisation for Economic Cooperation and Development (OECD). (2012). Thin Capitalisation Legislation: A background paper for country tax administration. Retrieved from*: http://www.oecd.org/*

Overesch, M., & Wamser, G. (2010). Corporate tax planning and thin-capitalization rules: evidence from a quasi-experiment. *Applied Economics*, *42(5)*, 563-573.

Rego, S. O. (2003). Tax-avoidance activities of US multinational corporations. *Contemporary Accounting Research, 20(4)*, 805-833.

Richardson, G., & Lanis, R. (2007). Determinants of the variability in corporate effective tax rate and tax reform: evidence from Australia. *Journal of Accounting and Public Policy*, *26(6)*, 689-704.

Rohaya, M. N., Fadzillah N.S.M., & Mastuki, N.A. (2010). Corporate tax planning: A study on corporate effective tax rates of Malaysian listed companies. *International Journal of Trade, Economics, and Finance*, *1*, 2010-023X.

Shackelford, D., & Shelvin, T. (2001). Empirical tax research in accounting. *Journal of Accounting and Economics, 31*, 321-387.

Shahar, W.H.S., Shahar, W.H.S., Bahari, N.F., Ahmad N.W., Fisal, S., & Rafdi, N.J. (2015). A review of capital structure theories: Trade-off theory, pecking order theory, and market timing theory. *Proceeding of the 2nd International Conference on Management and Muamalah 2015*. e-ISBN: 978-967-0850-25-2.

Singh, A., & Hamid, J. (1992). Corporate financial structures in developing countries. *IFC Technical Paper No.1*, Washington D.C: IFC.

Singh, A. (1995). Corporate financial patterns in industrializing economics: A comparative study. *IFC Technical Paper No.2*, Washington D.C: IFC.

Sinha, P., & Bansal, V. (2013). Capital structure puzzle: the interrelationship between leverage, taxes and other micro economic factors. (MPRA Paper No. 49878). University Library of Munich, Germany.

Slemrod, J. (2001). A general model of the behaviour response to taxation. *International Tax and Public Finance, 8(2)*, 119-128.

Steed, A. (2015, October 13). Revealed: the 10 countries toughest on tax evaders. *The Telegraph*. Retrieved from: *http://www.telegraph.co.uk/finance/personalfinance/expat-money/11927295/Revealed-the-10-countries-toughest-on-tax-evaders.html*

Stickney, C., & McGee, V. (1982). Effective corporate tax rates - the effect of size, capital intensity, leverage, and other factors. *Journal of Accounting and Public Policy*, *1*, 125–152.

Tandean, V.A, & Winnie. (2016). The effect of good corporate governance on tax avoidance: An empirical study on manufacturing companies listed in IDX period 2010-2013. *Asian Journal of Accounting Research, 1*, 28-38.

Tax Avoidance. In *Black Law's Dictionary (2nd Ed)*. Retrieved from: http://thelawdictionary.org/tax-avoidance/

Taylor, G., & Richardson, G. (2012). International corporate tax avoidance practices: evidence from Australian Firms. *The International Journal of Accounting, 47*, 469-496.

Taylor, G., Richardson, G., & Lanis, R. (2015). Multinationality, tax havens, intangible assets, and transfer pricing aggressiveness: an empirical analysis. *Journal of International Accounting Research*, *14(1)*, 25-57.

Turner, G. (2017, July 3). Will the G20 ever end the global problem of tax avoidance and tax evasion? *Tax Justice Network.* Retrieved from: http://www.taxjustice.net/2017/07/03/will-g20-ever-end-global-problem-tax-avoidance-tax-evasion/

Wamser, G. (2014). The impact of TCR on external debt usage – a propensity score matching approach. *Oxford Bulletin of Economics and Statistics, 76(5),* 764-781.

Webber, S. (2010). Thin capitalization and interest deduction regulations. *Copenhagen Research Group on International Taxation*, *8*.

Wilson, R.J. (2009). An examination of corporate tax shelter participations. *The Accounting Review, 84*, 969-999.

Van Dijck, S. (2016). Corporate tax avoidance and justice. (Master Thesis). Erasmus Universiteit Rotterdam, Rotterdam.

Appendix A
Variable Descriptions

Variable Name	*Variable Descriptions*
DEBT	Debt Level (Total Debt divided by total assets)
GAAPETR	Effective Tax Rate (Income Tax Expense divided by pretax income)
POST	Dummy for the year 2016 (post implementation of the new thin capitalization rule)
TREATED1	Dummy for companies with High DER
TREATED2	Dummy for companies with Low DER
POSTTREATED1	Measurement of the effect of thin capitalization rule on High DER companies
POSTTREATED2	Measurement of the effect of thin capitalization rule on Low DER companies
RISK	Probability of bankruptcy (Total assets divided by sum of 3.3 times EBIT, 1.0 times sales, 1.4 times retained earnings, and 1.2 times working capital)
TANG	Tangibility (Tangible Assets divided by total assets)
SIZE	Company size (Natural logarithm of total assets)
PROF	Profitability (ROA = pretax income divided by total assets)
CINT	Capital Intensity (Net Property, Plant, and Equipment divided by lagged total assets)
INVINT	Inventory Intensity (Total Inventory divided by lagged total assets)
multi	Dummy for multinational company
MULTITREATED1	Interaction effect of Multinational High DER Companies
MULTITREATED2	Interaction effect of Multinational Low DER Companies
POSTMULTITREATED1	Measurement of the effect of thin capitalization rule on multinational high DER companies
POSTMULTITREATED2	Measurement of the effect of thin capitalization rule on multinational low DER companies