

The Impact of Thin Capitalization Rule on Capital Structure

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Abstract—Debt financing is more favorable than equity financing due to the deductibility of the interest while the dividend is nondeductible in corporate taxation. This paper analyzes the impact of the implementation of Thin Capitalization Rule, that limits the deductibility of the interest expense through limiting the debt to equity ratio, on the choice of capital structure of the company. In this study, we use corporate tax return data (SPT) from the fiscal year 2010 to 2017. Using panel data regression, the results of the study show that the Thin Capitalization Rule reduces the use of debt in the capital structure. This study also shows an indication that the enactment of this rule increases the use of related party debt in the capital structure.

Index Terms—thin capitalization rule, tax return data, related party debt

I. INTRODUCTION

Incorporating Corporate Income Tax, the use of debt in financing decision brings benefits compared to the use of equity [1]. This advantage arises from the different treatment between the cost of debt and the cost of equity, known as the debt bias. The cost of debt, interest, is deductible in the corporate income tax, whereas the cost of equity, dividend, is nondeductible. Companies that have access to financing from related parties abroad, also have an incentive to use debt. In addition to the debt bias factor, the tax rate discrepancies between countries also encourage the use of debt. Companies in high tax rate countries can take advantage of debts from parent companies or affiliates in countries with lower tax rates, known as debt shifting. Both of these lead to the existence of thin capitalization, the condition in which companies are funded with a proportion of debt more than equity.

Thin Capitalization is a kind of tax avoidance that is usually used by foreign taxpayers. This kind of tax avoidance practice can undermine the income tax base, which in turn will undermine the government tax revenue. For this reason, many countries in the world, including the Government of Indonesia, make a regulation that limits interest deductibility by limiting the ratio of debt to equity. How companies in Indonesia response to this rule has not been much discussed in empirical studies other than those conducted by Zaina [2] and Ramadhan and Raindoko [3] using the data of companies listed on the Indonesia Stock Exchange. Therefore, this research needs to be done to see the companies' response on a wider scale (not limited to listed companies) and it is expected that

this research can give academic contribution from the data used (Income Tax return data) and how this rule affects the use of related party debt.

Using tax return data, this paper shows that companies' respond to the enactment of the thin capitalization rule by reducing the use of debt in the capital structure. Although the overall use of debt has decreased, the use of related parties' debt appears to have increased.

II. LITERATURE REVIEW

Modigliani and Miller explained that the existence of income tax makes the value of the company becomes larger if the company uses debt in its capital structure [1]. Due to the advantage of interest deductibility Modigliani-Miller, companies should be financed totally by debt [1]. However, in reality, the company still uses equity in its capital structure. This refers to a trade-off theory in which firms will determine the composition of debt and equity by paying attention to the cost and benefits of debt use. The tax benefit of debt use is the debt (interest) tax shield, while the cost of using debt is the bankruptcy cost. The Debt Tax Shield is a tax protection that arises because interest is deductible in the calculation of income tax.

The consequence of the Thin Capitalization Rule is that if the company has a debt level above the threshold, the interest is not fully deductible, so the tax shield reduced. Referring to the theory of trade-off, by using the same debt level, the benefit of debt use decreases, while the cost of debt use remains the same. Thus the incentives of debt financing will decrease.

The influence of tax on the capital structure of the firm has been long discussed both in theoretically [1] as well as empirically [4], [5]. The tax variable that is discussed in the research is the tax rates. Researches that adds tax policy in the form of thin capitalization rule as the main variable is mostly done in developed countries [6]–[9].

Several empirical studies have shown that the thin capitalization rule has to lower the use of debt in the capital structure [6]–[9]. However, not all of the results of the studies unanimously confirm the decline of debt financing. Buettner, Overesch, Schreiber, and Wamser show that although there was a decrease in internal debt, the enforcement of these rules actually led to an increase in the use of external debt [6]. While

TABLE I
THIN CAPITALIZATION RULE IN SOME COUNTRIES

Type	Countries	Year	Ratio
Fixed Debt-Equity Ratio for Related Party Debt	Argentina	1999	2:01
	Canada	1972	1.5:1
	China	2008	2:01
	Turkey	2006	3:01
	USA	1989	1.5:1
Fixed Debt-Equity Ratio for Total Debt	Albania	2000	4:01
	Colombia	2013	3:01
	Croatia	2005	4:01
	Latvia	2003	4:01
	Serbia	2001	4:01

Source: [14]

Jovanovic [10] also pointed out that, the thin capitalization rule in Slovenia did not succeed in lowering the internal rate of corporate borrowing. Thus, the hypothesis of this study is the taxpayer will respond to the thin capitalization rule by reducing the proportion of debt in the capital structure.

In the context that thin capitalization rule limits only the use of internal debts, studies by Buettner, Overesch, Schreiber and Wamser [6] and Wamser [11] indicate a decrease in the proportion of internal debt/related party in the firm's capital structure. However, restrictions that only cover internal debt also responded by increasing use of external debt as a substitute. The use of internal debt in financing is popularly undertaken by Multinational Corporations utilizing tax rate discrepancies [12], [13]. In the absence of restrictions on the use of internal debt/related party debt, it is possible for companies that have access to financing from related parties (parent companies/affiliates) to shift external debt sources to internal/related parties. They can still comply with the limit of total debt to equity ratio while enjoying the benefits of using related party/internal debt. Therefore, the second hypothesis in this study is that there is an indication that taxpayers increase the proportion of related party debt usage after the implementation of the thin capitalization rule in Indonesia.

Tax avoidance through debt shifting has been the concern of many countries. At least 60 countries in the world already have rules that try to limit the practice of tax avoidance through thin capitalization scheme. Some countries regulate the total debt. Examples of some of the rules of thin capitalization in different countries are as in Table I.

The Government of Indonesia issued Regulation of the Minister of Finance number PMK-169 / PMK.010 / 2015 regarding the determination of the amount of comparison between debt and corporate capital for the purpose of calculating income tax [15]. This rule was published in 2015 but effective started on the fiscal year 2016. The regulation stipulates the ratio between debt and equity for the purposes of calculating the Income Tax at the maximum of four to one (4:1) with some exceptions. The sectors excluded from the imposition of this rule are: Bank and Financing Institutions; Insurance and Reinsurance; Oil and gas mining, general mining and other mining bound by a production sharing contract, a work contract or a mining concession agreement, and in such contract or agreement

prescribes or stipulates a provision on the comparative ratio between debt and equity; Taxpayers whose income is subject to final Income Tax in accordance with special regulations; and Taxpayers conducting business in the field of infrastructure.

III. RESEARCH METHODOLOGY

The data used in this study sourced from the Annual Corporate Tax Return (SPT) obtained from the Directorate General of Taxes. The data provided covers the 2010 tax year to the tax year 2017. This data only covers taxpayers who are not excluded from the rules. The data includes 96,613 Taxpayers with 245,773 observations. The data are separated into two parts: taxpayers who are potentially affected (treatment group) and taxpayers who are not potentially affected by this rule (control group). The taxpayers affected in this study were determined by looking at the average debt to equity ratio during the 2010 tax year to the tax year 2015. Taxpayers with an average DER above 4:1 and are categorized as potentially impacted taxpayers. While the taxpayer with an average DER from 0:1 to 4:1 considered taxpayers who are not affected by the rules. The empirical model to test the hypothesis in this study consists of the following equation:

$$\begin{aligned}
 CapitalStructure_{it} = & \beta_{0it} + \beta_1 Year_{it} + \\
 & \beta_2 Treatment_{it} + \\
 & \beta_3 Year * Treatment_{it} + \\
 & \beta_4 Size_{it} + \beta_5 Tang_{it} + \\
 & \beta_6 Profit_{it} + \beta_7 Reval_{it} + \\
 & \beta_8 LendRate_{it} + \beta_9 PMA_{it} + \\
 & \beta_{10} PMA_DY_{it} + \epsilon \quad (1)
 \end{aligned}$$

Capital structure in this research uses two proxies. First, Debt to Total Capital (DTC) is the ratio between total debt to total capital (debt+equity). Second, Related Party Debt to total capital (RPD_TC) is the ratio between related party debts to total capital. A year is a time dummy of 1 for the fiscal year 2016 and 2017 and is 0 for the previous year. Treatment is a dummy of value 1 for potentially affected taxpayers and 0 for taxpayers who are not potentially affected. Year*Treatment is an interaction dummy between dummy year and dummy treatment. Control variable used in this research is company

TABLE II
DESCRIPTIVE STATISTIC

Variable	Observation	Mean	Std. Dev.	Min	Max
DER	245773	2.866746	5.053868	0	43.82434
DTC	245773	0.486967	0.305651	0	0.977691
SIZE	245773	1.49E+11	1.89E+12	4.80E+09	5.67E+14
TANG	245773	0.242217	0.258045	0	1
PROFIT	245773	2.804072	656.5988	-26691.2	226689.9
RPD_TC	245773	0.008545	0.059835	0	0.973493

size (SIZE) by using a proxy of sales. Tangibility (TANG) is the ratio between fixed assets and total assets. Profit is the level of profitability of the company with the proxy of return on assets. Reval is the dummy variable whether the taxpayer does an asset revaluation: 1 if the company evaluate its fixed asset, 0 otherwise. Lend Rate is the loan interest rate. PMA is a dummy variable of value 1 if the taxpayer registered at Foreign Taxpayer Tax Office, 0 otherwise. This dummy variable indicates the multinationalism of the taxpayer.

IV. RESULTS

A. Descriptive Statistic

Table II presents the descriptive statistics of the data used in this study. From the existing data, the average debt to equity ratio is 2.87: 1 which means it is still under the government-specified threshold. Meanwhile the average debt to total capital is 0.49, which means that on average 49% of the company's capital comes from debt. In terms of related party debt, an average of 0.8% of the total capital of the company comes from debt related party.

B. Regression Result

The result of regression analysis is as in Table III. Column (1) and column (2) is the result using the Individual Fixed Effect, column (3) and column (4) is using industry fixed effect. The regression results using Debt to Total Capital as the dependent variable is in column (1) and (3). Column (2) and column (4) is the result of regression by using Related Party Debt to Total Capital as the dependent variable.

We use the F test to see whether the independent variables together significantly affect the dependent variable. The result shows that the F Value is 17071.22 and the significance level is 0.000 for the first model, while F Value is 107.44, and significant level 0 for the second model. It means all independent variables together significantly influence the dependent variable.

Table III shows that dummy variable year is negative and significant except for related party debt to total capital that is positive and significant. This result indicates that using individual fixed effect or industry fixed effect, in the years before the enactment of the thin capitalization rule; companies have higher total debt ratio than the years of the enactment of the thin capitalization rule. On the other hand, the use of related party debt is higher than before policy enactment.

The interaction variable shows negative and significant results but positive and significant results in related party debt

to total capital. It means that companies that are likely be affected by this rule reduce the ratio of total debt used in their capital structure. However, taxpayers with the potential to be affected by this policy also appear to respond to the policy by increasing the ratio of debt to related parties.

Meanwhile, we do regression separately for each sector to see how the taxpayers from each sector respond to this policy. The regression results for each sector with the Total Debt to total Capital dependent variable are as in Table V, and the Related Party Debt variable are as in Table VI. Sectoral regression result is as follow: Column (1) Agriculture, Forestry and Fisheries; Column (2) Manufacture; Column (3) Service; Column (4) Trade; Column (5) Real Estate; and Column (6) Transport and Infrastructure.

Regression with the dependent variable Total Debt to Total Capital, in Table V shows that by sectoral, the ratio of total debt to total capital at the time of imposition of the thin capitalization rule of all sectors is lower than before the previous period. This is shown by the variable Dummy Year which is negative and significant. Likewise with companies potentially affected by this policy. The interaction variable between year and treatment in all sectors has a negative and significant coefficient. It means that the imposition of thin capitalization rule is responded by companies that are potentially affected by the policy by reducing the proportion of its debt in the capital structure.

Meanwhile, the use of debt from related parties, the regression results in Table VI shows that sectorally gives more varied results. The Year dummy variables are positive and significant for several sectors: Manufacturing Processing Sector, Service Sector, Trade Sector and Transport, and Infrastructure Sector. Thus we can see that during the period the thin capitalization rule is enacted, these four sectors have a higher related party debt ratio than before the enactment of the rule.

Meanwhile the interaction variable show us that only the Trade Sector and the Transport and Infrastructure Sectors show positive and significant results. This explains that taxpayers in both sectors that are potentially affected by this regulation respond to the imposition of the thin capitalization rule by increasing the proportion of debt to related parties, while in other sectors these variables do not show any significant impact.

V. DISCUSSION

The regression results show that the average ratio of total debt to total capital in the capital structure of the company

TABLE III
REGRESSION RESULT WITH INDIVIDUAL AND INDUSTRY FIXED EFFECT

VARIABLES	Individual Fixed Effect		Industry Fixed Effect	
	Debt To Total Capital (1)	Related Party Debt to Total Capital (2)	Debt To Total Capital (3)	Related Party Debt to Total Capital (4)
YEAR	-0.0616*** (-0.0012)	0.00146*** (-0.000302)	-0.0556*** (-0.00151)	0.00293*** (-0.000299)
TREATMENT			0.421*** (-0.00105)	0.00962*** (-0.00047)
YEAR*TREATMENT	-0.0389*** (-0.00232)	0.00223*** (-0.000807)	-0.00438** (-0.00223)	0.00309*** (-0.000964)
SIZE	4.27E-15** (1.89E-15)	5.55E-16 (5.08E-16)	2.13E-15*** (7.55E-16)	2.90E-16** (1.42e-16)
TANG	0.00371 (-0.00551)	0.00532*** (-0.00132)	0.00891*** (-0.0021)	0.0113*** (-0.000632)
PROFIT	4.93E-07 (-6.70E-07)	1.56E-08 (-3.47E-08)	7.56e-07*** (-2.08E-07)	-4.74e-08* (-2.54E-08)
REVAL	-0.0579*** (-0.0042)	-0.000555 (-0.00141)	-0.0144*** (-0.0045)	-0.000648 (-0.00135)
LEND_RATE	-0.00600*** (-0.000826)	0.00135*** (-0.000273)	-0.000905 (-0.00124)	0.00235*** (-0.000308)
PMA			0.00968*** (-0.00221)	0.0127*** (-0.000894)
PMA*YEAR	0.0217*** (-0.00444)	0.00380* (-0.00207)	0.0116* (-0.00592)	0.00494* (-0.00257)
2. Manufacturing			0.0634*** (-0.00358)	-0.0152*** (-0.00157)
3. Services			-0.0549*** (-0.00369)	-0.0169*** (-0.00157)
4. Trade			0.0168*** (-0.00355)	-0.0194*** (-0.00154)
5. Real Estate			-0.0117** (-0.00462)	-0.00097 (-0.00204)
6. Transport & Infrastructure			-0.0106*** (-0.00386)	-0.0167*** (-0.0016)
Constant	0.579*** (-0.0104)	-0.00993*** (-0.00343)	0.408*** (-0.0157)	-0.00975** (-0.00403)
Observations	245,773	245,773	245,773	245,773
R-squared	0.048	0.001	0.351	0.017

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

TABLE IV
F-TEST RESULT

Model	F Statistic	Prob > F
1 (Dependen Variabel: Total Debt to Total Capital)	17071.22	0.00
2 (Dependen Variabel: Related Party Debt to Total Capital)	107.44	0.00

decreased. But it can also be seen that on average there is an increase in related party debt usage. Therefore it can tell us that the imposition of the thin capitalization rule was responded by reducing the use of debt as a whole, and responded by raising debt to related parties. However, when viewed sectorally the response of each company in various sectors is not the same. The decrease of total debt proportion and the increase of the related party debt may show that the company tend to fulfill the rules but try to take advantage of the absence of specific rules governing related party debt. Additionally, if the related party debt comes from low tax jurisdiction, it may take the advantage from tax rate discrepancy.

The potentially affected company's response to this rule is to reduce the ratio of total debt usage, in line with previous studies among others by Blouin, Huizingha, Laeven, and Nicodeme [7]; Almendros and Mira [9]; and Zaina [2]. However, increased use of related party debt does not support the results of previous studies conducted by Blouin, Huizingha, Laeven, and Nicodeme [7]; Buettner, Overesch, Schreiber, and Wamser [6]; and Overesch and Wamser (2010).

This is possible because of differences in the background of the rules underlying each study. In this study, the context of the rules in Indonesia does not merely restrict the use of debt to related parties, but the overall debt. Thus, it appears

TABLE V
INDUSTRY COMPARISON USING TOTAL DEBT TO TOTAL CAPITAL AS DEPENDENT VARIABLE

VARIABLES	TOTAL DEBT TO TOTAL CAPITAL					
	(1)	(2)	(3)	(4)	(5)	(6)
YEAR	-0.0527*** (-0.0084)	-0.0828*** (-0.00263)	-0.0378*** (-0.00294)	-0.0601*** (-0.00174)	-0.0808*** (-0.00788)	-0.0687*** (-0.0041)
YEAR*TREATMENT	-0.0266* (-0.0156)	-0.0404*** (-0.00477)	-0.0422*** (-0.00768)	-0.0328*** (-0.0031)	-0.0560*** (-0.0157)	-0.0412*** (-0.0098)
SIZE	1.18E-14 (1.03E-14)	3.09E-15 (1.97E-15)	5.51E-14* (2.83E-14)	6.89E-15*** (2.39E-15)	1.78E-14* (9.96E-15)	9.06E-15* (4.82E-15)
TANG	0.00434 (-0.0252)	-0.0325*** (-0.0116)	0.0502*** (-0.0117)	-0.0402*** (-0.009)	-0.00274 (-0.0293)	0.151*** (-0.0152)
PROFIT	-0.0271** (-0.0131)	3.77e-07*** (-9.44E-08)	6.41E-06 (-4.22E-06)	1.38E-07 (-4.86E-07)	-0.0897** (-0.0381)	2.10E-06 (-1.62E-06)
REVAL	-0.0134 (-0.0161)	-0.0520*** (-0.00529)	-0.102*** (-0.0163)	-0.0514*** (-0.00876)	-0.0888* (-0.0453)	-0.0717*** (-0.0179)
LEND_RATE	-0.00109 (-0.00488)	-0.00452*** (-0.00133)	-0.00595** (-0.00232)	-0.00634*** (-0.0013)	-0.00432 (-0.00523)	-0.00934*** (-0.00312)
PMA*YEAR	0.0329* (-0.0188)	0.0381*** (-0.00576)	0.0253* (-0.0144)	0.0039 (-0.0114)	0.0333 (-0.0334)	0.0551*** (-0.0181)
Constant	0.500*** (-0.0612)	0.642*** (-0.017)	0.453*** (-0.0294)	0.601*** (-0.0163)	0.535*** (-0.0657)	0.520*** (-0.0392)
Observations	5,275	50,209	35,009	128,934	6,160	20,186
R-squared	0.036	0.088	0.025	0.044	0.081	0.068
Number of ID_WP	1,758	14,851	14,465	55,214	2,312	8,009

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

TABLE VI
INDUSTRY COMPARISON USING RELATED PARTY DEBT TO TOTAL CAPITAL AS DEPENDENT VARIABLE

VARIABLES	TOTAL DEBT TO TOTAL CAPITAL					
	(1)	(2)	(3)	(4)	(5)	(6)
YEAR	0.00362 (-0.00365)	0.00242*** (-0.0008)	0.00162** (-0.00082)	0.000589* (-0.000341)	0.00104 (-0.00262)	0.00266** (-0.00107)
YEAR*TREATMENT	0.000486 (-0.00954)	0.00193 (-0.00197)	0.00294 (-0.00337)	0.00210** (-0.000838)	-0.0024 (-0.00962)	0.00651* (-0.00392)
SIZE	9.16E-16 (4.68E-15)	8.21E-16 (7.61E-16)	5.07E-15 (7.96E-15)	-6.55E-16 (5.40E-16)	9.97E-16 (2.31E-15)	2.47E-15 (2.14E-15)
TANG	0.0123 (-0.0102)	0.0101*** (-0.00351)	0.00616** (-0.00304)	0.00197 (-0.00128)	0.00969 (-0.0137)	0.00467 (-0.00436)
PROFIT	-0.00114 (-0.00145)	-4.01e-08** (-1.90E-08)	-5.29e-08* (-3.05E-08)	-1.02E-08 (-8.42E-09)	-0.00055 (-0.00203)	2.87E-07 (-3.49E-07)
REVAL	0.00785 (-0.00914)	-0.00264 (-0.0017)	-0.00562 (-0.00503)	0.000112 (-0.00121)	0.000601 (-0.00175)	0.0049 (-0.00704)
LEND_RATE	0.00743*** (-0.0028)	0.00192*** (-0.000598)	0.00141* (-0.000772)	0.00025 (-0.00031)	0.000894 (-0.0024)	0.00351*** (-0.000988)
PMA*YEAR	0.0148 (-0.0149)	0.00528* (-0.00293)	-0.00532 (-0.00432)	0.00405 (-0.00432)	-0.0158 (-0.0109)	0.00416 (-0.0079)
Constant	-0.0698** (-0.0349)	-0.0149** (-0.00753)	-0.0113 (-0.00992)	0.00153 (-0.00385)	0.0109 (-0.03)	-0.0365*** (-0.0127)
Observations	5,275	50,209	35,009	128,934	6,160	20,186
R-squared	0.004	0.002	0.001	0	0.001	0.002
Number of ID_WP	1,758	14,851	14,465	55,214	2,312	8,009

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

that the enactment of this rule causes increases in the use of debt from related parties.

Even though there is an increase in the use of related party debt, it still cannot conclude that the increase of related party debt proportion is an increase of debt shifting scheme in tax avoidance. To ensure increased debt shifting activity requires further research with additional information related to it, among other is the information that can show does the related party debt come from low tax countries or not.

Differences in response for each sector can provide empirical considerations for the policymaker to evaluate this regulation. This may be a clue that the characteristics of funding needs may differ among sectors, so that it may require different treatment. Also in terms of compliance monitoring, this sectoral result shows that there is a need to pay more attention to compliance monitoring, especially those sectors that use internal debt.

VI. CONCLUSION

The Government of Indonesia uses the Thin Capitalization Rule to limit tax avoidance through interest expense deduction. This empirical study shows that the rule achieved its goals. The implementation of the thin capitalization rule was responded by reducing the company's total debt to total capital ratio. This result supports the hypothesis that the company will reduce the proportion of debt financing due to the limited benefit of debt. However, there is an indication of an increase in the proportion of related party debt in the choice of corporate financing.

The response of each sector varies, especially for related party debt. This result gives an empirical consideration to the government. The government should give more attention to a sector that is significantly increasing the proportion of related party debt, even though there is no strong conclusion that the increase of the related party debt is a debt shifting scheme. Further study is needed to see whether the proportion of related party debt is a true debt-shifting scheme to countries with low tax rates or not. This study does not cover it because of limited information/data obtained.

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