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Is TCR effective in reducing tax avoidance in Indonesia?

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ABSTRACT

Thin capitalization is a tax avoidance technique using funding sources that prioritize debt over capital. Thin capitalization can be used as a technique to avoid taxes because there is a difference in treatment between debt and capital as a source of funding in tax regulations. Thin capitalization rule (TCR) is domestic tax system to reduce thin capitalization. This study aims to examine the effect of implementing thin capitalization rules on reducing tax avoidance in Indonesia. This study is a quantitative study. The data used are secondary data obtained from multinational companies listed on the IDX from 2013 to 2020 by excluding companies that are excluded from PMK-169: bank companies, financing institutions, insurance, reinsurance, operating in the oil and gas mining sector, companies whose entire income is subject to final tax, and infrastructure. The data analysis method used in this study is regression using the eviews 12.0 program. The results show that the implementation of thin capitalization rule (TCR) does not reduce tax avoidance. These results provide empirical evidence that the government need to consider using thin capitalization rule with the interest to Earnings Before Interest, Tax, Depreciation, and Amortization (EBITDA) rule mechanism rather than the Debt-to-Equity Ratio (DER) rule mechanism and arm's length rule mechanism.

ABSTRAK

Thin capitalization merupakan teknik penghindaran pajak dengan menggunakan sumber pendanaan yang mengutamakan utang dibanding-kan modal. Thin capitalization dapat menjadi teknik penghindaran pajak karena adanya perbedaan perlakuan antara utang dan modal sebagai sumber pendanaan dalam peraturan perpajakan. Thin capitalization rule adalah sistem pajak dalam negeri untuk mengurangi thin capitalization. Penelitian ini bertujuan untuk menguji pengaruh penerapan thin capitalization rule terhadap pengurangan penghindaran pajak di Indonesia. Penelitian ini merupakan penelitian kuantitatif. Data yang digunakan adalah data sekunder yang diperoleh dari perusahaan multinasional yang terdaftar di BEI pada tahun 2013 hingga 2020 dengan mengecualikan perusahaan yang dikecualikan dari PMK-169: perusahaan perbankan, lembaga pembiayaan, asuransi, reasuransi, yang bergerak di bidang pertambangan minyak dan gas. sektor, perusahaan yang seluruh penghasilannya dikenakan pajak final, dan infrastruktur. Metode analisis data yang digunakan dalam penelitian ini adalah regresi dengan menggunakan program eviews 12.0. Hasil penelitian menunjukkan bahwa penerapan aturan kapitalisasi tipis tidak mengurangi penghindaran pajak. Hasil tersebut memberikan bukti empiris bahwa pemerintah dapat mempertimbangkan untuk menggunakan thin capitalization rule dengan mekanisme the interest to Earning Before Interest, Tax, Depreciation, and Amortization (EBITDA) rule dibandingkan mekanisme aturan Debt-to-Equity Ratio (DER) dan mekanisme arm's length rule.

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1. INTRODUCTION

Tax avoidance is an attempt to reduce the amount of tax owed by exploiting the discrepancy between the intent and the literal interpretation of tax provisions (Zimmer, 2002). In the context of cross-border transactions, tax avoidance takes advantage of loopholes in tax provisions, the interaction of tax systems between countries, and double taxation agreement (Tooma, 2008). Even though tax avoidance can have a negative impact on both macroeconomics and microeconomics, many experts state that tax avoidance is a legitimate action because it does not violate tax provisions. From a macroeconomic perspective, tax avoidance has an impact on not achieving tax revenues. In addition, according to Wardani (2020), several previous studies have proven that corporate tax avoidance also has a negative impact on microeconomic, such as (1) reducing company value (Santana & Rezende, 2016); (2) increasing capital costs (Hutchens & Rego, 2012); (3) increasing cash holding (Hanlon et al., 2017); and (4) reducing capital structure (Shevlin et al., 2013). OECD data shows that Indonesia is one of the countries with a high level of tax avoidance. In 2020, Indonesia's tax-to-GDP (10.1%) was below the average for Asian and Pacific countries (19.1%) and the average for OECD members (33.5%) (OECD, 2022). Based on OECD data (2022), Indonesia's tax structure is dominated by value added tax (28%) and corporate income tax (27%). Therefore, tax avoidance schemes by corporate taxpayers need special attention since corporate income tax has a crucial role in tax revenues in Indonesia.

One of the most common tax avoidance schemes carried out by corporate taxpayers is thin capitalization. Thin capitalization is a tax avoidance technique using funding sources that prioritize debt over capital (OECD, 2012). There are differences in the treatment of debt and capital as sources of funding in tax regulations (Egger et al., 2010). In calculating taxable income, debt interest expenses are deductible expenses, while dividends as share costs are non-deductible expenses.

Thin capitalization has been an OECD issue since 2013. Excessive use of debt as part of Base Erosion Profit Shifting (BEPS) erodes state tax revenues and raises issues of inequality (OECD, 2013). OECD has created BEPS Action Plan 4 to provide practical recommendations for preventing tax erosion through interest charges. However, BEPS Action Plan 4 does not have fixed standards. Therefore, each country may apply a different regulatory to limit deductible interest expenses in the taxable income calculation. In 2012, there were 61 countries that had implemented restrictions on reducing interest expenses using debt and capital ratio models, with different safe haven ratios and with different models (Merlo et al., 2020). The thin capitalization rule (TCR) model that can be applied is DER rule, arm's length rule, or interest to earning before interest, tax, depreciation, and amortization (EBITDA) rule. DER rule model is the model that most widely used by countries in the world with different ratios. In their research, De Mooij & Hebous (2018) revealed a list of 33 countries that use the DER rule model with affiliated debt to equity ratio and 17 countries that use the DER rule model with all debt to equity ratio. The 3:1 ratio is a popular ratio in many countries (Susilawati, 2019). Furthermore, thin capitalization can implement arm's length rule. In the arm's length approach, the maximum value of deductible interest expense for taxable income calculation is determined based on the value of the debt if the debt is provided by a non-affiliated party (OECD, 2012). There are two stages in measuring the fairness and prevalence of debt: (1) the fairness and prevalence of the debt structure; and (2) the fairness and prevalence of loan interest rates (Kurniawan, 2018). Countries that apply the arm's length rule model are Kazakhstan, South Africa and England (De Mooij & Hebous, 2018). The latest rule model is interest to EBITDA rule. In BEPS Action 14, the recommended interest to EBITDA ratio is 10% to 30% (OECD, 2012). The interest to EBITDA ratio rule determined can be the ratio of interest on affiliated debt to EBITDA or the ratio of interest on all debt to EBITDA. Countries that use the interest to EBITDA ratio rule model with debt burden referring to affiliate debt are Finland (25%), Norway (30%), and Slovakia (25%). Meanwhile, countries that use the interest to EBITDA ratio rule model with debt burden referring to all debt are Germany (30%), Greece (40%), Italy (30%), Portugal (30%), and Spain (30%) (De Mooij & Hebous, 2018).

Based on the Indonesia's Income Tax Law, the thin capitalization rule that applies in Indonesia includes the DER rule model (Article 18 paragraph 1 of the Income Tax Law) and the arm's length rule (Article 18 paragraph 3 of the Income Tax Law). Currently, the Indonesian Government is

implementing Regulation of the Minister of Finance Number 169/PMK.010/2015 (PMK-169), issued on September 9, 2015 and effective in 2016, concerning determining the amount of comparison between company debt and capital for the purposes of calculating income tax. PMK-169 regulates that the debt-to-equity ratio (DER) permitted for income tax calculation purposes is 4:1. However, several matters related to the implementation of this regulation have not been stated in detail and explicitly. Therefore, on November 28, 2017, the Directorate General of Taxes issued Regulation Number 25/PJ/2017 (PER-25) concerning the implementation of determining the amount of comparison between company debt and capital for the purposes of calculating income tax and procedures for reporting external private debt.

There have been many criticisms and suggestions regarding thin capitalization rules in Indonesia which are considered strict, rigid and inflexible (Darussalam & Kristiaji, 2015; Yasa & Wicaksana, 2017; Kurniawan, 2018; Syahidah & Rahayu, 2018; Susilawati, 2019). The increasing national deficit and the existence of tax incentives make the effectiveness of tax policy very important (Hanlon & Heitzman, 2010). Ineffective thin capitalization rule (TCR) can have a negative impact on tax revenues. Moreover, inappropriate TCR has the potential to harm a company. This can reduce company profits and company value because companies with exceeding DER cannot deduct the excess loan costs in calculating taxable income. Furthermore, it can endangers foreign direct investment (Buettner et al., 2018; de Mooij & Liu, 2021; Kemmanang, 2021).

Several studies have tested the effectiveness of thin capitalization rule (TCR) in Indonesia. Howev-er, based on the previous research and literature, researchers identified three main gaps. First, the researchers identified a clear theoretical gap in pre-vious research regarding economic deterrence theory because the research conducted by Ramadhan et al. (2017), Ramadhan & Riandoko (2017), Zaina (2017), Jatmiko & Husodo (2019), Syahidah & Rahayu (2018), Saragih et al. (2019), and Atmaja, 2021) only used agency theory and trade-off theory. Second, the researchers identified gaps in evidence in previous research regarding the effect of thin capitalization rule on tax avoidance. The results of research conducted by Atmaja (2021) and Ramadhan (2023) show that thin capitalization rule has a negative effect on tax avoidance. Meanwhile, the results of research conducted by Zaina (2017), Saragih et al. (2019), and Anindita et al. (2022) show that the thin capitalization rule has no effect on tax avoidance. The inconsistency in previous research results is triggered by the final gap, namely population gap. Previous research conducted by Ramadhan et al. (2017), Ramadhan & Riandoko (2017), Zaina (2017), Jatmiko & Husodo (2019), Syahidah & Rahayu (2018), Saragih et al. (2019), and Atmaja (2021) included the year 2016 into the population after the implementation of capitalization rule in Indonesia, even though in that year the PER-25 which regulates capitalization rule supervision in Indonesia had not yet been implemented. So, it could provide inconsistent results. Therefore, the researchers conducted this research with the population of multinational companies listed on the IDX during the 2013-2020 period by excluding companies that are excluded from PMK-169. This research uses the 2013-2016 period as the period before the implementation of the thin capitalization rule and the 2017-2020 period as the period after the implementation of the thin capitalization rule which has never been used in previous research.

The purpose of this research is to test and to give empirical evidence concerning the effectiveness of thin capitalization rule (TCR) to reduce tax avoidance. This research can be used to evaluate and formulate the most appropriate model for thin capitalization rule, whether it is DER rule, arm's length rule, or interest to EBITDA rule.

2. THEORITICAL FRAMEWORK AND HYPOTHESIS

Almost every country in the world has equipped its domestic tax system with specific anti-avoidance rules (SAAR) or domestic provisions in the form of transfer pricing rules, thin capitalization rules, controlled foreign companies (CFC) rule, and so on with the aim of preventing specific tax avoidance schemes (Darussalam & Septriadi, 2017). SAAR, including thin capitalization rule, is expected to reduce tax avoidance that has a negative impact on state revenues. The effect of implementing thin capitalization rule (TCR) on tax avoidance can be predicted with agency theory, trade-off theory, and economic deterrence theory.

In a profit-oriented company or organization there are managers (agents) and shareholders (principals) who have an interest in taking maximum advantage for their respective utilities. In an agency relationship,

there is a contract between the principal and agent to perform several services that involve delegation of decision-making authority to the agent (Jensen & Meckling, 1976). The delegation of decision-making authority can cause loss of efficiency and increased costs called agency costs (Deegan, 2014). Agency theory is a theory that focuses on efforts to resolve conflicts between principals and agents and the problem of high costs for the principal to find out that the agent behaves in accordance with the principal's wishes (Eisenhardt, 1989).

Agency theory explains agency problems. Agency problems are difficulties or problems in motivating agents to work in the principal's best interests. Agency problems arise due to inefficiency and information asymmetry. Information asymmetry indicates that in business transactions there are some parties who have more information than other parties (Myers & Majluf, 1984). There are two types of information asymmetry (Scott, 2015). The first is adverse selection. This is a condition in which managers and other insiders know more information about the company's condition and prospects than outside parties. Managers only convey sufficient information and do not convey other important information that could influence shareholder decision making. The second is moral hazard. This is a condition where manager's activities are not fully known by shareholders or principals so that the manager can take actions outside the knowledge of shareholders which violate contracts and ethics.

In agency problems, the manager (agent) may take a different level of tax avoidance than that desired by the company owner (principal). Tax avoidance is a risky investment opportunity that management can take (Armstrong et al., 2015). The results of research conducted by Rego & Wilson (2012) prove that managers take the risk of tax avoidance in order to get incentives. On the other hand, owners prefer companies not to avoid taxes because it has an impact on the company's reputa-tion when it is known to the public. The results of research conducted by Graham et al. (2014) show that there is a relationship between tax avoidance and company reputation.

With the establishment of the thin capitalization rules (TCR), tax avoidance steps that will be taken by companies, especially thin capitalization, can be predicted using trade-off theory. Trade-off theory is a development of the Modigliani-Miller theory by including bankruptcy cost variable (Kraus & Litzenberger, 1973). In the Modigliani-Miller theory, a company can have tax advantages when it has a capital structure consisting of debt. However, the Modigliani-Miller theory does not take into account the possibility of debt and interest default when the company is unable to generate revenue and profits.

Trade-off theory balances the costs and benefits of using debt (Myers, 2001). Based on the trade-off theory, when debt can be met optimally, the tax shield achieves the maximum capital structure to reduce financial costs (Desai & Dharmapala, 2008) Companies with high profitability tend to try to reduce the tax burden by increasing the debt to equity ratio. Interest expense from debt is a deductible expense in calculating taxable income. Thus, increasing debt can reduce the amount of tax that must be paid. Trade-off theory predicts a positive relationship between capital structure and firm value, assuming that tax benefits outweigh bankruptcy risk and agency costs (Myers, 2001).

The thin capitalization rule sets the DER for calculating taxable income. Companies that have a DER above a predetermined ratio can no longer take advantage of incentives from fully using debt. The interest expense on debt, which is originally a deductible expense, will become a non-deductible expense for debt that exceeds the predetermined DER. Therefore, having a DER above a predetermined ratio can risk increasing the tax burden and increasing the risk of bankruptcy. Thus, based on trade-off theory, companies will choose to reduce tax avoidance. Furthermore, based on agency theory, this additional risk results in risk management not getting incentives so that the company will choose to reduce tax avoidance.

Moreover, based on propositions derived from economic deterrence theory, taxpayers decide whether and how to comply with tax regulations based on a rational cost-benefit calculation: what is to be gained from compliance and what are the likely costs of non-compliance (Ali et al., 2014). Levenko & Staehr (2023) divide economic motives into three aspects: possibility of evasion, rational individualistic choice, and individual behavioral choice.

Individuals who perceive tax avoidance as difficult are more likely to express tax compliance attitudes. Conversely, taxpayers will try to report lower taxes than they should when the risk of detection is low (Allingham

& Sandmo, 1972). According to Kirchler et al., (2008), a low audit probability factor will reduce the level of taxpayer compliance. With thin capitalization rules, DER is determined for calculating taxable income and there is an obligation to report it on the Annual Tax Report, making it difficult to avoid tax. Therefore, companies will reduce tax avoidance.

companies will reduce tax avoidance.

The results of research conducted by Taylor & Richardson (2013) show that the determinants of thin capitalization practices include the character of multinationality, the use of tax havens, the existence of withholding taxes, and tax uncertainty. Several studies have tested the effectiveness of thin capitalization rules. The results of research conducted by Overesch & Wamser (2010) show that thin capitalization rules can increase tax revenues and reduce tax avoidance. The results of this research are supported by the results of research conducted by Atmaja (2021) and Ramadhan (2023) that thin capitalization rule is able to reduce tax avoidance. In line with the results of this research, the results of research conducted by Ramadhan & Riandoko (2017) and Jatmiko & Husodo (2019) show that thin capitalization rule is able to reduce company leverage.

Therefore, theoretically implementing the thin capitalization rule will reduce tax avoidance. With the increase in the national deficit and the tax in-centives provided, the effectiveness of tax policy becomes very important (Hanlon & Heitzman, 2010). So, the hypothesis could be formulated as follows.

Ha: The implementation of thin capitalization rules (TCR) can reduce tax avoidance.

3. RESEARCH METHOD

This study uses data in the form of information in financial statements obtained from www. idx.co.id and companies website from 2014 to 2019. In this quantitative study, secondary data is obtained from the annual reports of multinational companies listed on the IDX from 2013 to 2020 by excluding companies that were excluded from PMK-169.

This study does not use the latest data because this study aims to test the effectiveness of TCR in reducing tax avoidance. Therefore, this study uses an observation window of 8 years, consisting of 4 years before and 4 years after TCR implementation. This study uses an 8 year observation window because it is a development of previous research conducted by Ramadhan (2023) which also uses the population from 2013 to 2020. If this study uses the latest data, the observation window will be too wide so that the results can be influenced by other factors other than TCR implementation. Meanwhile, 2020 is still included in the observation window because, based on the results of research conducted by Devi et al. (2020) and Prastowo & Christiawan (2121), the Covid-19 pandemic has no effect on company leverage.

Sampling is carried out using purposive sampling method with the following criteria: (1) multinational companies listed consecutively on the IDX in the period 2014 to 2019; (2) having financial reports for 2014 - 2019; (3) financial reports are presented in rupiah currency; (4) having all the variables needed in the research; (5) do not have a negative DER; (6) do not have a negative cash ETR.

Based on the results of purposive sampling method, there are 36 samples multinational companies with the observation period of 8 years. There are 288 data observed. The data collection technique is a documentation technique by collecting sample annual reports as a source of information. The data analysis method used in this study is regression using the *eviews* 12.0 program.

Tax Avoidance

The dependent variable in this research is tax avoidance. Tax avoidance is efforts to reduce the amount of tax owed by exploiting loopholes in tax provisions, interaction of tax systems between countries, and the Double Taxation Agreement (Tooma, 2008). Based on Hanlon & Heitzman (2010) literature study, there are twelve methods of measuring tax avoidance: GAAP Effective Tax Rate (ETR), current ETR, cash ETR, long-run cash ETR, ETR differential, DTAX, total book-tax differences (BTD), temporary BTD, abnormal total BTD, unrecognized tax benefits, tax shelter activity, and marginal tax rate. According to Dyreng et al. (2010), there are two common tax avoidance measurement methods: ETR and cash ETR. This is supported by Astuti & Aryani (2017) that the most frequently used tax avoidance measurements that are in accordance with Indonesian tax regulations are ETR and cash ETR because taxation in Indonesia only recognizes tax burdens, while taxation in the United States has many types of tax burdens, for example current federal tax expense and current foreign tax expense. ETR and cash ETR are expected to be able to identify tax

avoidance, whether carried out using fixed differences or temporary differences (Chen et al., 2010).

According to Dyreng et al. (2008), the use of ETR in measuring tax avoidance has limitations. The tax burden used as the denominator in calculating tax avoidance includes the current tax burden and the deferred tax burden. Current tax expense uses an accrual basis measurement while deferred tax expense represents the future effects of current transactions. Both are not currently paid taxes and thus potentially exaggerating the tax burden compared to the actual tax paid by the company. On the other hand, according to Astuti & Aryani (2017), a tax deferral strategy, for example through accelerating depreciation for tax purposes, will not change the ETR, while cash ETR can be affected by tax deferral strategies.

A method used for measuring tax avoidance by modifying cash ETR is HS method which was developed by Henry & Sansing (2018). The HS method is a modification of the cash ETR method by adding the element of asset market value as a divisor. The market value of assets is the book value of assets plus the market value of equity minus the book value of equity.

In calculating tax avoidance, the market value of assets is used as a company measure because the market value of assets includes the value of intangible assets developed internally, such as intellectual property arising from research and development and company brands arising from advertising, while the book value of assets does not. Using the market value of assets in this calculation is considered better for the following reasons: (1) research and development and advertising activities are currently deductible expenses with certain requirements, (2) research and development activities are often associated with tax avoidance activities but have no effect on the book value of assets (Atmaja, 2021). The book value of assets is not sufficient to capture a company's economics (Joos & Plesko, 2005; Klein & Marquardt, 2006; Darrough & Ye, 2007).

However, based on the results of research conducted by De Simone et al. (2020), testing tax avoidance using a proxy developed by Henry & Sansing (2018) has lower strength than testing tax avoidance using other proxies (GAAP ETR, cash ETR, BTD, permanent different) in all samples, including samples that include observing losses companies that are predicted to be an advantage of measuring tax avoidance using the HS method. In addition, cash ETR has higher strength than HS in every test with permanent strategy, temporary strategy, hybrid strategy on profit, and tax. The strength of the test is on its ability to detect differences in tax avoidance proxies between tax-avoiding firms and others, holding the known economic determinants of avoidance constant.

So, in this study, tax avoidance is measured using the cash ETR method. The cash ETR method is calculated using the following equation:

Cash ETR=(tax paid)/(earning before tax)

Tax paid is the amount of corporate income tax paid by the company as stated in the company's consolidated statement of cash flows in operating activities. Earning before tax is the company's profit before corporate income tax as stated in the consolidated statement of profit or loss and other comprehensive income. The higher the cash ETR, the lower the level of tax avoidance. Therefore, in this study, tax avoidance is proxied by TA using the following equation:

TA= cash ETR x-1

Thin Capitalization Rule (TCR)

The independent variable used in this study is thin capitalization rule (TCR) consisting of PMK-169 and PER-25. Thin capitalization is a tax avoidance technique using funding sources that prioritize debt over capital (OECD, 2012). The measurement of the independent variable of TCR in this study is proxied by the level of effect of TCR on the company's DER on an interval scale. The company's DER is calculated by the ratio of total debt to total company equity. This is done because TCR is a tax regulation that specifically regulates the amount of DER for calculating taxable income. Therefore, the effect of TCR can be measured through changes in a company's DER. Thre results of research conducted by Babberich (2009), Blouin et al. (2014), Sogorb-mira (2016), Ramadhan & Riandoko (2017), Jatmiko & Husodo (2019), and Anindita et al. (2022) show that TCR has an effect on a company's DER. The change in DER used in this study is the difference between the average DER before and after TCR implementation multiplied by 10. The larger the interval value indicates the greater the effect of TCR on reducing DER after implementing TCR.

Control Variables
This study also uses three control variables to strengthen the research results, consisting of company size, company profitability, and capital intensity.

Company Size (SIZE)
Company size refers to various metrics or variables used to measure dimensions or characteristics of a company that are considered to influence performance (Nordlöf et al., 2015). In this study, company size is measured by the normal logarithm of total assets. In terms of the relationship between company size and ETR, there are two different views. First, it is the view that large companies will have a high ETR because large companies tend to be monitored more closely by the tax authorities so they will choose not to avoid tax (Zimmerman, 1983). Second, it is the view that large companies will have low ETR because they have political power that is able to influence regulators to make profitable regulations (Richardson & Lanis, 2007).

Company Profitability (ROA)
Company profitability is the company's ability to achieve effectiveness and efficiency in company operations as reflected in the level of profits generated (Kasmir, 2012). In this study, company profitability is proxied by ROA and measured by profit before tax divided by total assets. There is a positive relationship between profitability and tax avoidance (Adhikari et al., 2006; Taylor & Richardson, 2013).

Capital Intensity (CINT)
Capital intensity is a company's investment, in the form of fixed assets, that provides tax benefits (Taylor & Richardson, 2013). In this study, capital intensity is measured by net property, plant and equipment divided by total assets. Companies with large control of fixed assets are able to control the depreciation expenses they charge. A large depreciation expense will affect tax avoidance by the company as proxied by ETR. The larger the fixed assets, the greater the tax avoidance carried out, or in other words the smaller the ETR (Richardson & Lanis, 2007).

Data Analysis Technique

$$TA = (\alpha + \beta_1 TCR_{it\_}it + \beta_2 SIZE_{it} + \beta_3 ROA_{it} + \beta_4 CINT_{it} + \epsilon)$$

Description:
TA : tax avoidance level
α : constanta
β_1-β4 : independen variable coefisien on company i year t
TCR : the influence of TCR is proxied by an in-interval scale
SIZE : company size
ROA : company profitability
CINT : capital intensity

4. DATA ANALYSIS AND DISCUSSION

According to Sekaran & Bougie (2016), the number of appropriate samples in research is between 30 and 500 samples. In addition, according to Hair et al. (2019), sample size has a direct impact on the suitability and statistical power of multiple regression. The recommended sample size is 30-1,000. Small samples, less than 30 observations, are only suitable for simple regression analysis with one independent variable and can only detect strong relationships. Meanwhile, large samples, more than 1,000 observations, make statistical significance tests too sensitive so that they often show almost every relationship to be statistically significant. In this study, 36 companies meet the appropriate sample size because they produce 288 observations as samples.

All data analysis methods are processed using the *eviews* version 12.0 statistical application because this application excels in panel data analysis. Panel data analysis is a regression-based analysis technique designed to handle cross-sectional analysis of longitudinal or time-series data (Hair et al., 2019). There are three estimation models that can be used to estimate panel data regression models. They are common effect, fixed effect and random effect models (Brooks, 2008). Therefore, a regression model is selected, whether the Common Effect Model (CEM), Fixed Effect Model (FEM), or Random Effect Model (REM).

In this study, testing is only carried out to choose between the CEM and REM models with Legrange Multiplier (LM) Test because data regression using the FEM model could not produce output. This is caused by indications that there is a multicollinearity problem which is indicated by the notification "near singular matrix". This problem could have been predicted beforehand because in this study there are variables that have time invariant data or do not change throughout the observation period, namely the TCR variable. The FEM model is a model that has weaknesses when dealing with time invariant problems so

that the selection of the FEM model cannot be ignored. The results of the LM test are presented in Table 2 as follows.

Based on Table 2, the Breusch Pagan value is 0.000 < 0.050, so REM is chosen as the best model. The REM model is used in this study because the model is able to explain variables that are time invariant (Bell & Jones, 2015) solvable with Mundlak's (1978a. Furthermore, the results of regression with REM Model can be seen in Table 3 as follows. Based on information in Table 3, TCR has no effect on TA. This indicates that TCR does not reduce tax avoidance so that the hypothesis is rejected.

Classical assumption test, with normality test and multicollinearity test, is carried out to prove the validity of hypothesis test results. Heteroscedasticity and autocorrelation tests do not need to be carried out because the hypothesis testing uses the REM model.

Figure 1 shows the results of normality test. The Jarque Berra probability value is

Table 1
Purposive Sampling Results

Criterion	Year							
	2020	2019	2018	2017	2016	2015	2014	2013
Listed on IDX	696	606	606	557	533	511	491	479
Domestic companies	340	286	266	233	210	202	192	185
Multinational companies	356	320	340	324	323	309	299	294
Bank	32	32	32	30	31	29	27	23
	324	288	308	294	292	280	272	271
Financial/ Financing institutions	11	20	11	11	10	10	10	9
	313	268	297	283	282	270	262	262
Insurance and reinsurance companies	7	7	6	5	5	5	5	5
	306	261	291	278	277	265	257	257
Mining companies	31	28	33	33	36	36	36	36
	275	233	258	245	241	229	221	221
Companies subject to Final Income Tax	50	37	49	46	45	43	40	39
	225	196	209	199	196	186	181	182
Infrastructure Companies	17	18	16	15	14	14	13	13
POPULATION	208	178	193	184	182	172	168	169
Not listed consecutively for 8 years	80	50	65	56	54	44	40	41
	128	128	128	128	128	128	128	128
Incomplete financial report 2013-2020	18	18	18	18	18	18	18	18
	110	110	110	110	110	110	110	110
Financial report is not stated in rupiah currency	21	21	21	21	21	21	21	21
	89	89	89	89	89	89	89	89
Incomplete variable	24	24	24	24	24	24	24	24
	65	65	65	65	65	65	65	65
Negative DER	1	1	1	1	1	1	1	1
	64	64	64	64	64	64	64	64
Negative cash ETR	28	28	28	28	28	28	28	28
SAMPLE	36	36	36	36	36	36	36	36

Source: Processed Data, 2023

Table 2
LM Test Results

	Cross-section	Time	Both
Breusch-Pagan	68.77504	0.035310	68.81035
	(0.0000)	(0.8509)	(0.0000)

Source: Processed Data, 2023

Table 3
REM Model Regression Results

Variabel	Coefficient	Std. Error	t-Statistic	Prob.
C	-0,727027	0.293426	-2.477716	0.0138
TCR	0.005416	0.009413	0.575383	0.5655
SIZE	0.018815	0.018804	1.000576	0.3179
ROA	0.799126	0.175196	4.561333	0.0000
CINT	-0.010265	0.148399	-0.069169	0.9449
R-Squared				0.071278
Prob (F-Statistic)				0.000317

Source: Processed Data, 2023

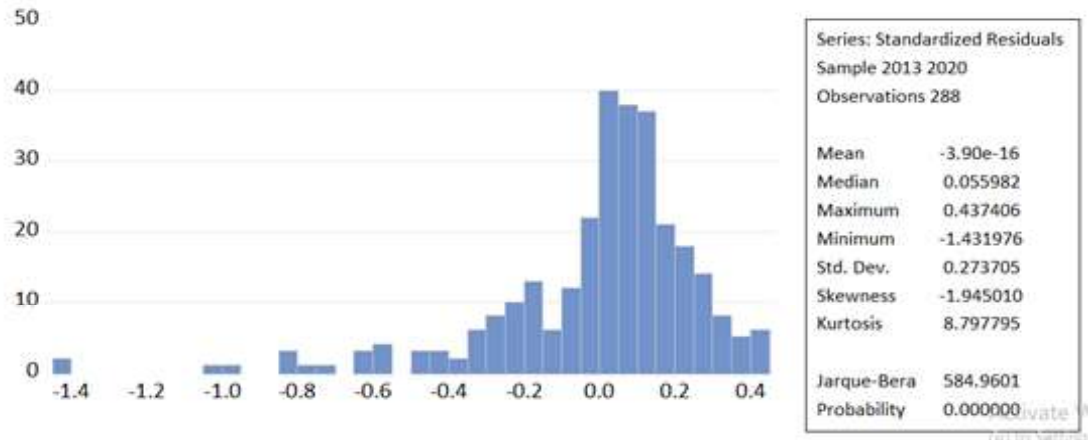

Figure 1
Normality Test Results – Residual Data

Source: Processed Data, 2023

0.000 < 0.050, indicating that the residual data is not normally distributed. According to Gujarati & Porter (2009), in a study with more than 100 observation data, normality test results that show abnormal data can be ignored. Hypothesis testing is still considered valid because in large samples the sampling error distribution becomes normal. This is supported by Hair et al. (2019) that in 200 observation data, a large size can eliminate the negative impact of variations and non-normal distribution. According to Field (2018), testing is carried out to test residual data so that the data remains valid.

Table 4 shows that the multicolinearity value is < 0.8000, indicating that there is no multicolinearity among the variables. Thus, the classical assumption test indicates that the results of the hypothesis test are acceptable.

Robustness Test

To guarantee the results of data analysis, researchers carry out samples testing using another method, namely independent test, which is processed using the *eviews* version 12.0 statistical application. The independent test is a test used to reach conclusions about whether or not there are differences between two or more samples. In this test, there is paired sample data: tax avoidance before and tax avoidance after implementing the thin capitalization rule (TCR). The paired samples come from the

same subject taken in different situations or circumstances. The data sample used in this test is TA data with a ratio scale. Data analysis with ratio scale data can be carried out using the paired sample t-test, a test used to compare the difference between two means of two sets of paired sample data, with the assumption that the data is normally distributed. However, the data used must be normally distributed because this test is a parametric statistical test. If the data is not normally distributed, differences are carried out using the Wilcoxon test, namely a non-parametric statistical test.

To ensure that the data is normally distributed, a normality test is carried out using the Jarque-Berra method. The residual data is normally distributed if the Jarque-Berra probability value is > 0.05. The independent test models in this research are as follows:

Ho: μd ≥0

Ha: μd <0

μd is the average difference between paired data after and before treatment (μafter-μbefore). The t-test/Wilcoxon probability value < 0.05 indicates that there is a difference between the initial sample and the final. This shows that there is a significant influence on the differences in treatment given.

To find out the direction of the influence of variables in the independent test, it can be seen from the independent test results. The higher the TA value, the higher the tax avoidance value. If the t-statistic/ Wilcoxon value is positive, this means that there is an increase in tax avoidance. Conversely, if the t-statistic/ Wilcoxon value is negative, this means that there is a decrease in tax avoidance.

Figure 2 shows the results of the normality test. The TA Jarque Berra probability value is 0.000 < 0.050, indicating that the data is not normally distributed. Therefore, the difference test is carried out using Wilcoxon test, which is a non-parametric statistical testing.

In Table 5, it can be seen that the Wilcoxon probability value is 0.5192 > 0.0500, indicating that there is no influence on the differences in treatment given. The results show that thin capitalization rule (TCR) does not reduce tax avoidance.

Table 5
Wilcoxon Test Results

Method	df	Value	Probability
Wilcoxon/ Mann-Whitney		0.644566	0.5192

Source: Processed Data, 2023

These results provide empirical evidence that thin capitalization rules (TCR), consisting of PMK-169 and PER-25, cannot reduce the level of tax avoidance in Indonesia. These

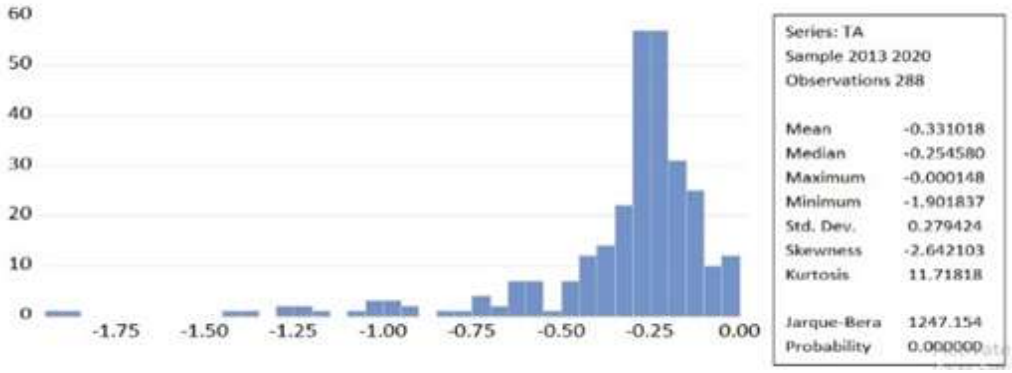

Figure 2
Normality Test Results – Tax Avoidance

Source: Processed Data, 2023

Table 4
Multicolinearity Test Result

	TCR	SIZE	ROA	CINT
TCR	1.000000	0.226197	0.030456	0.267909
SIZE	0.226197	1.000000	0.070704	0.016644
ROA	0.030456	0.070704	1.000000	0.157209
CINT	0.267920	0.016644	0.157209	1.000000

Source: Processed Data, 2023

findings support the results of research conducted by Zaina (2017), Saragih et al., (2019), and Anindita et al. (2022)with multiple linear regression models. The sample used in this research is companies listed on the Indonesia Stock Exchange (IDX that TCR has no effect on tax avoidance.

Based on agency theory, the level of tax avoidance carried out by managers (agents) can be different from the wishes of the company owner (principal). After TCR implementation, the tax avoidance steps that the company will take, especially thin capitalization, can be predicted using trade-off theory. Thin capitalization rules determine the DER for calculating taxable income. After implementing TCR, companies that have a DER above a predetermined ratio can no longer take advantage of incentives from using debt in full. The interest expense on debt, which was originally a deductible expense, will become a non-deductible expense on debt that exceeds the predetermined DER. So, having a DER above a predetermined ratio can increase the tax burden and risk of bankruptcy. Thus, based on trade-off theory, companies will choose to reduce tax avoidance.

Furthermore, based on agency theory, an increase in the tax burden and the risk of bankruptcy can cause management to lack incentives, so that companies will choose to reduce tax avoidance.

In addition, based on propositions derived from economic deterrence theory, individuals who perceive tax avoidance as something difficult are more likely to express tax compliance attitudes. TCR determines the DER for calculating taxable income and the obligation to report it on the Annual Tax Return, making it difficult to avoid tax. PMK-169 provides detailed guidance regarding related party handling, debt and equity definitions, DER thresholds, and other compliance requirements. Meanwhile, PER-25 regulates the technicalities of DER reporting using a special attachment contained in the Annual Tax Report which is also a control tool for the Directorate General of Taxes to carry out supervision. With this supervision, the risk of detecting tax evasion is greater so that agents will choose low tax avoidance because a high level of supervision can pose a risk to the incentives received by the agent. This can increase taxpayer compliance and reduce tax avoidance.

Therefore, trough agency theory, trade-off theory, and economic deterrence theory, it can be concluded that PMK-169 and PER-25 can reduce the level of tax avoidance through the practice of thin capitalization as indicated by significant differences in tax avoidance before and after the implementation of TCR. However, the results of independent test show that TCR has no effect on the level of tax avoidance (Zaina, 2017).

Based on trade-off theory, there is a positive relationship between capital structure and company value, assuming the tax benefits are greater than the risk of bankruptcy and agency costs (Myers, 2001). In this case, the company can choose a funding source with a low DER because the company considers the risk of debt default, high interest and bankruptcy risk. The sample used in this study had an average DER of 99.3%, far below the DER ratio of 400%, which is the TCR limit. This is in accordance with the results of research conducted by Atmaja (2021) that the average DER in his research sample is 137%. The results of this research are also in accordance with the results of research conducted by Saragih et al. (2019) that of all public companies listed on the IDX during 2014-2017, only 33 companies had a DER above 4:1. The results of this research are also in line with the results of research conducted by Zaina (2017) that public companies in Indonesia are financed more with equity financing than with debt financing.

This low DER phenomenon can be explained through trade-off theory. Sample companies are still trying to get tax incentives from reducing debt costs, but are still careful about the risk of default and bankruptcy (Atmaja, 2021). Apart from considering the ability to pay debts and the risk of bankruptcy, the low DER value can also be caused by several things, such as: 1) companies in Indonesia lack bona fides from investors' perspective; 2) sample companies are companies selected using purposive sampling by excluding companies that have a negative cash ETR or are in a loss condition.

With the sample DER condition being far below the DER ratio determined by the TCR, the TCR becomes less effective in influencing DER and corporate tax avoidance (Saragih et al., 2019). Taking this into account, the average company DER is still far from the threshold set by PMK-169, so the government can revise the DER that has been set in order to obtain

tax revenue (Atmaja, 2021). This result may be caused by the thin capitalization regulatory mechanism model implemented in Indonesia. The thin capitalization rules in Indonesia use the DER rule mechanism which regulates the limit on the amount of debt that can be deducted by a company for calculating taxable income.

According to Anindita et al. (2022) with multiple linear regression models. The sample used in this research is companies listed on the Indonesia Stock Exchange (IDX, TCR with a DER regulatory mechanism is not OECD best practice. This rule primarily functions to reduce interest expenses that can be deducted in calculating taxable income. The OECD suggests that this is done through a fixed ratio rule (interest to EBITDA rule). This is also in line with the results of research conducted by Kurniawan (2018) that the fixed ratio (interest to EBITDA) rule is better than DER rule. The results of research conducted by Saragih et al. (2019) also prove that reducing DER does not reduce tax avoidance.

Based on quantitative research evidence with paired sample tests and regression tests, the DER regulatory mechanism, especially in Indonesia, is less effective in reducing tax avoidance, so the EBITDA regulatory mechanism is worth considering. In BEPS Action 14, the recommended interest to EBITDA ratio is from 10% to 30% (OECD, 2012). The regulatory mechanism for the interest ratio to EBITDA determined can be the ratio of interest on affiliate debt to EBITDA or the ratio of interest on all debt to EBITDA. The OECD specifically created BEPS Action Plan 4 to provide practical recommendations for preventing tax erosion through interest charges. BEPS Action Plan 4 does not have fixed standards, so there are differences in the application of tax avoidance regulations regarding the limits on interest expenses that can be deducted in each country. Each country may apply different regulatory approaches for the purpose of limiting deductible interest expenses in calculating taxable income. In 2012, there were 61 countries that implemented restrictions on reducing interest costs using a debt and capital ratio model, with different safe haven ratios and with different models (Merlo et al., 2020).

There are three TCR models that can be implemented. The first is DER rule model. DER rule model is the model most widely used by countries in the world. The DER rule determined can be the ratio of affiliate debt to equity or the ratio of all debt to equity. De Mooij & Hebous (2018) revealed a list of 33 countries that use the DER rule model with affiliated debt and 17 countries that use the DER rule model for all debt with different ratios. The 3:1 ratio is a popular ratio in many countries (Susilawati, 2019).

The second is the interest to EBITDA (Earnings Before Interest, Tax, Depreciation, and Amortization) ratio rule model. The interest to EBITDA rule determined can be the ratio of interest on affiliated debt to EBITDA or the ratio of interest on all debt to EBITDA. In BEPS Action 14, the recommended interest to EBITDA ratio is from 10% to 30% (OECD, 2012). Countries that use the interest to EBITDA ratio rule model with debt burden referring to affiliate debt are Finland (25%), Norway (30%), and Slovakia (25%). Meanwhile, countries that use the interest to EBITDA ratio rule model with debt burden referring to all debt are Germany (30%), Greece (40%), Italy (30%), Portugal (30%), and Spain (30%) (De Mooij & Hebous, 2018).

The third is arm's length rule model. In the arm's length approach, the maximum value of interest expense that can be deducted in calculating taxable income is determined based on the value of the debt if the debt is provided by a non-affiliated party (OECD, 2012). There are two stages to measure the fairness and prevalence of debt which is the fairness and prevalence of the debt structure and the fairness and prevalence of loan interest rates (Kurniawan, 2018). Countries that apply the arm's length rule model are Kazakhstan, South Africa and England (De Mooij & Hebous, 2018).

Moreover, according to economic deterrence theory, taxpayers will try to report lower taxes than they should when the risk of detection is low (Allingham & Sandmo, 1972). The results of research conducted by Kirchler et al. (2008) show that a low audit probability factor can reduce the level of taxpayer compliance. The population and samples in this research are multinational companies, which are under the auspices of the special tax service office, namely the Large Taxpayer Office or the Foreign Investment Tax Office. In this tax office, the number of taxpayers is smaller than in other offices. On the other hand, the number of account representative and auditor is greater so that supervision and audits are very strict. This can cause taxpayers to remain compliant

both before and after the implementation of TCR due to the high audit risk.

Furthermore, the less significant research results can also be explained through the R-squared value. Based on the results of the regression test, the R-squared value is 0.071, indicating that the independent variables only provide 7.1% of the information needed to predict the dependent variable for tax avoidance. This indicates that the sample companies may use other tax avoidance strategies to reduce tax liabilities besides the thin capitalization strategy. This is in line with the results of research conducted by Saragih et al. (2019) that tax avoidance is determined by other variables. Variables that cannot be explained and may influence the level of tax avoidance are tax planning strategies other than thin capitalization (Zaina, 2017).

Moreover, the regression results for the control variables are as follows. First, the regression results for the control variable of company size (SIZE) show that company size has no effect on tax avoidance. This is in line with the results of research conducted by Atmaja (2021) and Nathania et al. (2021). Company size is not a benchmark for companies to practice tax avoidance because tax avoidance is not based on the size of a company. Tax avoidance will occur as long as there are gaps in tax regulations that have the potential to give rise to tax avoidance (Nathania et al., 2021).

Second, the regression results for the control variable of company profitability (ROA) show a significant positive coefficient, indicating that the higher the level of profitability, the higher the level of tax avoidance. This is supported by the results of research conduced by Adhikari et al. (2006), Taylor & Richardson (2013), and Atmaja (2021) that companies with high profitability tend to have a high tax burden so they tend to have a high level of tax avoidance to reduce the tax burden.

Third, the regression results for the control variable of capital intensity (CINT) show insignificant results, indicating that fixed asset intensity has no effect on tax avoidance. Based on theory, companies with large control of fixed assets are able to control the depreciation expenses they charge. Large depreciation expenses will affect corporate tax avoidance because it can reduce profits before tax and the amount of tax that must be paid (Richardson & Lanis, 2007). In this research, fixed asset intensity has no effect on tax avoidance. The results of this research support the results of research conducted by Susanti (2019), Tobing (2018), Nugrahadi & Rinaldi (2021), Maha Putra & Putri Kirana (2023). Fixed assets are used to support the company's operational activities, not specifically to avoid taxes Maha Putra & Putri Kirana (2023). This shows that the sample companies in this study do not use a tax avoidance strategy by using fixed asset intensity. The results of this research can be related to a sample of companies that exclude companies that are included in the criteria excluded from PMK-169, such as banking companies, financial institutions, insurance, reinsurance, operating in the oil and gas mining sector, companies whose entire income is subject to final tax, and infrastructure. The companies excluded from this research are types of companies with high capital intensity.

5. CONCLUSION, IMPLICATION, SUGGESTION AND LIMITATION

This study aims to test the effectiveness of thin capitalization implementation to reduce tax avoidance. This research uses a sample of 36 multinational companies listed on the IDX during 2013-2020 periods by excluding companies that are excluded from PMK-169. This research uses the period of 2013-2016, as the period before the implementation of the thin capitalization rule (TCR), and the period of 2017-2020, as the period after the implementation of the thin capitalization rule (TCR), which has never been used in previous research.

The test results show that TCR is not effective in reducing tax avoidance. This is because the samples in this study have an average DER of 99.3%, far below the DER ratio which is the limit for TCR of 400%. The low DER value can be caused by several things, such as: 1) companies in Indonesia lack bona fides from investors' perspective; 2) sample companies are companies selected using purposive sampling by excluding companies that have a negative cash ETR or are in a loss condition.

In addition, the population and samples used in this study are multinational companies, which are under the auspices of the special tax service office, namely the Large Taxpayer Office or the Foreign Investment Tax Office. In this tax office, the number of taxpayers is smaller than that in other offices. On the other hand, the number of account representative and auditor is greater so supervision and

audits are very strict. This can cause taxpayers to remain compliant both before and after the implementation of TCR due to the high audit risk.

This study has implications for TCR policy in Indonesia. This study provides evidence and guidelines for formulating thin capitalization rules and other similar tax policies that aim to overcome tax avoidance or anti-tax avoidance rules, such as transfer pricing rules and CFC rules. Previously there were several studies and literature that documented several criticisms of thin capitalization rules in Indonesia which were considered strict, rigid and inflexible so that changes were necessary.

This study provides empirical evidence that thin capitalization rule (TCR) cannot reduce tax avoidance. Therefore, the government needs to carry out further evaluation of the thin capitalization rules to answer whether changes need to be made. This evaluation needs to be carried out because the DER regulations have proven to be ineffective and the government needs to consider other models of debt interest limitation regulations, such as the mechanism for regulating interest on EBITDA.

The limitation of this study is that the data used in the difference test and the residual data in the hierarchical regression analysis are not normally distributed. This indicates that the sample distribution pattern is not the same as the population distribution pattern, so there is a possibility that type 1 error or type 2 error will occur because conclusions drawn to accept or reject the hypothesis do not represent the population.

To overcome the limitations of non-normal data distribution, future research can increase the number of samples and observations by developing a more accurate proxy for measuring tax avoidance that can accommodate observations of loss-making companies but also has good power.

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