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The impact of thin capitalization rule on tax avoidance in Indonesia

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Abstract

Research aims: This study aims to investigate the impact of the thin capitalization rule on tax avoidance in Indonesia.

Design/Methodology/Approach: The analysis used event study regression to overcome the problem of committed variable bias.

Research findings: The examination found that, over the entire period, the thin capitalization rule could reduce tax avoidance. However, this study also uncovered that even though tax avoidance was reduced, the company did not pay the tax in the current year but postponed it to the following years. In addition, this study revealed that the thin capitalization rule could only reduce tax avoidance for a sub-sample of non-manufacturing companies. As for manufacturing companies, the thin capitalization rule had no impact on tax avoidance.

Theoretical contribution/Originality: This research is the first to examine the impact of the thin capitalization rule on tax avoidance using a suitable method, i.e., event study regression with a staggered setup.

Practitioner/Policy implication: This study can show that the thin capitalization rule works well for non-manufacturing companies. However, for manufacturing companies, the Indonesian tax authorities need to consider other ways to reduce their tax avoidance, for example, by creating or updating other specific anti-tax avoidance rules, such as transfer pricing or treaty shopping.

Keywords: Thin Capitalization Rule; Tax Avoidance; Difference-in-Difference



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Introduction

The problem of tax avoidance is an issue faced by almost all tax authorities in the world. Nearly USD 500 billion of tax revenue is lost annually due to tax avoidance (Cobham & Jansky, 2018). In addition, the IMF also estimates that tax revenue lost due to tax avoidance reaches USD 600 billion per year (Turner, 2017).

Indonesia also faces the problem of tax avoidance. One indicator that illustrates this problem is the tax ratio. Based on IMF data (2020), Indonesia's tax ratio was only 9.75% in 2019. This ratio was still far from Indonesia's neighboring countries, such as Singapore, with a tax ratio of 13.34%, and Malaysia, with a tax ratio of 11.93%. Ironically, in 2019, Singapore had a lower tax rate than Indonesia. It further indicates the importance of the problem of tax avoidance in Indonesia.

Specifically, one of the tax avoidance techniques that taxpayers often use is thin capitalization. Thin capitalization is a tax avoidance technique that prioritizes debt over capital as a source of corporate funding (OECD, 2012). Taxpayers carry out thin capitalization because the interest expense from debt can be deducted from income, while dividends, which are costs of shares, cannot be deducted from income (Egger et al., 2014).

To prevent taxpayers from carrying out aggressive thin capitalization, the OECD issued BEPS action 4 (limitation on interest deductions), which advises tax authorities to make thin capitalization rules. The thin capitalization rule has long been a regulation by various tax authorities globally. For example, Canada has had a thin capitalization rule since 1971. In 2005, two-thirds of OECD members had a thin capitalization rule (Buettner et al., 2012). Then, in 2015, Indonesia imposed a thin capitalization rule that limited taxpayers' Debt-to-Equity Ratio to a ratio of 4:1.

Therefore, this research aims to find the impact of the thin capitalization rule on tax avoidance. This research evaluates the implementation of the thin capitalization rule in Indonesia. Thus, after getting the result from this result, the researcher could advise making better tax avoidance regulations in Indonesia for the future.

This research used the Indonesian listed company data from 2013 – 2020 provided by Refinitiv Eikon with exclusions based on the thin capitalization rule in Indonesia. The author also used data from the Refinitiv Eikon database since the database retrieves financial report data directly from the Indonesian Stock Exchange website. To ensure data accuracy, Refinitiv Eikon allows users to directly access company financial report data from the Refinitiv Eikon application. A total of 529 enterprises were analyzed in this research. Since some companies started to be listed in Indonesia after 2013, the data used in this research were unbalanced panel data.

Moreover, the model used in this research was the event studies by de Chaisemartin and D'Haultfoeuille (2022) since this model allows the researcher to analyze the unbalanced panel data and the treatment data that switch on-off over time. To ensure that the results obtained were robust, the researcher also tested the parallel trend assumption. In addition, the researcher also conducted a heterogeneity test to ensure that the results obtained were homogeneous in each sub-sample group. The researcher also employed a sub-sample of manufacturing and non-manufacturing companies in this heterogeneity test.

This study is the first study employing an appropriate approach, i.e., event study regression with staggered setup, to assess the influence of the thin capitalization rule on tax avoidance. The investigation discovered that the thin capitalization rule could minimize tax avoidance over the entire period. However, according to this study, even when tax avoidance was decreased, the corporation did not pay the tax in the current year but deferred it to future years. Furthermore, this analysis found that the thin capitalization rule could only minimize tax avoidance for a subset of non-manufacturing firms. Meanwhile, the thin capitalization rule did not affect tax avoidance for

manufacturing enterprises. Further, this study can show that the thin capitalization rule works well for non-manufacturing companies. Based on this, even though the thin capitalization rule only affects the non-manufacturing sector, it can be said that the government has succeeded in reducing tax avoidance. However, the government still has homework to reduce tax avoidance in the manufacturing sector. The way that can be carried out is to compile and update other regulations relating to other modes of tax avoidance, such as transfer pricing and treaty shopping.

Literature Review and Hypotheses Development

Research on the impact of the thin capitalization rule in Indonesia was initiated by Ramadhan et al. (2017a), Ramadhan and Riandoko (2017), and Ramadhan et al. (2017b), who examined the impact of the thin capitalization rule on the leverage and capital structure of companies in Indonesia using the paired sample t-test method. These studies concluded that the thin capitalization rule could reduce companies' leverage in Indonesia and change the company's capital structure. Interestingly, Ramadhan and Riandoko (2017) found that the change in leverage and capital structure was caused by an increase in capital, not a decrease in debt. However, these studies contain methodological weaknesses. Because these studies used a paired sample t-test, it was uncertain whether the leverage and capital structure changes came from the thin capitalization rule.

Furthermore, studies on the impact of the thin capitalization rule on capital structure and tax avoidance were conducted by Zaina (2017) and Anindita et al. (2022). These studies used the difference-in-difference method to see the impact of the thin capitalization rule. They uncovered no impact of the thin capitalization rule on tax avoidance. Nevertheless, there are several weaknesses in both studies. Zaina (2017) and Anindita et al. (2022) used companies with DER more than 4.1:1 as treatment group 1, companies with DER less than 3.7:1 as treatment group 2, and companies with DER between 3.7:1 – 4.1:1 as a control group. Zaina (2017) also argued that a company with a DER of less than 3.7:1 would increase its debt to reach 4:1. In the researcher's opinion, this argument is invalid since the company's leverage is determined not only by the tax consideration but also by the optimal cost of capital for the company (Titman & Keown, 2018). In addition, Zaina (2017) and Anindita et al. (2022) employed canonical difference-in-difference in two-groups/two-periods (2x2) context while they had panel data for more than two years. They treated all years before 2016 as the first period (before treatment) and all years after 2016 as the second period (after treatment).

In this research, the treatment time is different across the observations. For example, in one observation, the treatment was started in 2016. However, in another observation, the treatment was started in 2018. The 2x2 estimators deduct the average changes in the untreated outcomes and their treatment effects because groups that have previously received treatment (already-treated) may serve as controls (Goodman-Bacon, 2021). This condition leads to bias in the average treatment effect produced in this 2x2 estimation.

Thus, in this research, the difference-in-difference approach by de Chaisemartin and D'Haultfoeuille (2022) was used to estimate the impact of the thin capitalization rule on tax avoidance. The researcher utilized this model since the model allows the binary treatment that switches on and off over time. In this research, the binary treatment variable could switch on-off. For example, the observation could become a treatment group in 2017 but a control group in 2018. Hence, de Chaisemartin and D'Haultfoeuille's (2022) model is suitable for this setup. Using this model, this study is the first to analyze the impact of the thin capitalization rule in Indonesia on tax avoidance using the appropriate method.

On the other side, Indonesian tax authorities issued the thin capitalization rule to minimize tax base erosion owing to excessive debt-financing activities. By adopting this new thin capitalization regulation, the government hopes to decrease tax avoidance and increase tax revenue from companies with high debt-to-equity ratios. The influence of the thin capitalization rule on tax-planning behavior has been further investigated by Overesch and Wamser (2010) using German enterprise data. They confirmed that the thin capitalization rule could increase the tax revenue in Germany and reduce tax avoidance. Thus, the researcher could hypothesize as follows:

H₁: *Tax avoidance for taxpayers will decrease after implementing the thin capitalization rule.*

Research Method

The outcome variable in this research was tax avoidance. There are many measurements of tax avoidance like effective tax rate, current effective tax rate, cash effective tax rate, book-tax difference, marginal tax rate, and others. This paper used the effective tax rate (ETR) since ETR is one of the most effective tax avoidance measurements (Hanlon & Heitzman, 2010). The formula to determine ETR is:

$$ETR_{i,t} = \frac{\text{Income tax expense}_{i,t}}{\text{Income before tax}_{i,t}} \quad (1)$$

In addition, the researcher included two more tax avoidance measurements in the robustness test: current ETR and deferred ETR. The formula to determine current ETR and deferred ETR is:

$$CURRENT_ETR_{i,t} = \frac{\text{Current income tax expense}_{i,t}}{\text{Income before tax}_{i,t}} \quad (2)$$

$$DEFERRED_ETR_{i,t} = \frac{\text{Deferred income tax expense}_{i,t}}{\text{Income before tax}_{i,t}} \quad (3)$$

The subscript *i* in equations (1), (2), and (3) refers to the company. Then, the subscript *t* represents the year. It also should be noted that the difference between income tax expense and current income tax expense is in the formula for calculating income tax

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expense, where income tax expense includes deferred income tax expense and current income tax expense. Hence, to calculate deferred tax expense, the researcher used the following formula:

$$DEFERRED_ETR_{i,t} = ETR_{i,t} - CURRENT_ETR_{i,t} \quad (4)$$

Further, determining the treatment and control groups depend on the DER one year before the observed year. The observation is the treatment group if the company's DER exceeds 4:1 one year before the observed year, and the observation is the control group if the DER is less than or equal to 4:1 one year before the observed year. For example, if the company's DER were 5:1 in 2015, the company would be included as a treatment group in 2016. Then, if the company's DER were 3.5:1 in 2016, the company would become a control group in 2017. The DER could be calculated by the formula:

$$DER_{i,t} = \frac{Total\ debt_{i,t}}{Total\ equity_{i,t}} \quad (5)$$

All the data were taken from listed companies' financial report data for 2013 – 2020 provided by Refinitiv Eikon. From 2013 – 2020, 810 companies were listed in Indonesia. After doing purposive sampling, the remaining samples were 529 samples. The purposive sampling process is as follows: the total number of listed companies in Indonesia was 810. After reducing the sample with purposive sampling, which excluded a financial services company (104 companies), an energy company (52 companies), real estate (80 companies), and the companies without the industrial sector (45 companies), the net sample was 529 companies.

Although the data used were secondary, the data quality is very accurate because Refinitiv Eikon takes data directly from the financial statements of companies in Indonesia. Then, the number of treatment and control groups in each year is as follows:

Table 1 Distribution of Treatment and Control Group Each Year

Year	Group	Number of Observation
2016	Treatment	28
	Control	358
2017	Treatment	35
	Control	402
2018	Treatment	36
	Control	439
2019	Treatment	44
	Control	463
2020	Treatment	40
	Control	461

Table 1 presents the distribution of the treatment and control groups each year. The percentage of the treatment group was around 7% - 8.7% of the observation each year. The summary statistic of all variables used in this research is provided in Table 2.

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Table 2 Summary Statistic

Variable	Number of Observation	Mean	Standard Deviation	Min	Max
Debt-to-Equity Ratio	3.475	1.968	32.889	-753.542	1319.101
Effective Tax Rate	3.517	0.182	3.355	-160.457	76.751
Current Effective Tax Rate	2.760	0.392	13.603	-160.457	693.898
Deferred Effective Tax Rate	3.517	-0.125	11.855	-691.544	76.751

Based on Table 2, the debt-to-equity ratio as a determining variable for the treatment group varied between -753.542 to 1319.101. Companies with a debt-to-equity ratio of 1319.101 means that the debt value was 1319.101 times greater than the equity value. Furthermore, the effective tax rate as the primary outcome variable ranged from -160.457 to 76.751. In this study, several companies had a current ETR of 0, indicating that the company's tax burden was transferred to the following years.

This paper aims to analyze the impact of the thin capitalization rule on tax avoidance. In this case, many factors affect tax avoidance, so if the researcher used panel data regression with fixed effect or OLS approach, it would cause endogeneity problems from the omitted variable bias. Therefore, to overcome this problem, the researcher decided to use the difference-in-difference approach.

Because the data in this study were staggered, where not every treatment group received treatment simultaneously, the canonical difference-in-difference method could not be used. Therefore, the researcher decided to use the event study approach by de Chaisemartin and D'Haultfoeuille (2022) to analyze the impact of the thin capitalization rule on tax avoidance. In this method, the researcher estimated all valid dynamic group-time treatment effects, where groups were defined as a function of when treatment started. Then, the researcher calculated the weighted average of the group-time-specific effects using group sample shares as weights. In this method, the researcher also used two control groups: not yet treated and never treated. One of the advantages of de Chaisemartin and D'Haultfoeuille's (2022) model is that this model accommodates treatment variables that switch on-off. It is in accordance with the specifications in this study, where the treatment variable could be switched on-off. For example, a company could become a treatment group in 2017 because, in 2016, it had a DER of more than 4:1, but it could become a control group in 2018 because, in 2017, it had a DER of less than 4:1.

The value of the treatment variable depends on the DER one year before the year being observed. The treatment variable has a value of 1 if the company's DER exceeds 4:1 one year before the observed year, and the treatment variable has a value of 0 if the DER is less than or equal to 4:1 one year before the observed year.

The equation of the event study model in this research is:

$$O_{i,t} = \beta_0 + \sum_{e=-K}^{-2} \delta_e T_{i,t}^e + \sum_{e=0}^L \tau_e T_{i,t}^e + \phi_t + v_i + \mu_{i,t} \quad (6)$$

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In the equation (6), subscript i signifies the unit observation, and subscript t represents the year. O denotes the outcome variable, i.e., tax avoidance. T is a dummy treatment variable. In de Chaisemartin and D'Haultfoeuille's (2022) model, this dummy treatment variable could be switched on-off. Then, K and L are positive constants. The value of e from $-K$ to -2 indicates the time before the treatment started. $e=0$ means the first year of the treatment, and the value of e should be less than or equal to L , namely the years after treatment started. In addition, $e=-1$ is a baseline that would be compared by the effects after that time. ϕ_t is time fixed effect, v_i is unit fixed effect, and $\mu_{i,t}$ is error term. β_0 , δ_e , and τ_e are the parameters to be estimated, and τ_e is the average treatment effect on the treated (ATT) that would be a focus of this research. In this study, the standard error was clustered at the company level.

Moreover, the critical assumption of the event study model is the parallel trend assumption, where this assumption presumes that in the absence of treatment, the time path of the outcome of the treatment group and control group after treatment will be parallel (Angrist & Pischke, 2008). Thus, after analyzing the ATT, the researcher did the robustness test to check the parallel trend assumption. The researcher conducted the robustness test using an event study graph and joint placebo estimation (De Chaisemartin & D'Haultfoeuille, 2022).

After that, to ensure that the results of the event study analysis were robust, the researcher carried out several robustness tests in addition to checking the parallel trend assumption. In the robustness test, the researcher also changed the measurement of the outcome variable (tax avoidance) from the effective tax rate to the current effective tax rate (current ETR) and deferred effective tax rate (deferred ETR).

Furthermore, to ensure that the event study results were homogeneous between sub-samples, the researcher conducted a heterogeneity test. The heterogeneity test separated the sample into two sub-samples: manufacturing and non-manufacturing companies. The separation into manufacturing and non-manufacturing companies was performed by looking at the company's industrial sector data.

Results and Discussion

In this section, the researcher presents the results of the impact of the thin capitalization rule on tax avoidance, analyzed using the event study approach by de Chaisemartin and D'Haultfoeuille (2022). The analysis began by displaying the event study graph depicted in Figure 1. Figure 1 illustrates the results of the event study analysis in a graphic, where the dots represent the estimated coefficient, and the vertical line on the dots denotes the 95% confidence interval. In this study, $t=-1$ is the baseline year, and $t=0$ is the first year the treatment occurred. The interesting thing about this event study graph is that the coefficient for each treatment year ($t=0 - t=4$) was insignificant at the 5% level.

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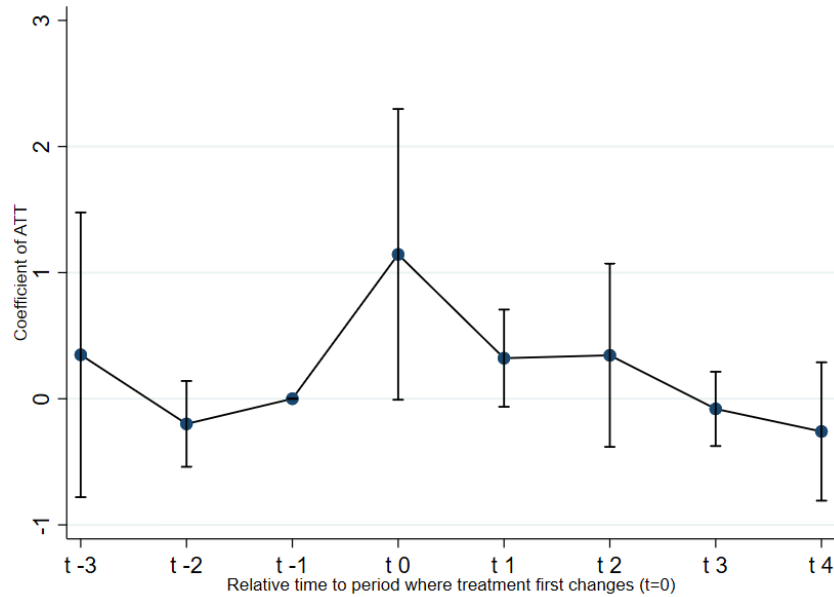


Figure 1 Event Study Graph

Then, Table 3 presents the results of event study regression in this study. Based on Table 3, the coefficient of ATT in t=0 was significant at the 10% level. Then, over the entire period, ATT was significant at the 5% level. Therefore, it can be concluded that, over the entire period, the thin capitalization rule could increase the effective tax rate (reduce tax avoidance) by 0.810 points.

Table 3 Event Study Regression Results

Year	Number of Observation	Coefficient	Standard Error	P-value
t=0	1.959	1.145	0.588	0.052
t=1	1.463	0.322	0.197	0.101
t=2	1.034	0.345	0.370	0.352
t=3	651	-0.081	0.150	0.592
t=4	313	-0.259	0.280	0.354
Average	5.420	0.810	0.373	0.030
t=-2	1.767	-0.199	0.174	0.251
t=-3	941	0.348	0.576	0.545
Joint Placebo				0.188

These results confirm the research hypothesis that the thin capitalization rule reduces tax avoidance. However, this result is different from previous research on the impact of the thin capitalization rule by Zaina (2017) and Anindita et al. (2022), who found no impact of the thin capitalization rule on tax avoidance. One of the reasons for this difference is the dissimilarity in the methods used, where Zaina (2017) and Anindita et al. (2022) employed the canonical difference-in-difference method in their analysis. Further, the results of this study indicate that, over the entire period, the thin capitalization rule can be implemented effectively in Indonesia, as evidenced by the reduction of tax avoidance in Indonesia.

Robustness Test

The researcher did a robustness test in two ways: checking the parallel trend assumption and changing the outcome variable from the effective tax rate to the current and deferred effective tax rate.

Regarding the parallel trend assumption, the researcher checked the placebo coefficients for periods $t=-2$ and $t=-3$. In addition, the researcher also checked the event study graph, as presented in Figure 1. Table 3 also reveals the coefficient, standard error, and p-value of the periods $t=-2$ and $t=-3$. Also, in Table 3, the researcher presents the p-value of the joint placebo. In this study, $t=-1$ is a baseline year, so there was no coefficient produced by de Chaisemartin and D'Haultfoeuille (2022) for the $t=-1$ period.

Table 3 also shows that the coefficient of $t=-2$ and $t=-3$ were insignificant at the 10% level. In addition, the joint placebo coefficient was also not significant at the 10% level. In other words, the parallel trend assumption could be satisfied. Furthermore, the researcher could also check the event study graph in Figure 1, and based on that graph, the researcher could conclude that the parallel trend assumption could be satisfied since the vertical lines between the dots in $t=-3$ and $t=-2$ crossed 0.

Then, the researcher conducted a robustness test by changing the outcome variable to the current ETR and deferred ETR. The results of event study regression using the two outcome variables can be seen in Table 4 and Table 5.

Table 4 Event Study Regression Results with Current ETR Outcome Variable

Year	Number of Observation	Coefficient	Standard Error	P-value
t=0	1.495	-0.683	0.311	0.826
t=1	1.075	0.486	0.456	0.286
t=2	746	0.095	0.068	0.165
t=3	466	0.276	0.119	0.020
t=4	226	0.280	0.115	0.015
Average	4.008	0.259	0.259	0.318
t -2	1.322	-0.344	0.251	0.170
t -3	661	0.161	0.124	0.195
Joint Placebo				0.115

Table 4 reveals the results of event study regression with the current ETR outcome variable. In this model, the parallel trend assumption could be satisfied. If the researcher used current ETR as the outcome variable, in periods $t=3$ and $t=4$, ATT was significant at the 5% level. However, ATT was not significant over the entire period at the 5% level. Therefore, it can be concluded that over the entire period, the thin capitalization rule had no impact on the current ETR.

Table 5 presents the results of event study regression with the deferred ETR outcome variable. If the researcher employed deferred ETR as the outcome variable, in periods $t=0$, ATT was significant at the 5% level. Besides, the ATT was significant over the entire period

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at a 10% level. Hence, it could be concluded that the thin capitalization rule could increase the deferred effective tax rate by 0.543 points over the entire period.

Table 5 Event Study Regression Results with Deferred ETR Outcome Variable

Year	Number of Observation	Coefficient	Standard Error	P-value
t=0	1.959	1.144	0.484	0.018
t=1	1.463	-0.055	0.127	0.667
t=2	1.034	0.042	0.152	0.780
t=3	651	-0.214	0.148	0.150
t=4	313	-0.418	0.319	0.190
Average	5.420	0.543	0.300	0.070
t=-2	1.767	-0.071	0.135	0.600
t=-3	941	0.454	0.455	0.319
Joint Placebo				0.489

Furthermore, when the researcher used the current effective tax rate as the outcome variable, the thin capitalization rule did not affect the current effective tax rate. On the other hand, when the researcher employed the deferred effective tax rate as an outcome variable, the thin capitalization rule significantly affected the deferred effective tax rate. Moreover, the main empirical result using the effective tax rate as the outcome variable produced a significant effect of the thin capitalization rule on tax avoidance. Thus, the researcher can conclude that although the thin capitalization rule could reduce tax avoidance, the company did not pay the tax in the current year but preferred to shift the tax burden to the following years. It was indicated by the significant effect of the thin capitalization rule on the deferred effective tax rate but not on the current effective tax rate.

Heterogeneity Test

The researcher divided the sample into two sub-samples for the heterogeneity test: manufacturing and non-manufacturing. The results of event study regression for the two sub-samples can be seen in Table 6 and Table 7.

Table 6 Event Studies Regression Results of Manufacturing Sub-Sample

Year	Number of Observation	Coefficient	Standard Error	P-value
t=0	703	1.881	1.573	0.232
t=1	531	0.062	0.296	0.836
t=2	375	-0.115	0.300	0.702
t=3	239	-0.434	0.301	0.150
t=4	117	-0.408	0.359	0.257
Average	1.965	0.866	0.845	0.306
t=-2	638	0.034	0.211	0.870
t=-3	344	1.718	1.566	0.273
Joint Placebo				0.422

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Table 7 Event Studies Regression Results of Non-Manufacturing Sub-Sample

Year	Number of Observation	Coefficient	Standard Error	P-value
t 0	1.256	0.775	0.652	0.235
t 1	932	0.469	0.537	0.382
t 2	659	0.513	0.454	0.258
t 3	412	0.105	0.194	0.590
t 4	196	-0.175	0.465	0.707
Average	3.455	0.778	0.441	0.078
t=-2	1128	-0.436	0.295	0.139
t=-3	597	-0.343	0.455	0.450
Joint Placebo				0.332

Table 6 and Table 7 show the heterogeneity test results. Based on the Table 6 and Table 7, it can be seen that the main empirical results were heterogeneous. Table 6 also displays that for the manufacturing sub-sample, over the entire period, there was no effect of the thin capitalization rule on tax avoidance. In contrast, for the non-manufacturing sub-sample, in Table 7, the ATT was significant at the 10% level. Therefore, for the non-manufacturing sub-sample, it can be concluded that the thin capitalization rule could reduce tax avoidance.

Related to that, manufacturing companies have more complex business processes than non-manufacturing companies (Irawan & Novitasari, 2021). The manufacturing business process includes purchasing raw materials, production, sales, and distribution, involving many parties and transaction processes. With such complex business processes, manufacturing companies prefer to use transfer pricing as a tax avoidance scheme (Adler, 1996; Kumar & Sosnoski, 2011). Therefore, the thin capitalization rule does not change the tax avoidance behavior of manufacturing companies much because thin capitalization is not the main tax avoidance scheme of these companies.

In contrast, non-manufacturing companies tend to have simpler business processes. With this simple business process, the transfer pricing scheme cannot be used because the tax authorities will easily detect it. Hence, non-manufacturing companies, such as trading and service companies, have few tax avoidance options. Thin capitalization is also often used because no regulations prohibited the scheme before 2016. Thus, when the thin capitalization rule was applied in 2016, the tax avoidance level in non-manufacturing companies decreased.

Conclusion

This research analyzed the impact of the thin capitalization rule on the tax avoidance of companies in Indonesia. The researcher used data from the financial statements of listed companies in Indonesia from 2013 - 2020. To overcome omitted variable bias, the researcher employed the event study approach. Using this approach, this research found that the thin capitalization rule could reduce tax avoidance in Indonesia over the entire period.

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In the robustness test, the thin capitalization rule did not affect the current effective tax rate and significantly affected the deferred effective tax rate. Although the thin capitalization rule reduced tax avoidance, the company delayed payments to the following years and did not pay directly in the current year. It is undoubtedly undesirable for the tax authorities because tax revenue cannot be increased even though tax avoidance is reduced.

Then, in the heterogeneity test, the researcher revealed that the main empirical results were heterogeneous. In manufacturing companies, the thin capitalization rule had no impact on tax avoidance. On the other hand, for non-manufacturing companies, the thin capitalization rule positively affected the effective tax rate. It suggests that manufacturing companies did not use thin capitalization as the primary tax avoidance scheme. In contrast, for non-manufacturing companies with a simpler business structure, thin capitalization was their main tax avoidance scheme, so the thin capitalization rule could significantly influence their tax avoidance behavior.

Although this research can overcome the problems in previous Indonesian thin capitalization rule studies in terms of methods, this research has not been able to overcome the problem of the data used to determine the impact of the thin capitalization rule on tax avoidance. Ideally, this study should use administrative data from the Indonesian tax authorities to describe the behavior of all companies registered with the tax authorities. However, the researcher could not use that data in this research due to data confidentiality.

In this research, it can be concluded that the thin capitalization rule can well overcome the problem of tax avoidance for non-manufacturing companies. However, for manufacturing companies, the Indonesian tax authorities need to consider other ways to address the tax avoidance problem. One way is to make or update other specific anti-tax-avoidance rules, such as transfer pricing, treaty shopping, and others following the tax avoidance characteristics of manufacturing companies.

The limitation of this research is that this research used financial report data from Indonesian Stock Exchange. The problem in using this data is that the data could not describe the whole taxpayers in Indonesia. Therefore, for future research, the researcher suggests that other researchers use administrative data from the Indonesian tax authority.

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