THE LINKAGE DER AND NPM PROXY AGAINSTS TAX AVOIDANCE IN MANUFACTURING FIRM'S LISTED

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Abstract

Taxes play a crucial role in a state's economy, serving as the primary source of revenue that enables government programs and infrastructure development. If tax revenues fall short of government targets, the intended objectives cannot be fully achieved. Indonesia, a country with significant natural resources and a strategic location, attracts both domestic and foreign businesses. However, tax compliance often conflicts with companies' goal to minimize tax expenses. This discrepancy leads to tax avoidance, where companies legally reduce their tax burden. This study aims to empirically examine the linkage of DER and NPM proxies with tax avoidance. Tax avoidance is measured using the cash effective tax rate (CETR) proxy. This causality study employs a quantitative research approach and involves twenty-one firms listed on the Indonesia Stock Exchange (IDX) during the 2016-2019 period, selected through judgment sampling. Panel data estimation is used in a regression model, with an estimation test conducted before hypothesis testing. The findings reveal that the DER and NPM proxies have a significant linkage with tax avoidance, both partially and simultaneously, contributing 87.38 percent. This study demonstrates that DER and NPM proxies can be used to identify tax avoidance practices in an empirical context, especially in Indonesia. Future research should consider case-study approaches to further enrich these findings.

Keywords: *DER and NPM Proxy, Tax Avoidance, Empirical Study, Indonesia Stock Exchange*

1. INTRODUCTION

Taxes play a crucial role in the functioning of the state, serving as the primary source of government revenue. Through taxes, the government is able to fund various programs aimed at boosting economic growth through infrastructure development, public services, and other essential facilities (McNichol, 2016). Failure to meet the government's tax revenue targets will prevent the country from reaching its full potential. Indonesia, the fourth most populous country in the world, boasts rich natural resources and a prime location as a global trade hub (Oberman et al., 2012). This situation encourages entrepreneurs to set up their businesses in Indonesia, both domestic and foreign companies. Hence, taxation is essential for funding the government, with individuals or groups required to pay without expecting direct benefits in return. It is enforced by law and collected accordingly. (Pistone et al., 2019). The following table illustrate the realization of state revenues from 2014 to 2018:

Table 1. 2014 – 2018 Tax Revenue (in trillion IDR)

Explanation / Years	2014	2015	2016	2017	2018
Target	1,072.37	1,294.26	1,355.20	1,283.57	1,424.00
Realize	981.83	1,060.83	1,105.73	1,151.03	1,315.51
Achievements	91.56%	81.96%	81.59%	89.67%	92.24%

Source: Processed From www.Pajak.Go.Id (2020)

Table 1 shows that tax revenue in Indonesia has fluctuated over the years, indicating that the tax revenue target has not been met for five years. Companies, as the main contributors to tax revenue, view taxes as a burden, conflicting with the government's aim to maximize tax revenue. This misalignment leads to discrepancies between tax authorities and firms (Afonso et al., 2013). The tax authorities as principals (stakeholders) wish to optimize tax revenue, whereas firms as agents desire the nethermost tax payments to the country. The existence of these differences in interests causes the emergence of non-compliance by taxpayers through resistance to taxes. One of the ways to fight against taxes is by tax avoidance, where the company tries to reduce its tax burden legally and does not conflict with the applicable tax laws (Piantavigna, 2017).

Tax avoidance involves minimizing tax expenses by taking advantage of loopholes in tax laws. It is a complex issue as it is not illegal, and can be measured using CETR (Cash Effective Tax Rates) (Pohan, 2016). By using the CETR, the company can accurately assess its efforts to reduce tax obligations. A higher CETR percentage indicates a lower level of corporate tax avoidance (Fauzan et al., 2019).

The DER ratio is a comparison that reflects the amount of debt used for financing by the company in carrying out its operating activities of the scope of the company's "total debt" amenability, which portray the fulfill both short- and long-term debt duty (Chesnick, 2000). One indicator that can be used as a tax avoidance tool is DER. DER is a ratio that gauges how far the firm is financed by debt and its capability to fulfill its duty with its equity. Profitability is a measure in assessing the performance of a corporation. Profitability indicates the capability of management to usher advantage. Profitability brings down to become several ratios, one of which is Net Profit Margin (NPM). Profit Margin is a gauge of a business profitability from sales following considering all spending and income taxes. This ratio serves to measure the rate of return of net profits to net sales. This indicates how well the company uses operating costs because it relates net income to net sales. Net profit margin is often used to evaluate a company's efficiency in controlling expenses related to sales.

Several previous study about tax avoidance findings, i.e. (1) A study in Australia involved 203 companies during 2006-2009. The finding that the technique used to suppress the aggressiveness of tax obligations was using income shifting. However, it was not significant based on statistical tests (Taylor & Richardson, 2012). (2) A study in Ghana involved 119 companies listed in Ghana Stock Exchange (GSE) after implementing IFRS using Ghana Revenue Authority (GRA) database, with the finding is either that equity-financed and debt-financed firms generate more tax avoidance activities (Amidu et al., 2016). (3) A study involved 7,651 firms using China Stock Market and Accounting Database (CSMAR) during 2005-2012, with tax avoidance measured by the effective tax rate (ETR) based on structural equation modeling (SEM) data analysis. The

findings show that the significant circumstantial positive as tax avoidance and market value is an escalate in profitability due to extra after-tax cash emerging from tax avoidance and business growth, which aids in increasing the market value of the corporation, which profitability use ROA, ROIC, and ROS proxy (Zhang et al., 2016). (4) A study in Korea involved 491 firms listed on the Korean Exchange during 2005-2007, with tax avoidance measured by book-tax differences. The finding is that one of the ratios of net income to equity has a positive and significant effect on corporate tax avoidance (Kim & Im, 2017). (5) A study in Indonesia involved 60 manufacture firms listed on the Indonesia Stock Exchange (IDX) during 2014-2016, with tax avoidance gauged by cash ETR. The finding is that audit committee, leverage, return on assets, firm size, and sales growth affect tax avoidance, which leverage use DER proxy (Fauzan et al., 2019). (6) A study in Nigeria involved 51 financial firms listed in Nigerian Stock Exchange (NSE) during 2013-2017, with tax avoidance measured by the effective tax rate. The findings show that corporate tax avoidance has a positive and insignificant implied while leverage using a comparison of non-current debt on equity has a negative and significant effect on the firm's financial performance using ROA, which means that when organizations engage in some level of tax avoidance, there is every tendency to increase their level of performance (Oboh & Dabor, 2019). The findings of the prior study that used the leverage ratio with the DER proxy were able to identify the effect on tax avoidance practices. In contrast, several previous studies using the measurement of income shifting, ROA, and ROE proxies still showed inconsistent results. Corporate tax avoidance in previous studies used the measurement of book-tax difference and effective tax rate.

This research utilizes the DER proxy to assess solvency. On the other hand, this study introduces the net profit margin (NPM) as a measure of profitability and examines its relationship with the cash-effective tax rate in determining tax avoidance practices. The focus of this study is on the manufacturing industry within the Food and Beverage Industry category, which has been a desirable sector since 2010 and is projected to remain so for the next two decades (2020 and 2030). This sector attracts investors due to its target consumer group, which consists of individuals with a monthly net income of US$ 300 or more. This evidence is supported by data from over 6,000 companies, with 90 percent coverage, including both large and small businesses, as well as significant international and foreign companies. This background highlights the gap in achieving the target tax revenue and emphasizes the need for further research, particularly on manufacturing firms in the consumer goods industry sector listed on the IDX (Indonesian Stock Exchange). The two financial ratios mentioned earlier play a crucial role in examining tax avoidance. Therefore, the objective of this study is to empirically investigate the relationship between DER and NPM Proxies and Tax Avoidance.

2. LITERATURE REVIEW

Compliance theory assumes a person's individual as a whole who is driven by self-interest and responds to changes that occur and emphasizes the importance of the socialization process in influencing one's compliance behavior (Tyler & Smith, 1995). In the context of taxation, the theory of tax compliance was first introduced by (Allingham & Sandmo, 1972) through the following model:

D   : D (I, t, p, f)
D   : declared income
I   : fixed income
t   : tax rates
p   : the possibility of an audit
f   : penalty rate

This model explains the main factors that affect tax compliance, namely: (I) fixed income; (t) tax rates; (p) the possibility of an audit; (f) the amount of sanctions to be imposed. In the context of taxpayer compliance, individuals or business entities that are tax subjects have obligations in terms of taxation in accordance with applicable regulations (James & Alley, 2002). Tax compliance is a taxpayer who has a willingness to comply with his tax obligations according to applicable rules without the need for an examination, thorough investigation (obtrusive investigation), warnings or threats, and the application of both legal and administrative. Thus, the level of taxpayer compliance can be measured by the Tax Gap, which is the difference between what is stated in the tax regulations and what is carried out by the taxpayer. The tax gap can also be interpreted as the difference between how much tax can be collected and the amount of tax that collected (James & Alley, 2002).

Agency theory introduced, i.e., (Jensen & Meckling, 2019) in 1976, assumes that all individuals will act in their own interests, such as human nature, which is always selfish rather than others, to encourage behavior and act in its own interests (Anthony et al., 2007). Conceptually, investors are parties related to company ownership and delegate authority to management to manage their wealth in the hope of increasing investor wealth and prosperity. On the other hand, the management is responsible morally to maximize the profits of the owners in the hope of being compensated according to the contract. Information asymmetry is the main factor that causes an imbalance of information owned by each party, namely the principal and agent. This condition provides an opportunity for management to take opportunistic actions, which in turn can lead to agency costs (Bendickson et al., 2016). Besides, the surroundings factor of internal and external structures are no less essential. A scholarly approach to comprehending matters necessary to be taken by corporations in accomplishing significant problems (Husain & Syniuta, 2020). A self-assessment system can provide an opportunity for management to enumerate taxable income as low as probable so that the businesses decreases bear the tax expense. The agent here uses asymmetric information to the principal by doing one of the tax management techniques to get his own benefits that cannot be obtained from the cooperation that occurs with the principal.

Debt-to Equity Ratio (DER) is any of the productions used as a simple calculation that compares the total debt owned by the corporation with the total equity (own capital) in bearing the risk. The DER ratio is computed as follows:

$$\textbf{Total Debt Ratio} = \frac{\textbf{Total Debt}}{\textbf{Total Capital}}$$

Source: (K. R. Subramanyam, 2013)

This ratio is worthwhile for understand-and to know the number of funds prepared by the borrower (the creditor) with the company's proprietor, which serves to determine each rupiah of own capital used as assurance for the debt—besides, the lower the DER, the bigger the firm's strength to shell out its duty.

Net Profit Margin (NPM) is the ratio among net profit and sales, which shows the firm's capacity to produce net profit subsequent to tax. Thus, ROE in the three-step Dupont Model can divide into the yield of three factors - the indicators, i.e., Net Profit Margin, Asset Turnover, and Equity Multiplier (Kijewska, 2016). Specifically, The NPM ratio is computed as follows

$$\textbf{Net Profit Margin} = \frac{\textbf{Earning after Interest and Tax}}{\textbf{Total Sales}}$$

Source: (K. R. Subramanyam, 2013)

Industry according to the Harry Graham Balter and Ernest R. Mortenson (1958), tax avoidance is a efforts to streamline the tax burden by avoiding taxation by directing it to transactions that are not tax objects (Pohan, 2016). Tax avoidance can be done in various ways according as follows: (1) displacement tax subjects or tax objects to countries that furnish specific tax action toward or tax relief (tax haven county) for a kind of income (substantive tax planning); (2) efforts to avoid tax by maintaining the economic res of the transaction over a formal election that provides the lowest tax expense (formal tax planning); (3) anti-avoidance clauses for transfer pricing, slight of capitalization, expense treaty, and controlled foreign business transactions (specific anti-avoidance precept), as well as transactions that do not have venture matter (prevalent of anti-avoidance) (Taylor & Richardson, 2012).

The factors that influence taxpayers' courage to do tax avoidance are opportunities, weak law enforcement, benefits, and costs (level of penalty). If the problem is revealed, it can be resolved (negotiated settlements) (Doran, 2009). To find out how much tax avoidance activity in a company can be measured using several ways, including: (1) Effective Tax Rate (ETR) is an income statement-based outcome quantify that generally proxy the effectiveness of tax bring down strategies and presides to high after-tax profits. ETR is used because it reflects the fixed difference between the calculation of book profit and fiscal profit. ETR can be calculated by comparing tax expense with pre-tax profit. (2) Cash Effective Tax Rate (CETR) is formulated with cash issued for tax costs split as profit ere tax which is used to see tax avoidance activities because CETR does not affect any alterations in foreseeing such as tax protection. Therefore, the greater the CETR percentage level, which is close to the enterprise income tax rate, represents that the lower the company's tax avoidance level; on the contrary, the smaller the CETR percentage level indicates that the higher the company's tax avoidance level (Dyreng et al., 2010). (3) Book-Tax Differences (BTD) as the difference in the amount of profit computed based on accounting with profit calculated following tax regulations. The large discrepancy among accounting profit and taxable income in companies generally indicates a greater aggressive behavior in avoiding tax payments. Book-tax differences can appear due to tax planning and earnings management activities within the company (Formigoni et al., 2009). From these three measures, it is expected that tax avoidance actions are identified, and it is known whether a company is carrying out an act of tax avoidance or not.

Although the actions taken by the company do not violate regulations, they will result in losses for the country.

The proposed model about DER and NPM proxy to investigate tax avoidance practices is adhere:
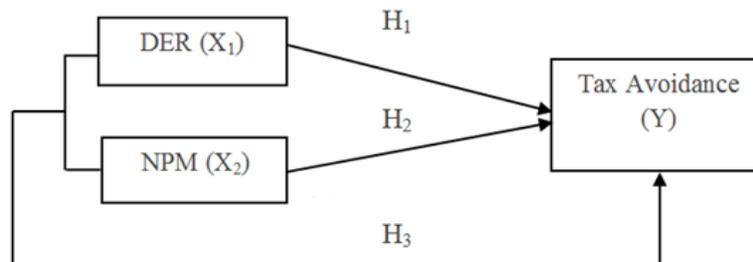

Figure 1. Proposed Research Model

The Hypothesis is a temporary answer to the research matter formulation (Sugiyono, 2018). After the empirical-based research model is made, it is continued by inputting and conducting analysis, one of which can use regression techniques to see the direct relationship and assessment of the proposed empirical model, especially subject firm's research in Indonesia.

The DER proxy, formulated from leverage, is used to gauge its ability to meet its long-term obligations. The company can use debt to meet the company's operational and investment needs and incur a fixed rate of return, namely, interest. The prior results, i.e. (Taylor & Richardson, 2013) research, prove that companies with high tax obligations will choose to borrow to reduce tax payments, but in the other hand, equity-financed and debt-financed firms generate more tax avoidance activities (Amidu et al., 2016). Leverage use DER proxy has to affect towards tax avoidance (Fauzan et al., 2019). Thus, the higher the sum of funding from third-party obligation used by the firms and the higher the interest effecting from the funding, thereby reducing taxable profit, decreasing the cash-effective tax rate. The first alternative hypothesis of the study is adhere:

H1: Expected that the DER proxy has a significant linkage on Tax Avoidance

The NPM proxy, formulated from profitability, is used to gauge net income, which provides an overview of all costs, including interest and taxes that have been calculated in the company's profit margin. The prior results, i.e., (Taylor & Richardson, 2012) research, states that the income-shifting technique can prevent the aggressive activity of tax obligations. But, then, research (Zhang et al., 2016) proving that ROA, ROIC, and ROS proxies that describe increased profitability help increase firm value even though they do not indirectly affect tax avoidance on market value. Hereinafter is also reinforced by the finding that the ROE proxy has a positive and significant implied on corporate tax avoidance (Kim & Im, 2017) and ROA proxy (Fauzan et al., 2019). Thus, the greater the net profit margin yielded by the company, the company can generate profits so that the income that is the basis for calculating taxes will impact increasing the value of the cash effective tax rate. Therefore, the second alternative hypothesis of the study is adhere:

H2 : Expected that the NPM proxy has a significant linkage on Tax Avoidance

The assumption is that there is a linkage betwixt the leverage variable and the DER proxy and the profitability variable with the NPM proxy together on tax avoidance as measured, i.e., cash effective tax rate basis. According to the finding of the research, each variable has a linkage with the praxis of corporate tax avoidance. Therefore, the transient conclusion that the DER and NPM proxies have a significant implied towards tax avoidance, which investigated further with as adhere third alternative hypothesis statement:

H3: Expected that the DER and NPM proxy has a significant linkage towards Tax Avoidance simultaneously

3. RESEARCH METHODS

The research method is a scientific mode of add valid data found, proven, developed as knowledge so that, in turn, used to grasp, solve, and anticipate matters (Sugiyono, 2018). This research is a type of causality that objectives to decide the effect among two or over variables. Based on the type, this study is quantitative research where the data used is numbers. The research was carried, i.e., accessing the Indonesia Stock Exchange website at http://www.idx.co.id/. The research time is accessing the website, which is from June 20 to the end of July 2020.

The population of this research involves the cosmetic and household goods sub-sectors of manufacturing firms listed in the Indonesia Stock Exchange (IDX) in 2016-2019 because manufacturing are chosen because the firm's has a relatively large contribution to tax revenue. The purposive sampling technique is a sampling technique with definite considerations (Sugiyono, 2018). The criteria used to select the sample are: Manufacturing companies focusing on the cosmetic and household sub-sectors, the data used in their financial statements do not experience losses during the observation period. The final sample takes twenty-one firms from this requirement.

The first independent variable (X1) in this study is using the DER (Debt-to-Equity Ratio) proxy by calculating the total debt owed by the company with total equity (own capital) in bearing the risk. Furthermore, the second independent variable (X2) uses the NPM (Net Profit Margin) proxy to calculate net profit with sales to show the firm's capability to generate net profit after tax. Finally, while the dependent variable (Y) in this study taking the CETR (Cash Effective Tax Rate) proxy, i.e., a presentation in the form of cash spent on tax expenses divided by pre-tax profit This research method employs a panel data regression in the ordinary least square with equation compute as adhere:

$$CETR\_Y: \alpha + \beta 1DER\_X1 + \beta 2NPM\_X2 + e$$

4. RESULTS AND DISCUSSION

4.1. Result

Yield from Descriptive-Table, which proceeds output is adhere:

Table 2. Statistical Descriptive Test

Metering / Variable	CETR__Y	DER__X_1	NPM__X_2
Mean	0.259503	0.669996	0.096711
Std. Dev.	0.036618	0.452859	0.073132
Observations	21	21	21

Source: Author Elaborated from Programs (2020)

The first independent variable using the DER proxy (statistical symbol 'X1') in manufacturing firms in the cosmetic and household goods industrial sector for the 2016-2019 period has a leverage score of 0.669996 with a deviation of 0.452859, meaning that the deviation score is quite large with an average of 70 percent rounded up. The second independent variable using the NPM proxy (statistical symbol 'X2') has a score of 0.096711 with a deviation of 0.073132, meaning that the deviation score is quite large with an average of 9,67 percent rounded up. Finally, the dependent variable using the CETR (statistical symbol 'Y') has a score of 0.259503 with a deviation of 0.036618, meaning that the deviation score is immense with an average of 25,95 percent.

The Likelihood or Chow test determines the best model for estimating panel data: fixed effect or common effect (Pooled OLS). The test has two hypotheses: H0 (common effect model) and Ha (fixed effect model). If the Chow test's probability is less than 0.05, Ha is selected, indicating that the fixed effect model is more appropriate. Table 3 displays the test results.

Table 3. Assessment of Chow Estimate

Score / Assessment	Cross-section F	Cross-section χ
Statistics	13.548039	104.590156
Probability	0.0000	0.0000
degree of freedom		
dF1	16	16
dF2	32	-

Source: Author Elaborated from Programs (2020)

The estimation of the Chow test from table 3 produces a probability score of 0.0000. Therefore, the probability score is less than the significant level ($\alpha=0.05$). Therefore, the estimation of the Chow test generates a probability score of 0.0000, which means that H0 for this model is rejected, and Ha is accepted, so a better estimate is used in this model, i.e., the Fixed Effect Model for the next phase assessment.

Hausman's test is a statistical tool that helps decide which model, fixed effect or random effect, is better for estimation. The test has two hypotheses: H0 (random effect model) and Ha (fixed effect model). If the probability from the test is less than 0.05, Ha is accepted, meaning that the fixed effect model is preferred. The results of the test can be found in table 4.

Table 4. Assessment of Hausman's Estimate

Score / Assessment	Cross-section random
Chi-Square Statistics	18.563813
Chi-Square degree of freedom	2
Probability	0.0001

Source: author elaborated from programs (2020)

The Hausman's test in table 4 shows a probability score of 0.0001, indicating that the null hypothesis (H0) is rejected in favor of the alternative hypothesis (Ha). This means that the Fixed Effect Model is a better estimate, making the LM test unnecessary.

Table 5. Assessment of Regression Estimate

Assessment Score / Variable	Constant	DER__X_1	NPM__X_2
Coefficients	0.322614	0.045085	-0.964917
t-Statistics	16.00306	3.140068	-4.644866
Probability	0.0000	0.0036	0.0001
Hypothesis Conclusion	-	H$_1$ Accepted	H$_2$ Accepted
R-*Squared*	0.873806		Hypothesis Conclusion: ↓
F-Statistics / Probability	12.30986 /	0.000000	H$_3$ Accepted

Source: author elaborated from programs (2020)

From assessment of regression yield from the panel data, the regression equation is obtained as adhering:

CETR_Tax Avoidance: 0.322614+0.045085DER_X1+0.964917NPM_X2+e

The regression test assessment shows that the coefficient scores for each variable are 0.045085 and 3.140068. Both of these scores are significantly lower than the significance level ($\alpha=0.05$), which are 0.0036 and 0.0001 respectively (H1 and H2 Accepted). This means that the DER and NPM proxies partially contribute to tax avoidance.

The coefficient determination from table 5 reveals an R-Squared score of 0.873806, indicating that DER and NPM proxies have a very high contribution of 87.38 percent in testing tax avoidance. The remaining 12.62 percent is influenced by other factors not considered in this study's regression model.

Furthermore, the F-statistic test estimation from table 5 yields a probability score of 0.000000, which is lower than the significance level ($\alpha=0.05$) (H3 Accepted). This implies that the DER and NPM proxies together have a significant impact on tax avoidance.

4.2. Discussion

The proxy linkage DER in table 5 shows empirical evidence supporting the first alternative hypothesis on Tax Avoidance, with a coefficient score of 4.51 indicating a 4.51 percent increase in tax avoidance. This is statistically significant (probability less than $\alpha=0.05$). The positive coefficient score suggests that an increase in DER will lead to higher tax avoidance, and vice versa. According to Enactment No.36 of 2008 on income tax, the burden is divided into deductible and non-deductible categories. Debt included in the DER can impact the amount of tax owed (Viantiaraini et al., 2024). One method of using debt to avoid taxes is by taking on debt or selling bonds to parent company affiliates and repaying with high interest rates (Taylor & Richardson, 2013). They choose to owe money to the parent company or shareholder rather than obtaining funding through capital injection. The results align with agency theory, showing that management's tax avoidance decisions are affected by the Debt-to-Equity Ratio (DER) proxy. A higher DER value indicates that debt plays a significant role in boosting the measurement value according to the cash effective tax rate. This outcome is consistent with previous research indicating that leverage, as measured by the DER proxy, can impact tax payments and tax avoidance strategies (Fauzan et al., 2019);(Taylor & Richardson, 2013). Therefore, the higher the debt-to-equity ratio in the proxy produced by the company, the greater the opportunity for the firm to carry out tax avoidance activities based on the calculation of the cash effective tax rate.

The empirical evidence in table 5 supports the second alternative hypothesis, which states that tax avoidance decreases with the NPM proxy. The coefficient score of -0.964 indicates a decrease in tax avoidance by 96.4 percent, and this result is highly significant (probability less than $\alpha=0.05$). When the NPM decreases, tax avoidance increases, and vice versa. This suggests that companies with high ROA operate efficiently and are rewarded by the government with a lower effective tax rate compared to less efficient firms. The NPM proxy is used to determine the amount of tax reported based on the self-assessment system in Indonesia, which allows taxpayers to comply with their tax obligations. This finding aligns with previous studies that found a positive influence of profitability, measured by ROA and ROE proxies, on tax avoidance practices (Kim & Im, 2017);(Fauzan et al., 2019).

The empirical evidence in table 5 supports the acceptance of the third alternative hypothesis, which states that both DER and NPM proxies are linked to tax avoidance. This is evidenced by a probability score of less than 0.05 (specifically, 0.000000) on the F-statistics test. Additionally, the R-squared score of 0.873806 indicates that DER and NPM proxies contribute significantly (87.38 percent) to the testing of tax avoidance. Hence, it can be concluded that the DER and NPM proxies serve as a strong empirical model for tax avoidance.

5. CONCLUSION

According to the results and analysis, this study concludes the following: The DER and NPM proxy have a significant impact on Tax Avoidance in manufacturing firms listed on the Indonesia Stock Exchange individually. The combined influence of DER and NPM proxies on Tax Avoidance in these firms is also significant. Together, these proxies

contribute to a high influence of 87.38 percent in identifying tax avoidance practices through the measurement of cash effective tax rate. Future research on tax avoidance practices should consider using additional proxies beyond DER and NPM in financial ratio analysis, such as firm size, audit quality, corporate governance, corporate social responsibility, inflation levels, market exchange rates, and more. Conducting case-study research will also be crucial for enhancing future findings.

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