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Fiscal Loss Compensation and Deferred Tax Expense in Tax Avoidance Practices: The Role of Inflation as a Control Variable

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ABSTRACT

Tax avoidance practices have become a concern in corporate tax management because they may involve efforts to reduce tax liabilities through tax provisions and differences between accounting profit and taxable profit. Previous studies have reported inconsistent findings regarding fiscal loss compensation, deferred tax expense, and tax avoidance, particularly in the property and real estate sector. This study aims to analyse the effects of fiscal loss compensation and deferred tax expense on tax avoidance, with inflation as a control variable, among property and real estate companies listed on the Indonesia Stock Exchange during 2020–2024. The population consisted of 92 companies, with 8 companies meeting the purposive sampling criteria, resulting in 40 observations. A quantitative approach with an associative research design was employed using secondary data from annual financial statements. Data were analysed using panel data regression with EViews through the Common Effect Model, Fixed Effect Model, and Random Effect Model, supported by the Chow, Hausman, and Lagrange Multiplier tests. The results show that fiscal loss compensation has no significant effect on tax avoidance. Deferred tax expense has a positive and significant effect on tax avoidance, while inflation has no significant effect. Simultaneously, fiscal loss compensation, deferred tax expense, and inflation have a significant effect on tax avoidance. These findings provide empirical evidence regarding accounting and taxation factors associated with tax avoidance and offer considerations for management, investors, and regulators in understanding corporate tax information.

1. Introduction

Tax is one of the sources of state revenue that plays an important role in financing development and the administration of government. Tax revenue comes from various economic activities of the community and business sector, which constitute an important part of the country's fiscal sustainability. Companies as one of the taxpayers are obliged to fulfil tax payments in accordance with applicable regulations. The tax burden borne by companies can reduce the profit earned, thereby encouraging companies to manage their tax obligations efficiently. One form of such management is tax avoidance, namely the company's action to minimise its tax burden by utilising available tax provisions without directly violating legal provisions. The practice of tax avoidance has attracted attention because it can reduce the potential tax revenue of the state.

Companies in the property and real estate sector have business activity characteristics related to property development, construction, marketing, and sales with relatively large transaction values. Such activities require substantial investment and capital and have relatively long operating cycles. Revenue and expense recognition in property and real estate companies may also experience timing differences between commercial financial statements and tax calculations. Such conditions can create differences between commercial profit and fiscal profit and affect the amount of the company's tax obligations. These characteristics make companies in the property and real estate sector relevant for research in relation to tax avoidance practices.

Indonesia's tax revenue showed changing developments during the 2020–2024 period. These changes may provide an overview of the

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government's ability to optimise state revenue originating from the taxation sector. Data on Indonesia's tax revenue targets and realisations during the 2020–2024 period are presented in Table 1.

Table 1. Indonesia's Tax Revenue Target and Realisation, 2020–2024

Year	Tax Revenue Target (Rp trillion)	Tax Revenue Realisation (Rp trillion)	Achievement (%)	Increase from Previous Year (%)
2020	1,198.82	1,069.97	89.25%	-
2021	1,229.58	1,277.53	103.89%	19.39%
2022	1,484.96	1,716.76	115.60%	34.38%
2023	1,818.24	1,867.87	102.72%	8.80%
2024	1,921.00	1,930.81	100.51%	3.36%

Source: Ministry of Finance of the Republic of Indonesia, processed.

Table 1 shows that tax revenue realisation increased nominally during the 2020–2024 period. Tax revenue realisation in 2020 reached Rp1,069.97 trillion, or 89.25% of the target of Rp1,198.82 trillion. This realisation indicates that tax revenue had not yet reached the target set by the government. A different condition occurred in 2021 when tax revenue realisation reached Rp1,277.53 trillion, or 103.89% of the target. Tax revenue increased again in 2022 to Rp1,716.76 trillion, with an achievement rate of 115.60% and growth of 34.38% compared with the previous year. In 2023, realisation reached Rp1,867.87 trillion, or 102.72% of the target, with growth of 8.80%. In 2024, realisation reached Rp1,930.81 trillion, or 100.51% of the target, with growth of 3.36%. These developments show that tax revenue realisation was able to reach the target after 2020, although revenue growth slowed in the subsequent period.

Tax revenue that is able to reach the target indicates a positive condition in terms of state revenue. This condition cannot fully describe the behaviour of companies in fulfilling their tax obligations. Companies may implement tax management strategies to reduce the tax burden that must be paid by utilising tax provisions. The practice of tax avoidance is one form of strategy that may cause the tax paid by companies to be lower than the potential tax that could be received by the state. This phenomenon is relevant to examine in companies in the property and real estate sector because business characteristics, transaction values, and differences in accounting and fiscal recognition may provide companies with opportunities to manage their taxes.

The phenomenon of tax avoidance in companies in the property and real estate sector can be observed through the development of average tax avoidance during the 2020–2024 period. These data are used to provide an overview of companies' tendencies in managing their tax burdens during the observation period. The average tax avoidance of companies in the property and real estate sector is presented in Table 2.

Table 2. Average Tax Avoidance of Property and Real Estate Companies, 2020–2024

Year	Average Tax Avoidance
2020	0,171818
2021	0,125504
2022	0,112981
2023	0,091854
2024	0,106627

Source: Financial statement data of companies in the property and real estate sector, processed.

Table 2 shows that the average tax avoidance of companies in the property and real estate sector changed during the observation period. The average tax avoidance in 2020 was 0.171818, then decreased in 2021 to 0.125504 and decreased again in 2022 to 0.112981. The decline continued in 2023, reaching 0.091854. The year 2024 showed a change in direction when the average tax avoidance increased to 0.106627. These changes show that the tax avoidance behaviour of companies in the property

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and real estate sector did not move consistently during the observation period. This condition indicates that although national tax revenue showed positive achievement, tax burden management practices at company level continued to change.

Tax avoidance is an effort by companies to reduce their tax burden by utilising loopholes or weaknesses in applicable tax regulations. Tjung and Khairudin (2024) explain that this practice reflects a company's strategy to reduce the tax costs that must be paid through the management of tax obligations.

Fiscal loss compensation is one of the factors related to tax avoidance. Silvera and Ismanto (2024) explain that fiscal loss compensation provides companies with the right to offset fiscal losses against taxable income in subsequent periods in accordance with tax regulations. The utilisation of such compensation can reduce the company's tax burden when it earns profits in subsequent periods, making its existence one of the aspects that needs to be considered in analysing tax avoidance practices.

Deferred tax expense or deferred tax burden is related to temporary differences that cause tax consequences to be recognised in a period different from the period in which they are recognised for accounting purposes. Aksent'ev (2023) explains that the concept of deferred taxation is based on temporary differences and the distribution of tax effects across periods, so that deferred tax information can provide an overview of the relationship between accounting profit measurement and its tax consequences. These differences are relevant in tax avoidance research because they may reflect differences in the timing of recognition between accounting profit and profit that forms the basis for tax assessment.

Inflation is a condition of a general increase in price levels accompanied by a decline in the purchasing power of money. O'g'li and Toxtasinovna (2024) explain that inflation is associated with a general increase in price levels and a decline in the purchasing power of money, and is one of the indicators that needs to be considered when examining economic conditions. Changes in the inflation rate may be related to various economic activities, including the use of production resources, consumption, employment opportunities, and real wage levels. Therefore, inflation is used as a control variable in this study to control for macroeconomic conditions that may potentially affect the relationship between fiscal loss compensation and deferred tax expense with tax avoidance.

Previous studies have shown inconsistent results regarding the relationship between fiscal loss compensation and tax avoidance. Widilestariningtyas and Kristina (2023) found that fiscal loss compensation had a positive and significant effect on tax avoidance in mining companies listed on the Indonesia Stock Exchange during the 2015–2022 period. Different results were shown by Kamil and Masripah (2022), who found that fiscal loss compensation had no significant effect on tax avoidance in manufacturing companies listed on the Indonesia Stock Exchange during the 2017–2020 period. Fitrifiani and Oktris (2023) also found that fiscal loss compensation had no effect on tax avoidance in companies listed on the Indonesia Stock Exchange during the 2015–2019 period. These differences in results indicate that the relationship between fiscal loss compensation and tax avoidance has not yet provided a consistent conclusion, so further testing is needed across different company characteristics and research periods.

Research on deferred tax expense and tax avoidance has also shown inconsistent results. Muslim et al. (2025) found that deferred tax expense had a positive and significant effect on tax avoidance in the companies studied during the 2020–2022 period. Different results were shown by Suciarti et al. (2020), who found that deferred tax expense had no significant effect on tax avoidance in automotive subsector companies listed on the Indonesia Stock Exchange during the 2012–2018 period. Kirnanda et al. (2024) also found that deferred tax burden had no effect on tax avoidance in mining sector companies listed on the Indonesia Stock Exchange during the 2019–2022 period. These differences in results indicate that the relationship between deferred tax expense and tax avoidance has not yet produced consistent empirical conclusions, so further testing is needed across different company characteristics and research periods.

Research on inflation has also shown an association with tax avoidance, but previous research has not shown a consistent direction of the relationship. Sari and Wahyuni (2023) found that inflation had a positive and significant effect on tax avoidance in companies in the property and real estate sector. Conversely, Ambarita et al. (2024) found that inflation had a negative effect on tax

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avoidance in industrial companies listed on the Indonesia Stock Exchange. Meanwhile, Prisilia and Pandin (2024) found that the inflation rate had no effect on tax avoidance in companies listed on the Indonesia Stock Exchange during the 2019–2022 period. These differences in results indicate that the relationship between inflation and tax avoidance remains inconsistent, making inflation relevant for use as a control variable to control for macroeconomic conditions that may potentially be associated with companies' decisions to engage in tax avoidance.

The empirical gap in this study can be seen from the contradiction between national tax revenue conditions and the tax avoidance phenomenon in companies in the property and real estate sector. Tax revenue showed positive developments because revenue realisation was able to reach the government's target after the initial period of observation, while average tax avoidance in companies in the property and real estate sector continued to show changes during the same period. This condition indicates that the government's success in achieving tax revenue targets does not fully reflect low tax avoidance practices at company level. Changes in average tax avoidance also show that companies' behaviour in managing their tax burdens does not always move in the same direction as developments in state tax revenue. This phenomenon indicates a gap between positive tax revenue conditions at the national level and tax management behaviour at company level that needs to be explained through internal company factors, particularly fiscal loss compensation and deferred tax expense.

The research gap lies in the inconsistent relationship between fiscal loss compensation and deferred tax expense with tax avoidance. Fiscal loss compensation and deferred tax expense are conceptually related to tax burden management, but empirical findings indicate that both are not always associated with tax avoidance practices. This uncertainty needs to be considered by taking into account macroeconomic conditions, as inflation may affect business activities, financial conditions, and companies' ability to fulfil their tax obligations. Therefore, this study examines fiscal loss compensation and deferred tax expense in relation to tax avoidance, with inflation as a control variable.

The urgency of this study lies in the gap between national tax revenue, which shows positive developments, and tax avoidance in companies in the property and real estate sector, which continues to fluctuate. This condition indicates that the achievement of tax revenue does not fully reflect tax management behaviour at company level. On the other hand, the relationship between fiscal loss compensation and deferred tax expense with tax avoidance has not shown consistent results, while inflation may affect companies' business and financial conditions. Therefore, this study is important to examine the relationship between fiscal loss compensation and deferred tax expense with tax avoidance by controlling for inflation as a macroeconomic factor.

This study aims to analyse the effect of fiscal loss compensation and deferred tax expense on tax avoidance in companies in the property and real estate sector listed on the Indonesia Stock Exchange, with inflation as a control variable. The results of the study are expected to contribute to the development of tax literature concerning the determinants of tax avoidance and provide information for the government and tax authorities in understanding company factors associated with tax burden management practices.

2. Literature Review

2.1. Conceptual and Theoretical Foundations

Agency theory explains the contractual relationship between the principal as the owner of the company and the agent as the party responsible for managing the company. According to Jensen and Meckling (1976), an agency relationship occurs when the principal delegates authority to the agent to perform work and make decisions on behalf of the principal.

Differences in interests between the principal and the agent may influence the company's decision-making process. Management, as the party responsible for conducting operational activities, has a role in determining various company policies based on the information available. According to Raičević and Stojiljković (2022), information generated through financial statements is one of the main sources in the company's decision-making process, while the selection of accounting policies may affect the figures presented in financial statements. This condition indicates that policies determined by management may affect financial information used

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by various parties in assessing the company's condition.

This study uses agency theory to explain the relationship between fiscal loss compensation and deferred tax expense with tax avoidance. Fiscal loss compensation provides companies with the opportunity to utilise fiscal losses in accordance with tax regulations in subsequent periods. This condition may form part of management's considerations in managing the company's tax obligations. Deferred tax expense is related to temporary differences between accounting profit and taxable profit. According to Karina and Herdiyanti (2023), deferred tax expense indicates differences between accounting standards and tax regulations and may be associated with management policies in earnings management. Lee (2020) also shows that tax avoidance decisions may be related to management's consideration of the company's profit conditions and resources.

2.2. Review of Empirical Studies

Fiscal loss compensation is related to a company's right to utilise fiscal losses to reduce taxable income in subsequent periods. This position makes fiscal loss compensation relevant to discussions of corporate tax management. Widilestariningtyas and Kristina (2023) show a positive relationship between fiscal loss compensation and tax avoidance, whereas Kamil and Masripah (2022) and Fitrifiani and Oktris (2023) find no significant effect. These differences indicate that the tax benefits inherent in fiscal loss compensation cannot yet be theoretically directly associated with a company's tendency to engage in tax avoidance.

Deferred tax expense has different characteristics because it is related to the consequences of temporary differences between accounting and tax treatment. Muslim et al. (2025) find a positive relationship between deferred tax expense and tax avoidance, whereas Suciarti et al. (2020) and Kirnanda et al. (2024) find no significant effect. This variation indicates that the presence of deferred tax expense does not yet provide a consistent explanation of companies' decisions regarding tax management.

Inflation has a different position because it represents macroeconomic conditions that are outside the company's internal characteristics. Sari and Wahyuni (2023) find a positive relationship between inflation and tax avoidance, Ambarita et al. (2024) find a negative relationship, whereas Prisilia and Pandin (2024) find no effect. These differences indicate that macroeconomic conditions may produce different consequences for companies' decisions regarding tax management.

Findings from previous studies indicate that the relationship between tax-related factors and tax avoidance cannot always be explained through the same pattern of relationships. Fiscal loss compensation represents a tax benefit, deferred tax expense represents the consequences of temporary differences, whereas inflation reflects macroeconomic conditions. These differences in characteristics indicate the need for a theoretical framework that can explain how internal company factors are related to management decisions in tax management when macroeconomic conditions are also taken into consideration.

Agency theory provides a basis for explaining management decisions in managing corporate tax obligations. The relationship between the principal and the agent places management as the party with the authority to determine various company policies, including policies related to taxation. Raičević and Stojiljković (2022) explain that financial statement information and accounting policy choices are important parts of the company's decision-making process. This perspective can be used to explain why tax-related information and consequences may become management considerations when determining company policies.

This study subsequently uses the perspective of agency theory to explain the relationship between fiscal loss compensation and deferred tax expense with tax avoidance. Inflation is positioned as a control variable so that macroeconomic conditions are also taken into consideration in this relationship. This framework provides the basis for developing theoretical arguments regarding the relationship between each research variable.

2.3. Identification of the Research Gap

Although research on tax avoidance has developed, the relationship between fiscal loss compensation and deferred tax expense with tax avoidance still shows different results. Fiscal loss compensation functions as a tax benefit that can reduce taxable income, whereas deferred tax expense is related to the consequences of temporary differences between accounting and tax treatment.

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The different characteristics of these two concepts indicate that their relationship with companies' decisions to engage in tax avoidance still requires further explanation.

Research on property and real estate sector companies listed on the Indonesia Stock Exchange also shows variations in characteristics and observation periods. This condition provides an opportunity to re-examine the relationship between fiscal loss compensation and deferred tax expense with tax avoidance in the property and real estate sector over the 2020–2024 observation period. The use of this period is expected to provide an overview of companies' tax avoidance practices by considering the economic conditions occurring during the research period.

The research gap lies in the need to clarify the relationship between fiscal loss compensation and deferred tax expense with tax avoidance among companies in the property and real estate sector, while considering inflation as a control variable. This study is directed at explaining the relationship between corporate tax factors and tax avoidance practices after macroeconomic conditions through inflation have been taken into consideration.

2.4. Development of the Conceptual Framework

Based on the theoretical foundation and research gap identified, this study develops a conceptual framework that explains the relationship between fiscal loss compensation, deferred tax expense, and tax avoidance, with inflation as a control variable.

Fiscal loss compensation is expected to be related to tax avoidance because the utilisation of fiscal losses can reduce taxable income and the company's tax burden. Deferred tax expense is also expected to be related to tax avoidance because it reflects temporary differences between accounting and tax treatment that may affect the management of the company's tax obligations.

Inflation is used as a control variable to control for the influence of macroeconomic conditions that may affect operational activities, profits, and the company's tax obligations. The research conceptual framework is presented in Figure 1.

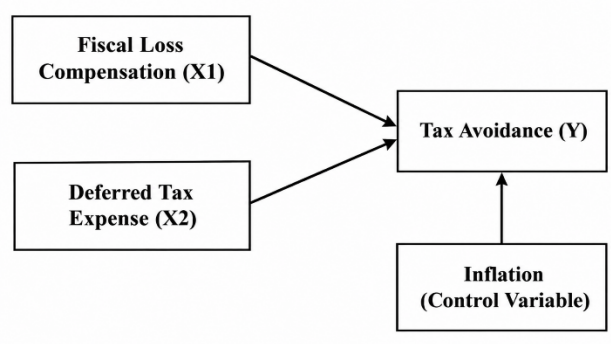


Fig. 1. Conceptual Framework

2.5. Hypotheses or Research Propositions

Based on the theoretical foundation, findings from previous studies, and the conceptual framework developed, the research hypotheses are formulated as follows:

H1: Fiscal loss compensation and deferred tax expense simultaneously have a significant effect on tax avoidance.

H2: Fiscal loss compensation has a positive and significant effect on tax avoidance.

H3: Deferred tax expense has a positive and significant effect on tax avoidance.

3. Research Methods

3.1. Research Design

This study uses a quantitative approach with an associative research design aimed at testing the effects of fiscal loss compensation and deferred tax expense on tax avoidance, with inflation as a control variable. A quantitative approach is used because the study examines relationships between variables based on numerical data analysed using statistical methods. According to Creswell and Creswell (2018), a non-causal comparative or correlational design is a type of quantitative research that aims to measure the degree of relationship between two or more variables using correlational statistics, without involving manipulation of the variables being studied.

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The data used are secondary data in the form of panel data that combine company and time dimensions. The research data cover property and real estate sector companies listed on the Indonesia Stock Exchange during the 2020–2024 period. The use of panel data enables the study to observe differences in characteristics between companies as well as changes in variables during the observation period. According to Baltagi (2005), panel data are a combination of observations from a cross-section unit such as households, countries, or companies observed repeatedly over several periods.

3.2. Research Context and Setting

The study was conducted on property and *real estate* sector companies listed on the Indonesia Stock Exchange during the 2020–2024 period. The property and *real estate* sector was selected because it has business activity characteristics involving relatively large transaction values and is associated with the management of assets, income, and tax obligations. This condition makes the sector relevant for testing factors associated with *tax avoidance* practices.

3.3. Population and Sample / Research Participants

The research population consists of property and real estate sector companies listed on the Indonesia Stock Exchange during the 2020–2024 period. Based on the research criteria, there were 92 companies in the population. The sample was selected using the purposive sampling method, namely sample selection based on specific criteria relevant to the research objectives.

The sample selection criteria in this study are:

a. Property and real estate sector companies listed on the Indonesia Stock Exchange during the 2020–2024 period.
b. Property and real estate sector companies continuously listed during the 2020–2024 period.
c. Companies that published complete annual financial statements during the 2020–2024 period.
d. Companies that did not experience losses during the 2020–2024 period.
e. Companies that had deferred tax expense during the 2020–2024 period.
f. Companies that made tax payments during the 2020–2024 period.

Based on these criteria, 8 companies were obtained as the research sample. With an observation period of five years, this study generated 40 company-year observations.

3.4. Data Sources and Data Collection

This study uses secondary data in the form of annual financial statements of property and *real estate* sector companies included in the research sample. The data were obtained from the financial statements and annual reports of companies available through the Indonesia Stock Exchange. Data collection was conducted using the documentation method on companies' financial statements during the 2020–2024 period.

3.5. Measurement of Variables and Research Instruments

Each research variable is operationalised using predetermined definitions and indicators. The measurement of the research variables is presented in Table 3.

Table 3. Measurement of Research Variables

Variable	Operational Definition	Formula/Indicator	Scale
Tax Avoidance (Y)	Efforts by companies to minimise tax burdens through the utilisation of tax provisions that remain within legal limits.	**CETR = Cash Tax Paid / Pre-Tax Income** Source: Sholihah and Rahmiati (2024)	Ratio
Fiscal Loss Compensation (X1)	The company's right to offset fiscal losses from previous periods against taxable profit in the current period.	**Dummy = 1**, if the company has fiscal loss compensation; **0**, if it does not have fiscal loss compensation. Source: Sholihah and Rahmiati (2024)	Nominal
Deferred Tax Expense (X2)	Deferred tax expense arising from temporary differences between accounting profit and taxable profit.	**DTE = Deferred Tax Expense it / Total Assets-1** Source: Safitri and Rizal (2023)	Ratio

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Inflation (X3)	A condition of a general increase in the prices of goods and services that may affect economic activity and company conditions.	**Annual inflation rate (%)**	Ratio

Source: Processed by the researcher (2026).

3.6. Data Analysis Techniques

The research data were analysed using panel data regression with the assistance of EViews software. The stages of analysis included descriptive statistics, estimation of the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM), as well as model selection tests through the Chow test, Hausman test, and Lagrange Multiplier (LM) test.

Hypothesis testing was conducted through the coefficient of determination test (Adjusted R^2), the F-test to determine the simultaneous effect of the independent variables, and the t-test to determine the effect of each variable partially. Inflation was included in the model as a control variable. The significance level used in the testing was 5%.

3.7. Validity, Reliability, and Trustworthiness

The validity, reliability, and trustworthiness of the research data were ensured through the use of officially published annual financial statements and reports of property and real estate companies listed on the Indonesia Stock Exchange during the 2020–2024 period. Data validity was maintained by verifying the consistency of the financial information with the original company reports and ensuring that the operational definitions and measurement formulas were applied appropriately to each research variable. Reliability was supported by applying consistent data collection, recording, and calculation procedures across all sampled companies and observation years. Furthermore, data accuracy was maintained through cross-checking the collected information and conducting the calculations systematically. Since this study uses secondary quantitative data, validity and reliability were assessed through data verification and consistency procedures rather than questionnaire-based instrument testing. These procedures were implemented to enhance the accuracy, consistency, and credibility of the research findings.

3.8. Ethical Considerations

This study uses publicly available secondary data and therefore does not involve human respondents or participants. The data were obtained from officially accessible sources and used for academic purposes. Data processing and presentation were conducted by observing accuracy and academic integrity.

3.9. Research Procedure

The research procedure was conducted through several stages, namely: (1) identifying the research phenomenon and problem; (2) determining the population and purposive sampling criteria; (3) determining the companies that met the sample criteria; (4) collecting companies' financial statements for the 2020–2024 period; (5) calculating the values of tax avoidance, fiscal loss compensation, deferred tax expense, and inflation; (6) conducting descriptive statistical analysis and panel data regression; (7) conducting model selection tests; and (8) conducting hypothesis testing and interpreting the research results.

3.10. Methodological Limitations

This study has several limitations. First, the study only uses fiscal loss compensation and deferred tax expense as independent variables and therefore does not include other factors that may affect tax avoidance. Second, the study is limited to property and real estate sector companies over the 2020–2024 observation period, so the research results may not necessarily be generalisable to different sectors and periods. Third, the measurement of tax avoidance only uses the Cash Effective Tax Rate (CETR), so other measures of tax avoidance have not been used in the study.

4. Results and Discussion

4.1. Research Results

4.1.1. Sample Description and Descriptive Statistics

The final research sample consisted of 8 property and real estate companies listed on the Indonesia Stock Exchange during the 2020–2024 period. Based on the five-year observation period, 40 firm-year observations were obtained. Sample

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selection was conducted using the purposive sampling method in accordance with the established criteria.

Table 4. Descriptive Statistics

Date: 09/17/26 Time: 17:37
Sample: 2020–2024

Statistics	X1	X2	X3	Y
Mean	0.675000	0.000197	2.648000	0.121757
Median	1.000000	7.45E-05	1.870000	0.103528
Maximum	1.000000	0.007584	5.510000	0.510067
Minimum	0.000000	-0.006066	1.570000	0.000337
Std. Dev.	0.474342	0.002260	1.495078	0.118865
Skewness	-0.747265	0.187622	1.293738	1.285527
Kurtosis	1.558405	6.309550	2.934431	4.539190
Jarque-Bera	7.186359	18.48989	11.16555	14.96571
Probability	0.027511	0.000097	0.003762	0.000563
Sum	27.00000	0.007873	105.9200	4.870268
Sum Sq. Dev.	8.775000	0.000199	87.17504	0.551023
Observations	40	40	40	40

Source: EViews Output, processed by the researcher (2026).

The descriptive statistics results show that fiscal loss compensation (X1) has a mean value of 0.675000, with a minimum value of 0 and a maximum value of 1, as it uses a *dummy* measurement. *Deferred tax expense* (X2) has a mean value of 0.000197, with a minimum value of −0.006066 and a maximum value of 0.007584. Inflation (X3) has a mean value of 2.648000, with a minimum value of 1.570000 and a maximum value of 5.510000. *Tax avoidance* (Y) has a mean value of 0.121757, with a minimum value of 0.000337 and a maximum value of 0.510067.

4.1.2. Data Quality and Preliminary Analysis

The preliminary analysis consisted of panel data regression model selection and classical assumption tests, including normality, multicollinearity, and heteroscedasticity testing. The Chow test results show a *Cross-section Chi-square* probability value of 0.0000 < 0.05, indicating that the Fixed Effect Model (FEM) is more appropriate than the *Common Effect Model* (CEM). Subsequently, the Hausman test produces a probability value of 0.4109 > 0.05, indicating that the Random Effect Model (REM) is more appropriate than the FEM. The LM test results show a *Breusch-Pagan* probability value for the *cross-section* of 0.0000 < 0.05, indicating that the REM is more appropriate than the CEM. Based on these three tests, the Random Effect Model (REM) was selected as the regression model used in the study.

Table 5. Panel Data Regression Model Selection

Test	Probability	Selected Model
Chow Test	0.0000	FEM
Hausman Test	0.4109	REM
LM Test	0.0000	REM

Source: EViews Output, processed by the researcher (2026).

a. Classical Assumption Tests

The normality test results show a probability value of 0.064859, which is greater than the significance level of 0.05. These results indicate that the research residuals are normally distributed, so the normality assumption is satisfied.

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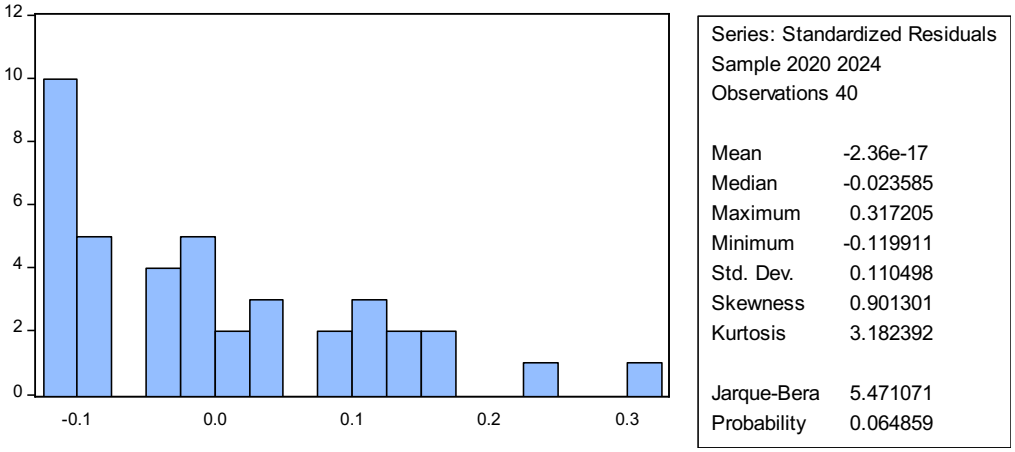


Fig. 2. Normality Test

The multicollinearity test shows that the centred VIF values for all independent variables are below 10, namely 1.013916 for X1, 1.046900 for X2, and 1.034155 for X3. These results indicate that there is no multicollinearity problem in the research model.

Table 6. Multicollinearity Test

Variance Inflation Factors
Date: 09/17/26 Time: 18:26
Sample: 1–40
Included observations: 40

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.001881	6.553909	NA
X1	0.001326	3.119741	1.013916
X2	60.33802	1.055045	1.046900
X3	0.000136	4.361434	1.034155

Source: Eviews Output, processed by the researcher (2026).

The heteroscedasticity test using the White method produces an *Obs*R-squared* value of 13.37320 with a Chi-Square probability of 0.0996 > 0.05. These results indicate that the research model does not experience a heteroscedasticity problem.

Table 7. Heteroscedasticity Test (White Test)

Heteroskedasticity Test White
Null hypothesis: Homoskedasticity

F-statistic	1.946202	Prob. F(8,31)	0.0881
Obs*R-squared	13.37320	Prob. Chi-Square(8)	0.0996
Scaled explained SS	11.31351	Prob. Chi-Square(8)	0.1846

Source: EViews Output, processed by the researcher (2026).

4.1.3. Main Analytical Results

Based on the estimation results of the *Random Effect Model* (REM), the research regression equation is:

$$Y = 0.119850 + 0.003205\ X1 + 15.18422\ X2 - 0.001226\ X3 + e$$

Table 8. Random Effect Model Regression Results

Dependent Variable: Y
Method: Panel EGLS (Cross-section random effects)
Date: 09/17/26 Time: 18:42
Sample: 2020–2024

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Periods included: 5
Cross-sections included: 8
Total panel (balanced) observations: 40
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.119850	0.046671	2.567964	0.0145
X1	0.003205	0.036641	0.087479	0.9308
X2	15.18422	4.228985	3.590511	0.0010
X3	-0.001226	0.006086	-0.201415	0.8415
Effects Specification				
			S.D.	Rho
Cross-section random			0.098134	0.7558
Idiosyncratic random			0.055784	0.2442
Weighted Statistics				
R-squared	0.279380	Mean dependent var		0.029999
Adjusted R-squared	0.219328	S.D. dependent var		0.063901
S.E. of regression	0.056460	Sum squared resid		0.114759
F-statistic	4.652318	Durbin-Watson stat		1.711914
Prob(F-statistic)	0.007547			
Unweighted Statistics				
R-squared	0.135826	Mean dependent var		0.121757
Sum squared resid	0.476180	Durbin-Watson stat		0.412571

Source: EViews Output, processed by the researcher (2026).

The coefficient of determination shows an Adjusted R-squared value of 0.219328. This means that the variables of fiscal loss compensation, deferred tax expense, and inflation are able to explain 21.93% of the variation in tax avoidance, while the remaining 78.07% is explained by other factors outside the research model.

The F-test results show a probability value of 0.007547 < 0.05. This means that fiscal loss compensation, deferred tax expense, and inflation simultaneously have a significant effect on tax avoidance at the 5% significance level.

The partial test results show that fiscal loss compensation has a coefficient of 0.003205 with a probability of 0.9308 > 0.05. This means that fiscal loss compensation has no significant effect on tax avoidance.

Deferred tax expense has a coefficient of 15.18422 with a probability of 0.0010 < 0.05. This means that deferred tax expense has a positive and significant effect on tax avoidance.

Inflation as a control variable has a coefficient of −0.001226 with a probability of 0.8415 > 0.05. This means that inflation has no significant effect on tax avoidance.

4.1.4. Hypothesis Testing Results / Key Findings

The partial regression results indicate that fiscal loss compensation (X1) has a coefficient of 0.003205 and a probability value of 0.9308. Deferred tax expense (X2) has a coefficient of 15.18422 and a probability value of 0.0010. Inflation (X3), included as a control variable, has a coefficient of -0.001226 and a probability value of 0.8415.

Table 9. Summary of Hypothesis Testing Results

Variable	Coefficient	Probability	Result at 5% Significance Level
Fiscal Loss Compensation (X1)	0.003205	0.9308	Not significant
Deferred Tax Expense (X2)	15.18422	0.0010	Positive and significant
Inflation (X3)	-0.001226	0.8415	Not significant
Simultaneous F-test	—	0.007547	Significant

Source: EViews Output, processed by the researcher (2026).

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The results show that fiscal loss compensation does not have a statistically significant partial effect on tax avoidance. Deferred tax expense has a positive and statistically significant partial effect on tax avoidance. Inflation does not have a statistically significant partial effect on tax avoidance. Simultaneously, fiscal loss compensation, deferred tax expense, and inflation have a statistically significant relationship with tax avoidance at the 5% significance level.

4.1.5. Visual Presentation of Results

The empirical results are presented through descriptive statistics in Table 4, model selection results in Table 5, classical assumption tests in Figure 2 and Tables 6–7, and regression and hypothesis testing results in Tables 8–9. These tables and figures summarize the sample characteristics, preliminary analysis, estimated regression model, and statistical significance of the research variables.

4.2 Research Discussion

4.2.1. Interpretation of Key Findings

a. The Effect of Fiscal Loss Compensation on Tax Avoidance

The results show that fiscal loss compensation has no significant effect on *tax avoidance*, with a coefficient of 0.003205 and a probability of 0.9308 > 0.05. These results indicate that the existence of fiscal loss compensation has not yet become a determining factor in *tax avoidance* practices among property and real estate companies during the 2020–2024 period. This condition may occur because fiscal loss compensation is a tax facility whose utilisation is regulated by tax provisions, meaning that its existence does not directly indicate *tax avoidance* practices.

These results are consistent with Kamil and Masripah (2022), who found that fiscal loss compensation had no significant effect on *tax avoidance* among manufacturing companies listed on the Indonesia Stock Exchange. Similar results were also reported by Fitrifiani and Oktris (2023), who found that fiscal loss compensation had no effect on *tax avoidance* among companies listed on the Indonesia Stock Exchange. These findings differ from Widilestariningtyas and Kristina (2023), who found that fiscal loss compensation had a positive and significant effect on *tax avoidance* among mining companies listed on the Indonesia Stock Exchange.

The differences in these research findings indicate that fiscal loss compensation cannot yet be regarded as a factor consistently associated with *tax avoidance*. The insignificant effect of fiscal loss compensation in this study demonstrates that fiscal loss compensation facilities can be utilised by companies in accordance with tax provisions without necessarily being accompanied by *tax avoidance* practices. Differences in sector characteristics and company conditions may be among the considerations in understanding these variations in the relationship.

b. The Effect of Deferred Tax Expense on Tax Avoidance

The results show that deferred tax expense has a positive and significant effect on tax avoidance, with a coefficient of 15.18422 and a probability of 0.0010 < 0.05. These results indicate that an increase in deferred tax expense is associated with an increase in tax avoidance among property and real estate companies during the 2020–2024 period. This condition indicates that temporary differences between accounting and taxation treatments, as reflected through deferred tax expense, are associated with changes in the level of corporate tax avoidance.

These results are consistent in terms of the direction of the relationship with Muslim et al. (2025), who found that deferred tax expense had a positive and significant effect on tax avoidance. These findings indicate that deferred tax expense may be associated with tax avoidance practices through temporary differences between accounting and taxation recognition. These results differ from Suciarti et al. (2020), who found that deferred tax expense had no significant effect on tax avoidance among automotive subsector companies listed on the Indonesia Stock Exchange. The findings of Kirnanda et al. (2024) also show that deferred tax burden had no effect on tax avoidance among mining sector companies listed on the Indonesia Stock Exchange.

The findings of this study show that deferred tax expense has a positive relationship with tax avoidance among property and real estate companies. This means that an increase in deferred tax expense is associated with an increase in tax avoidance. These results indicate that differences in accounting and taxation treatments reflected in deferred tax expense may form part of the conditions

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associated with the level of corporate tax avoidance. Differences from previous studies indicate that the relationship between deferred tax expense and tax avoidance may vary according to company characteristics, industry sector, and observation period.

c. The Role of Inflation as a Control Variable

Inflation as a control variable has a negative coefficient of −0.001226 with a probability of 0.8415 > 0.05. These results indicate that inflation has no significant effect on tax avoidance among property and real estate companies during the 2020–2024 period. This means that changes in the inflation rate during the observation period have not shown a significant relationship with companies' tendency to engage in tax avoidance.

These results differ from Sari and Wahyuni (2023), who found that inflation had a positive and significant effect on tax avoidance among property and real estate companies. These results also differ in direction from Ambarita et al. (2024), who found that inflation had a negative effect on tax avoidance among industrial companies listed on the Indonesia Stock Exchange. Meanwhile, these results are consistent with Prisilia and Pandin (2024), who found that inflation had no effect on tax avoidance among companies listed on the Indonesia Stock Exchange.

The insignificant effect of inflation indicates that changes in macroeconomic conditions reflected by the inflation rate have not yet become a factor directly associated with tax avoidance among property and real estate companies during the 2020–2024 period. Differences from previous studies indicate that the relationship between inflation and tax avoidance may vary according to sector characteristics and observation periods. The use of inflation as a control variable in this study helps account for macroeconomic conditions when analysing the relationship between fiscal loss compensation and deferred tax expense and tax avoidance.

4.2.2. Comparison with Previous Studies

The insignificant effect of fiscal loss compensation is consistent with Kamil and Masripah (2022) and Fitrifiani and Oktris (2023), but differs from Widilestariningtyas and Kristina (2023), who reported a positive and significant effect. For deferred tax expense, the findings are consistent with Muslim et al. (2025), who identified a positive and significant relationship with tax avoidance, but differ from Suciarti et al. (2020) and Kirnanda et al. (2024), who found no significant effect. Regarding inflation, the results are consistent with Prisilia and Pandin (2024), but differ from Sari and Wahyuni (2023), who reported a positive and significant effect, and Ambarita et al. (2024), who identified a negative effect. These similarities and differences suggest that the relationships between the examined variables and tax avoidance may depend on industry characteristics, company conditions, and the observation period.

4.2.3. Theoretical Contributions

This study contributes to the understanding of tax avoidance by demonstrating that the relationships between tax-related factors and corporate tax avoidance are not uniform. The insignificant effect of fiscal loss compensation indicates that the availability of a tax facility does not automatically correspond to tax avoidance behaviour. Conversely, the significant positive effect of deferred tax expense highlights the relevance of temporary differences between accounting and tax treatments in explaining variations in tax avoidance. The insignificant effect of inflation further suggests that macroeconomic conditions do not necessarily have a direct statistical relationship with corporate tax avoidance in every sector and period. Collectively, these findings refine the understanding of tax avoidance by distinguishing the role of company-level tax-related factors from broader macroeconomic conditions.

4.2.4. Practical and Policy Implications

For company management, the findings highlight the importance of ensuring that fiscal loss compensation is utilised in accordance with applicable tax regulations and that deferred tax expense is recognised and reported accurately. The significant relationship between deferred tax expense and tax avoidance also indicates the need for careful monitoring of temporary differences between accounting profit and taxable profit. For tax authorities, deferred tax expense may serve as one of several indicators to consider when assessing corporate tax reporting, although it should not be treated as conclusive evidence of tax avoidance.

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Meanwhile, the insignificant effect of inflation suggests that tax compliance assessments should consider company-specific tax and financial characteristics rather than relying solely on macroeconomic indicators.

4.2.5. Integration with the Research Gap

This study addresses the research gap concerning the inconsistent empirical findings on the effects of fiscal loss compensation, deferred tax expense, and inflation on tax avoidance. By examining property and real estate companies listed on the Indonesia Stock Exchange during 2020–2024, the study provides sector-specific evidence that fiscal loss compensation and inflation have no statistically significant partial effects, whereas deferred tax expense has a positive and significant effect. These findings help clarify the differing relationships reported in previous studies and extend the empirical evidence by examining the three variables within a single regression model, with inflation included as a control variable.

4.2.6. Acknowledgement of Study Limitations

The findings should be interpreted in light of the study's scope, which covers only eight property and real estate companies over the 2020–2024 period. Consequently, the results may not be generalisable to other industries or observation periods. In addition, tax avoidance is measured using the Cash Effective Tax Rate (CETR), meaning that the findings may differ when alternative tax avoidance proxies are applied. The analysis also focuses on fiscal loss compensation and deferred tax expense, with inflation as a control variable, while other company-specific and institutional factors may also be associated with tax avoidance. Future research could expand the sample, extend the observation period, incorporate additional explanatory variables, and employ alternative tax avoidance measures to assess the robustness of these findings.

5. Conclusion

5.1. Summary of Key Findings

This study examines the effects of fiscal loss compensation and deferred tax expense on tax avoidance among property and real estate companies listed on the Indonesia Stock Exchange during the 2020–2024 period, with inflation as a control variable. The analysis was conducted using panel data regression based on 40 observations from 8 companies. The results show that the model used was the Random Effects Model (REM). Partially, fiscal loss compensation has no significant effect on tax avoidance, whereas deferred tax expense has a positive and significant effect on tax avoidance. Inflation as a control variable has no significant effect on tax avoidance. Simultaneously, fiscal loss compensation, deferred tax expense, and inflation have a significant effect on tax avoidance at the 5% significance level.

5.2. Theoretical Contributions

This study provides an empirical contribution to the discussion of tax avoidance through the examination of fiscal loss compensation and deferred tax expense among property and real estate companies in Indonesia. The results show that fiscal loss compensation has no significant effect on tax avoidance, whereas deferred tax expense has a positive and significant effect on tax avoidance. These findings indicate that differences in accounting and taxation treatments reflected through deferred tax expense may be associated with an increase in the level of corporate tax avoidance. The research findings also show that the effect of each variable on tax avoidance does not always correspond to the relationship conceptually expected. Simultaneously, the presence of fiscal loss compensation, deferred tax expense, and inflation shows a significant relationship with tax avoidance.

5.3. Practical and Policy Implications

For company management, the research results indicate the importance of paying attention to the management of temporary differences reflected in *deferred tax expense*, as this variable has been shown to have a positive and significant effect on *tax avoidance*. Tax management should be conducted carefully while continuing to comply with applicable tax provisions. For investors, fiscal loss compensation and *deferred tax expense* can provide additional information when assessing companies' tax policies and financial conditions. For regulators, the research findings may be considered in monitoring corporate tax practices, particularly those relating to the utilisation of fiscal loss compensation and temporary differences in tax reporting.

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5.4. Limitations of the Study

This study has several limitations. The study only uses fiscal loss compensation and deferred tax expense as independent variables, while there are other factors that may affect tax avoidance. Inflation is used as a control variable and therefore does not encompass all macroeconomic factors that may affect companies' tax policies. The study is also limited to property and real estate companies listed on the Indonesia Stock Exchange during the 2020–2024 period, with a sample of 8 companies and 40 observations. The measurement of tax avoidance only uses the Cash Effective Tax Rate (CETR), and therefore does not reflect all approaches to measuring tax avoidance.

5.5. Directions for Future Research

Future research may expand the independent variables by including other factors that may affect tax avoidance, such as capital intensity, leverage, profitability, firm size, and institutional ownership. The addition of these variables may provide a broader understanding of the factors associated with tax avoidance practices.

Future research may also use a longer observation period and include different company sectors to examine whether the relationship between fiscal loss compensation, deferred tax expense, and tax avoidance shows different patterns based on sector characteristics and observation periods.

The measurement of tax avoidance may also use alternative indicators in addition to the Cash Effective Tax Rate (CETR), such as the Effective Tax Rate (ETR) or Book-Tax Difference (BTD), so that the research results can provide a broader perspective on tax avoidance practices. Future research may also consider other macroeconomic variables as control variables to account for broader economic conditions when analysing tax avoidance.

6. References

Aksent'ev, A. A. (2023). The theory of deferred taxation: Evidence of its applicability and conceptual framework. *Vestnik Tomskogo gosudarstvennogo universiteta. Ekonomika*, *60*, 141–169. https://doi.org/10.17223/19988648/60/9

Ambarita, D., Ma'aruf, H., & Ibrahim. (2024). The Effect of Capital Structure, Tax Planning and Inflation on Tax Avoidance. *Return : Study of Management, Economic and Bussines*, *3*(6), 365–381. https://doi.org/10.57096/return.v3i6.245

Baltagi, B. H. (2005). *Econometric Analysis of Panel Data* (3 ed.). John Wiley & Sons Ltd. https://doi.org/10.1007/978-3-030-53953-5_2

Creswell, J. W., & Creswell, J. D. (2018). *Research Design: Qualitative, Quantitative, and Mixed Methods Approach* (5 ed.). SAGE Publications.

Fitrifiani, F., & Oktris, L. (2023). The Effect of Profitability, Public Ownership and Fiscal Loss Compensation on Tax Avoidance Moderated by Audit Quality. *International Journal For Multidisciplinary Research*, *5*(1). https://doi.org/10.36948/ijfmr.2023.v05i01.1647

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, *3*(4), 305–360. https://doi.org/10.1016/0304-405X(76)90026-X

Kamil, M. I., & Masripah. (2022). Pengaruh Capital Intensity, Risiko Perusahaan, Kompensasi Rugi Fiskal Terhadap Penghindaran Pajak. *AKUA: Jurnal Akuntansi dan Keuangan*, *1*(3), 361–369. https://doi.org/10.54259/akua.v1i3.1033

Karina, A., & Herdiyanti, H. (2023). Effect of Tax Planning, Deferred Tax Expense and Company Size Against Profit Management (Empirical Study on Manufacturing Companies Listed on IDX 2015-2019). *Jurnal Ilmu Manajemen & Ekonomika*, *12*(2), 61. https://doi.org/10.35384/jime.v12i2.355

Kirnanda, M. D., Suryarini, T., & Anita, N. (2024). Tax Avoidance of Mining Sector Companies Registered on The Indonesia Stock Exchange. *Jurnal Akuntansi*, *14*(3), 265–275. https://doi.org/10.33369/jakuntansi.14.3.265-275

Lee, N. (2020). Tax Avoidance, Near-Future Earnings, and Resource Availability. *International Review of Finance*, *20*(2), 537–548. https://doi.org/10.1111/irfi.12221

Muslim, A. B., Wulandari, T., & Wulandari, D. S. (2025). Decoding Deferred Tax Expense: Its Impact on Tax Avoidance through the Lens of Foreign Ownership. *International Journal of Accounting, Management, Economics and Social Sciences (IJAMESC)*, *3*(2), 663–672. https://doi.org/10.61990/ijamesc.v3i2.488

O'g'li, T. A. A., & Toxtasinovna, U. D. (2024). The Effect of Inflation on Economic Development. *International Journal of Advance Scientific Research*, *4*(3), 183–188. https://doi.org/10.37547/ijasr-04-03-34

DOI: 10.65246

Prisilia, S., & Pandin, R. M. Y. (2024). Dampak Dinamika Inflasi Dan Ukuran Perusahaan Terhadap Tingkat Penghindaran Pajak Pada 11 Sektor Industri Yang Listing Di Bursa Efek Indonesia (BEI) Pada Tahun (2019-2022). *JAKA (Jurnal Akuntansi, Keuangan, dan Auditing)*, *5*(1), 50–62. https://doi.org/10.56696/jaka.v5i1.10734

Raičević, J., & Stojiljković, M. (2022). The Importance of Choosing and Applying Accounting Policies in the Corporate Management System. *Proceedings of the 9th International Scientific Conference - FINIZ 2022*, 32–38. https://doi.org/10.15308/finiz-2022-32-38

Safitri, D., & Rizal, A. S. (2023). Pengaruh Deferred Tax Expense, Capital Intensity, Kepemilikan Institusional terhadap Tax Avoidance Perusahaan Consumer Non-Cyclicals yang Terdaftar di Bursa Efek Indonesia Periode 2017–2021. *JURNAL BISNIS & AKUNTANSI UNSURYA*, *8*(2). https://doi.org/10.35968/jbau.v8i2.1059

Sari, K. D. R., & Wahyuni, M. A. (2023). Pengaruh Financial Distress, Solvabilitas, Inflasi Terhadap Tindakan Tax Avoidance pada Perusahaan Sektor Property dan Real Estate. *JIMAT (Jurnal Ilmiah Mahasiswa Akuntansi) Undiksha*, *14*(03), 768–778. https://doi.org/10.23887/jimat.v14i03.64464

Sholihah, E. F. M., & Rahmiati, A. (2024). Pengaruh Leverage, Sales Growth, Kompensasi Rugi Fiskal dan Koneksi Politik terhadap Penghindaran Pajak (Studi Empiris Pada Perusahaan Manufaktur Yang Terdaftar di BEI Tahun 2017-2022). *Owner*, *8*(1), 186–199. https://doi.org/10.33395/owner.v8i1.1887

Silvera, C. P., & Ismanto, J. (2024). The effect of fiscal loss compensation, capital intensity and company age on tax avoidance. *Educoretax*, *4*(8), 1017–1026. https://doi.org/10.54957/educoretax.v4i8.1048

Suciarti, C., Suryani, E., & Kurnia, K. (2020). The Effect of Leverage, Capital Intensity and Deferred Tax Expense on Tax Avoidance. *Journal of Accounting Auditing and Business*, *3*(2), 76–83. https://doi.org/10.24198/jaab.v3i2.28624

Tjung, S., & Khairudin, K. (2024). Tax Avoidance: Peran Ukuran Perusahaan, Leverage, dan Profitability. *MIMBAR ADMINISTRASI FISIP UNTAG Semarang*, *21*(1), 103–110. https://doi.org/10.56444/mia.v21i1.1503

Widilestariningtyas, O., & Kristina, E. (2023). Determinasi Kompensasi Kerugian Fiskal dan Pertumbuhan Penjualan terhadap Tax Avoidance. *Jurnal Riset Akuntansi*, *15*(2), 112–122. https://doi.org/10.34010/jra.v15i2.11013