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Political Connections as Moderating Factors Affecting Tax Aggressiveness in Indonesian Mining Firms

Nazwa Anggita Az-Zahra[1], Fahmaninda Listiyani[2].*

[1,2] *Fakultas Ekonomi, Universitas Nahdlatul Ulama Yogyakarta, Indonesia*

General Background: Tax aggression remains a significant issue in developing countries as it can reduce government revenue and affect fiscal sustainability. **Specific Background:** In Indonesia, mining companies are considered vulnerable to aggressive tax practices due to their high capital requirements, complex financing structures, and close ties to government policy and regulation. **Knowledge Gap:** Previous studies on tax aggressiveness have yielded inconsistent findings, whilst evidence regarding the moderating role of political connections remains limited, particularly in the post-pandemic period. **Objective:** This study investigates the impact of firm characteristics on tax aggressiveness and the moderating function of political connections. **Method:** This study utilises secondary data from 29 mining companies listed on the Indonesia Stock Exchange over the period 2021–2024. The analysis was conducted using Moderated Regression Analysis (MRA). **Results:** The findings indicate that leverage has a significant positive effect on tax aggressiveness, whilst institutional ownership is significantly associated with lower tax aggressiveness. Political connections significantly moderate the relationship between institutional ownership and tax aggressiveness, thereby strengthening the link between institutional ownership and tax aggressiveness. **Novelty:** This study provides evidence regarding the role of political connections in shaping corporate tax behaviour in Indonesia's post-pandemic mining sector. **Implications:** These findings highlight the importance of strengthening regulatory oversight and corporate transparency to curb tax aggression practices.

Keywords: Political Connections, Capital Intensity, Leverage, Institutional Ownership, Earnings Management, Tax Aggressiveness.

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**Correspondence:*
Nazwa Anggita Az-Zahra
Nazwa.anggita.akt22@student.unu-jogja.ac.id

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INTRODUCTION

Tax aggressiveness has emerged as a crucial issue in corporate governance as it has the potential to reduce government tax revenue, undermine fiscal sustainability, and encourage opportunistic managerial behaviour aimed at minimising a company's tax liabilities (Eka *et al.*, 2024). Tax aggression refers to a company's efforts to reduce its tax burden through various tax planning strategies, including the use of accounting flexibility and the exploitation of regulatory loopholes, whether legal or illegal (Carrer & Slavov, 2021). From the perspective of Agency Theory, managers tend to maximise after-tax profits to achieve personal and corporate objectives, which can give rise to conflicts of interest with shareholders and other stakeholders. Such conflicts may encourage aggressive tax practices that reduce the transparency of financial reporting and ultimately undermine the effectiveness of fiscal policy whilst limiting the government's ability to finance sustainable development and public services (Utaminingsih *et al.*, 2022). Therefore, understanding the determinants of tax aggressiveness is crucial for regulators, investors and academics in evaluating the quality of corporate governance and corporate tax compliance.

In Indonesia, tax aggressiveness remains a cause for concern. Following various reforms, including the implementation of the Tax Regulation Harmonisation Act No. 7 of 2021 (UU HPP), the country's tax-to-GDP ratio has remained stagnant. Despite stable economic growth, Indonesia's tax-to-GDP ratio remains low, standing at 10.38 per cent in 2022 and 10.31 per cent in 2023, and is projected to fall to 10.08 per cent in 2024. This indicates difficulties in broadening the tax base and improving corporate tax compliance (Khan & Nuryanah, 2023). In recent years, the government has focused its attention specifically on the mining industry, as this sector makes a significant contribution to state revenue and exports, as well as to the management of the country's natural resources. Although there is significant potential for government revenue from the extractive sector, a number of mining companies have been involved in transfer pricing, profit shifting and under-reporting of taxes. Consequently, tax aggressiveness has become a key concern. The mining sector serves as a prime example of corporate tax aggressiveness, as it involves large-scale capital investment, complex financing structures, and integrated links with government policy (Sabaruddin *et al.*, 2024).

The unpredictable nature of tax revenue for Indonesia's mining sector between 2021 and 2024 was documented by the Ministry of Finance of the Republic of Indonesia in 2024. Driven by high commodity prices and global economic recovery, 2022 saw a 195.4 per cent increase in mining sector tax revenue compared with 2021. A sustained positive outlook for the growth of mining tax revenue remained evident in 2023 with an increase of 69.3 per cent, despite a weakening in commodity prices. A decline in commodity prices, an increase in tax refunds, and changes to the business licences of coal taxpayers resulted in a 63.8 per cent decrease in mining sector tax revenue in 2024. This situation demonstrates that tax revenue from the mining sector is influenced by conditions in the global commodities market.

Although there has been a consistent focus on the factors influencing tax aggressiveness, gaps remain in the literature regarding these findings. Research on capital intensity suggests that firms with higher fixed asset purchases are likely to be more tax-aggressive as they can reduce taxable income through depreciation charges (Dewi & Oktaviani, 2021; Hendayana *et al.*, 2024). On the other hand, other studies suggest that firms with high capital intensity may exhibit better tax compliance, as fixed assets are easier to control and verify. Research on leverage has also yielded mixed results. Leverage can increase tax aggressiveness as interest expenses act as a tax shield (Arhinful & Radmehr, 2023; Kijkasiwat & Hussain, 2022). However, excessive debt can also increase financial risk and external scrutiny, thereby limiting tax aggressiveness.

Research on institutional ownership generally indicates that institutional investors can enhance corporate oversight and transparency, thereby curbing tax aggressiveness (Tarighi *et al.*, 2022; Yahaya, 2025). Nevertheless, some studies suggest that institutional investors may still encourage tax minimisation strategies when such practices are deemed capable of boosting short-term profits. Furthermore, earnings management is closely linked to tax aggressiveness, as managerial discretion in determining accrual policies and accounting methods can influence both reported profits and taxable income (Delgado *et al.*, 2023; Ridho & Djamil, 2023). Through earnings management practices, managers can adjust financial reporting in a way that simultaneously reduces the company's tax liability. The discrepancies in findings observed in previous studies reflect an empirical gap in explaining the relationship between tax aggression and firm characteristics.

In addition to firm characteristics, political connections are regarded as a significant contextual factor that can influence a firm's tax behaviour. A firm's relationship with a political party or the government is referred to as its political connection, which manifests through ownership arrangements, management involvement, or close ties with public authorities. Firms with political connections are often considered to have better access to information regarding fiscal policy, a lower risk of tax audits and penalties, and greater leeway in managing tax-related activities (Sawitri *et al.*, 2022). Consequently, political connections can either strengthen or weaken the influence of a company's characteristics on its tax aggressiveness (Ghifary & Lastati, 2024). Previous studies have also shown that firms with political connections are more likely to maximise tax benefits through financing policies, depreciation methods, and flexibility in financial reporting practices (Cheng *et al.*, 2022; Kalbuana *et al.*, 2022).

Although numerous studies have examined tax aggressiveness and political connections, several gaps remain in the literature. Empirical evidence regarding the impact of capital intensity, leverage, institutional ownership, and earnings management on tax aggressiveness has yielded varied and inconsistent results across different industries and observation periods. From both methodological and contextual perspectives, most previous research has treated political connections as an independent variable rather than a moderating factor, whilst the majority of these studies have focused on manufacturing firms and the pre-pandemic period. Studies examining political connections as a moderating factor in the relationship between firm characteristics and tax aggressiveness among mining firms in Indonesia remain scarce, particularly in the post-pandemic period. Furthermore, research that simultaneously tests these variables using Moderated Regression Analysis (MRA) and panel data regression within the context of the mining sector remains limited.

Related research examining political connections as a moderator in the relationship between firm characteristics and tax aggressiveness amongst Indonesian mining firms during the post-pandemic fiscal reform period remains limited. This study enriches the literature on tax aggressiveness by explaining how political connections shape the impact of firm characteristics on tax behaviour in the Indonesian mining sector during the post-pandemic fiscal reform period, a topic rarely explored in previous research. The uniqueness of this study lies not only in the use of political connections as a moderator variable, but also in the attempt to demonstrate that political connections do not always directly increase a firm's tax aggressiveness. Rather, political connections may operate selectively through corporate governance mechanisms and ownership structures—particularly institutional ownership—to influence a company's tax decisions. These findings provide new insights for the development of agency theory and the literature on tax aggressiveness, particularly in understanding how political connections interact with firm characteristics in the mining sector, which is characterised by a high level of regulation, contributions to government revenue, and public scrutiny. Furthermore, we hope this research will provide insights to regulators, investors and tax authorities to improve corporate governance and tax management in the context of political relationships.

In line with these identified gaps, this study will investigate how capital intensity, leverage, ownership, and earnings management influence tax aggressiveness, and how political connections act as a moderating variable amongst mining companies listed on the Indonesia Stock Exchange (IDX) between 2021 and 2024. This study is expected to clarify inconsistencies in previous findings and provide a better understanding of tax aggression practices amongst mining companies with political connections during the post-pandemic period. Academically, this study contributes to agency theory, corporate governance, the literature, and research on aggressive taxation by explaining and analysing the influence of political relationships on managerial tax decisions. Empirically, this study provides evidence from the Indonesian mining sector using Moderated Regression Analysis (MRA) and panel data analysis. In practical terms, the results are expected to assist companies, investors and regulators in improving tax oversight, the quality of corporate governance, transparency and tax compliance.

Agency Theory

The relationship between corporate stakeholders is the primary focus of agency theory, namely that between shareholders (owners) and agents (managers). According to (Jensen & Meckling, 1976), an agency relationship arises when shareholders delegate authority to managers to oversee the company's activities and assets on behalf of the owners. In practice, the two parties have differing interests, which leads to agency conflicts. Shareholders expect managers to maximise the value of the company, whilst managers tend to prioritise their personal interests, salaries, reputation, and even their performance and targets within the company. These agency conflicts are usually exacerbated by information asymmetry. Managers tend to have a deeper and more detailed understanding of the company's internal workings than shareholders do.

Agency conflicts have the potential to encourage managers to act opportunistically and aggressively in dealing with corporate tax legislation. Managers may view a lower corporate tax burden as a cost-reduction mechanism that improves reported profits, making the company's performance appear better, regardless of the potential consequences the company may face, including legal sanctions and tax penalties, as well as damage to the company's reputation (Wawolangi, 2016). Aggressive tax behaviour encompasses various tax management practices, within the context of corporate finance, through flexible tax management, selective accounting and the exploitation of tax loopholes. According to agency theory, weak control and oversight combined with high information asymmetry provide management with the opportunity to implement aggressive tax strategies that can increase agency costs and result in greater deviations from the company's objectives (Amri *et al*., 2022).

The Influence of Political Connections on Tax Aggressiveness

Agency theory suggests that information asymmetry and conflicts of interest between managers and shareholders may encourage managers to adopt opportunistic strategies, including aggressive tax planning, in order to maximise corporate profits. Political connections can reinforce managerial discretion, as companies with political connections often have better access to policymakers, government-related resources, and strategic information. In highly regulated industries such as mining, political connections are particularly significant as companies frequently interact with government agencies regarding taxation, licensing, royalties and the management of natural resources (Latifatul *et al*., 2023).

From an agency theory perspective, political connections can create an environment in which managers perceive lower regulatory risk and greater institutional support when making tax-related decisions. Consequently, firms with political connections may have a stronger incentive to adopt aggressive tax strategies.

However, previous empirical findings remain inconclusive. (Abdullah *et al*., 2022) found that political connections mitigate the negative effects of tax aggressiveness on firm performance, suggesting that firms with political connections may receive institutional benefits that reduce the adverse consequences associated with aggressive tax practices. However, this study did not directly test whether political connections increase tax aggressiveness per se. Meanwhile, (Rudyanto *et al*., 2023) found that political connections do not directly influence tax aggressiveness, as their impact depends on business ethics and the effectiveness of corporate governance mechanisms.

Notwithstanding these inconsistent findings, political connections are expected to increase tax aggressiveness in mining firms, as firms with political ties generally have greater access to government resources and strategic networks that can facilitate more flexible tax-related decision-making.

H1: Political connections have a positive influence on tax aggressiveness.

The Effect of Capital Intensity on Tax Aggressiveness

The percentage of an organisation's investment allocated to fixed assets that support ongoing operations is known as capital intensity. An increase in the ownership of fixed assets results in depreciation charges recorded as expenses, which can reduce taxable income. Consequently, companies have the opportunity to legally minimise their tax liabilities through asset depreciation mechanisms. Consequently, capital intensity is often regarded as one of the tax planning tools with the potential to increase corporate tax aggressiveness (Ved & Sjarief, 2022).

Agency theory suggests that conflicts of interest between managers and shareholders may encourage managers to make investment decisions that provide financial benefits to the company, including tax savings. One such strategy is to increase investment in fixed assets, which generates depreciation charges that reduce taxable income. As depreciation is recognised as a deductible expense under tax regulations, managers can utilise capital-intensive investments as part of a tax planning strategy to minimise corporate tax liabilities whilst remaining compliant with applicable accounting and tax regulations.

Several previous studies have reported inconsistent findings regarding the relationship between capital intensity and tax aggressiveness. (Purwantoro *et al*., 2024), found that capital intensity significantly increases tax aggressiveness, as firms with substantial investment in fixed assets tend to utilise depreciation charges as a tax planning mechanism to reduce taxable income. Conversely, (Sumiati & Ainniyya, 2021) and (Hendayana *et al*., 2024) found that capital intensity had no significant effect on tax aggressiveness. These inconsistent findings suggest that the relationship between capital intensity and tax aggressiveness remains inconclusive. Therefore, the following hypothesis is proposed:

H2: Capital intensity has a positive effect on tax aggressiveness.

The Effect of Leverage on Tax Aggressiveness

Leverage reflects the extent to which a company relies on debt financing in its capital structure. Debt financing generates interest expenses that are tax-deductible, thereby creating a tax shield that can reduce the company's tax burden. From an agency theory perspective, managers may strategically utilise debt to enhance after-tax performance in order to maximise shareholder value. Information asymmetry between managers and shareholders enables managers to use debt financing not only to obtain tax benefits through deductible interest expenses, but also to implement tax planning strategies aimed at reducing the corporation's tax liability (Jihadi *et al*., 2021).

Previous research has reported mixed findings regarding the relationship between leverage and tax aggressiveness. (Hendayana *et al*., 2024) and (Khan & Nuryanah, 2023) found that leverage has a positive effect on tax aggressiveness, suggesting that firms with higher debt levels derive greater tax benefits from deductible interest expenses, thereby creating more opportunities to reduce taxable income. Conversely, (Prasetyo & Wulandari, 2021) found that leverage had no significant effect on tax aggressiveness, suggesting that debt financing does not always encourage firms to engage in aggressive tax planning practices. Similarly, (Sari & Ajimat, 2023) reported that leverage does not significantly affect tax aggressiveness, as companies with high debt levels tend to be subject to stricter scrutiny by creditors, thereby limiting management's discretion in implementing aggressive tax strategies. These inconsistent findings suggest that the relationship between leverage and tax aggressiveness remains inconclusive in the empirical literature. Therefore, the following hypothesis is proposed:

H3: Leverage has a positive effect on tax aggressiveness.

The Impact of Institutional Ownership on Tax Aggressiveness

Shares in public companies held by financial institutions, investment funds, insurance companies and other businesses are referred to as institutional ownership. These entities possess greater resources and information than individual investors. Agency theory suggests that institutional investors play a vital supervisory role in reducing agency conflicts between managers and shareholders. Through their larger shareholdings, institutional investors are better placed to monitor management decisions, including those relating to tax planning and financial reporting. Generally speaking, institutional investors enhance the effectiveness of control mechanisms over management and shape a company's key strategic decisions. (Hasan *et al*., 2022) explain that, through more intensive oversight, institutional investors have the potential to advise companies on how to manage their tax liabilities and how to formulate tax avoidance policies.

There is a wealth of empirical data on the relationship between tax aggressiveness and the level of institutional ownership; however, most of these studies have produced inconclusive findings. (Jiang *et al*., 2020) and (Jewartowski & Kaldonski, 2024) found that tax aggressiveness is facilitated by institutional ownership, as institutional investors can encourage tax efficiency strategies to enhance investment returns. Conversely, differing findings were reported by (Hendrianto, 2020), who demonstrated that tax aggressiveness is, in fact, significantly constrained by institutional ownership, as stronger oversight functions can curb tax aggressiveness practices that pose risks to the firm. These differing findings suggest that the influence of institutional ownership on tax policy remains dynamic; therefore, the following hypothesis is proposed in this study:

H4: Institutional ownership has a positive effect on tax aggressiveness.

The Influence of Earnings Management on Tax Aggressiveness

Earnings management refers to the use of managerial discretion in selecting accounting policies and determining the timing of transaction recognition to influence reported profits whilst remaining within the bounds of applicable accounting standards (Marfiana *et al.*, 2021). According to agency theory, information asymmetry between managers and shareholders provides managers with the opportunity to adjust accounting information to achieve various objectives, including improving financial performance, fulfilling contractual obligations, and responding to tax-related incentives (Wawolangi, 2016). As accounting profit serves as the basis for determining taxable income, managerial discretion in financial reporting can indirectly influence a company's tax liability. However, differences between financial accounting standards and tax regulations limit the extent to which accrual-based earnings management can directly affect taxable income.

Previous research has reported inconsistent findings regarding the relationship between earnings management and tax aggressiveness. (Marfiana *et al.*, 2021) found that earnings management has a positive impact on tax aggressiveness, suggesting that managers simultaneously manipulate accounting profits and tax-related reporting to reduce the company's tax burden. Conversely, (Delgado *et al.*, 2023) reported that earnings management significantly increases the Effective Tax Rate (ETR), which indicates a lower level of tax aggressiveness as higher reported profits are accompanied by higher taxable income and tax payments. Meanwhile, (Alfarizi *et al.*, 2021) and (Mulyaningsih *et al.*, 2023) found no significant relationship, arguing that earnings management is primarily aimed at improving the quality of financial reporting or achieving organisational objectives, rather than minimising tax liabilities.

These inconsistent findings suggest that the relationship between earnings management and tax aggressiveness remains uncertain and may depend on firm characteristics, industry conditions, and the regulatory environment. Based on agency theory, managers may use earnings management to pursue various objectives, including reducing the corporate tax burden. Therefore, this study proposes the following hypothesis:

H5: Earnings management has a positive effect on tax aggressiveness.

The Moderating Role of Political Connections on the Relationship between Capital Intensity and Tax Aggressiveness

Agency theory explains that managers may utilise fixed assets and depreciation policies to maximise after-tax profits, particularly under conditions of weak oversight and information asymmetry. Companies with high capital intensity have a greater opportunity to reduce taxable income through depreciation charges (Sari & Indrawan, 2022). This is particularly relevant to mining companies, as this sector is characterised by substantial investment in heavy machinery, infrastructure and production facilities.

Political connections can reinforce the link between tax aggressiveness and capital intensity, as firms with political connections tend to face lower regulatory pressure, have easier access to fiscal policy information, and perceive lower risks of tax audits and penalties (Firmansyah *et al.*, 2022). These conditions provide managers with greater flexibility to utilise depreciation charges as an instrument of aggressive tax planning. However, research examining political connections as a moderating factor in the relationship between tax aggressiveness and capital intensity remains scarce, particularly amongst Indonesian mining companies in the post-pandemic era. Therefore, the following hypothesis is proposed in this study:

H6: Political connections amplify the effect of capital intensity on tax aggressiveness.

The Moderating Role of Political Connections on the Relationship between Leverage and Tax Aggressiveness

Leverage refers to the use of debt financing that incurs interest expenses, which are recognised as tax-deductible costs and can reduce taxable income through tax-shield benefits (Afifah & Hasymi, 2020). According to agency theory, managers may utilise debt financing strategies to improve after-tax performance and enhance the company's profitability. This situation is particularly relevant in mining companies, as this industry generally requires significant external funding to support operational expansion and infrastructure development.

Political connections may influence the relationship between tax aggressiveness and leverage, as companies with political connections tend to have closer access to policymakers and perceive a lower risk of regulatory sanctions. However, empirical findings remain conflicting. (Andrianti *et al.*, 2025) and (Amelia *et al.*, 2023) found that political connections weaken the impact of leverage on tax aggressiveness due to stricter public scrutiny, whilst (Anggraini & Noviari, 2024) found that this relationship is strengthened by political connections as companies have greater flexibility in implementing tax-saving strategies. These inconsistent findings indicate an empirical gap, particularly amongst mining companies in Indonesia. Therefore, the following hypothesis is proposed in this study:

H7: Political connections weaken the effect of leverage on tax aggressiveness.

The Moderating Role of Political Connections in the Relationship Between Institutional Ownership and Tax Aggressiveness

Institutional ownership refers to the percentage of shares in a company held by institutions such as investment firms and pension funds. Within the context of agency theory, institutional owners act as a monitoring system that influences management's choices and tax strategies aimed at optimising the company's after-tax profits. The relevance of this role is particularly pronounced in the mining sector. This is due to the industry's characteristics, which demand substantial capital commitments, as well as investment in resources to understand and navigate a regulatory environment that is dynamic, complex and susceptible to political influence (Rennath & Trisnawati, 2023).

Political connections can strengthen the link between taxation and the aggressiveness of institutional ownership, as companies with political connections tend to have broader access to fiscal policy information and greater flexibility in responding to tax regulations (Firmansyah *et al*., 2022). These conditions may encourage institutional investors to support more tax-efficient strategies. However, various studies examining political connections indicate that the moderating effect in this relationship remains limited, particularly amongst mining firms in Indonesia. Therefore, the following hypothesis is proposed in this study:

H8: Political connections strengthen the influence of institutional ownership on tax aggressiveness.

The Moderating Role of Political Connections on the Relationship between Earnings Management and Tax Aggressiveness

The freedom managers have in choosing accounting policies, including those relating to statements in financial reports, is known as earnings management. Agency theory suggests that company managers may engage in earnings management as a means of achieving the company's financial performance targets for the period and, consequently, managing the company's tax exposure by minimising tax liabilities (Supriadi & Aryati, 2022). The relevance of this practice is particularly pronounced in the mining industry due to the complex nature of financial reporting, extreme variability in industrial operations, and high levels of government control and regulation.

The interaction between earnings management and tax aggressiveness may become more pronounced in the presence of political connections (Lestari *et al*., 2025). Companies with political connections tend to have better access to strategic information, stronger relationships with regulators, and a perceived lower risk of fiscal scrutiny. According to (Firmansyah *et al*., 2022), political connections yield regulatory advantages, whilst (Thalita *et al*., 2022) assert that companies with political connections engage in excessive tax planning and regulatory accounting practices. However, research examining this moderating relationship remains limited, particularly regarding Indonesian mining firms during the post-pandemic period. Therefore, the following hypothesis is proposed in this study:

H9: Political connections amplify the influence of earnings management on tax aggressiveness.

METHODS

A quantitative explanatory research design was employed in this study, which focused on identifying causal relationships, including both direct relationships and moderating effects amongst the variables. Panel data regression analysis was used to evaluate the moderating influence of political connections and to examine the impact of the independent variables on the dependent variable.

Mining companies listed on the Indonesia Stock Exchange (IDX) between 2021 and 2024 constitute the population of this study. The mining sector was selected due to its capital-intensive nature, its significant contribution to state revenue, and its close relationship with government policy and regulation. This close relationship with the government is likely to influence tax aggressiveness and political connections (Stratton, 2021). The selection of mining companies is also justified by the macroeconomic conditions during the observation period, which were characterised by economic recovery and stable growth according to reports published by the Central Statistics Agency (BPS).

This study covers all mining companies listed on the Indonesia Stock Exchange (IDX) during the 2021–2024 period as the study population. As shown in Table 1, the sample selection criteria were established using purposive sampling. Purposive sampling is a non-probability sampling technique that selects companies based on pre-determined criteria to ensure the completeness, relevance and comparability of the data. Table 1 presents the sample selection criteria and the results of the sample selection process. The application of these criteria resulted in a final sample of 29 mining companies, yielding 116 company-year observations over the study period.

[Table 1. Sample Selection Criteria]

The sample selection criteria were established using the purposive sampling method. Mining companies were included in the sample if they consistently published annual reports and audited financial statements throughout the 2021–2024 observation period. Furthermore, companies that incurred losses during the observation period were excluded, as loss-making companies may have a stronger incentive to reduce their tax burden, thereby resulting in a level of tax aggressiveness that is not comparable to that of profitable companies operating under normal tax payment conditions. The application of these criteria resulted in a final sample of 29 mining companies, yielding 116 firm-years of data over the study period.

As this study relies on secondary data, no respondents were involved. Consequently, the research focus was placed on the selection of companies based on the availability, completeness and comparability of the data.

This study utilises secondary data obtained from audited financial statements and annual reports of mining companies listed on the Indonesia Stock Exchange (IDX) for the period 2021–2024. Data were collected from the IDX's official website (www.idx.co.id) and the official websites of the respective companies. The data collection process involved downloading annual reports, extracting relevant financial information, identifying and coding political connection variables, and calculating the required research variables.

Dependent, independent and moderator variables form the research model. Tax aggressiveness is used as the dependent variable and is proxied by the Effective Tax Rate (ETR), which is calculated by dividing the income tax burden by pre-tax profit (Ramdhani *et al*., 2022). In this study, a higher ETR indicates that a company pays a larger proportion of its revenue as tax and therefore reflects lower tax aggressiveness. Conversely, a lower ETR indicates that a company pays a smaller proportion of its revenue in tax, signifying higher tax aggressiveness. Thus, the interpretation of the regression coefficients must take into account the inverse relationship between the ETR and tax aggressiveness.

The independent variables consist of capital intensity, leverage, institutional ownership and earnings management. Capital intensity is measured by the ratio of fixed assets to total assets. Leverage is proxied by the Debt-to-Assets Ratio (DAR), calculated by dividing total liabilities by total assets. Institutional ownership is measured based on the proportion of shares held by institutional investors relative to total shares in issue. Meanwhile, earnings management is measured using the Modified Jones Model.

The moderator variable is political connections, measured using a dummy variable. A value of 1 is assigned if the firm has political connections, and 0 if it does not. Table 2 presents the operational definitions and measurements of all variables used in this study.

[Table 2. Operational Definitions of Variables]

Panel data regression techniques were applied using EViews software. The analysis began with descriptive statistics to provide an overview of the characteristics and distribution of the research variables. Subsequently, model selection tests were conducted, including the Chow test to compare the Common Effects Model (CEM) and the Fixed Effects Model (FEM), the Hausman test to compare the Fixed Effects Model (FEM) and the Random Effects Model (REM), and the Lagrange Multiplier (LM) test to compare the Common Effects Model (CEM) and the Random Effects Model (REM).

After selecting the most appropriate panel data regression model, classical assumption tests were carried out, including tests for normality, multicollinearity and heteroscedasticity. Hypothesis testing was then conducted using the t-test to examine partial effects, the F-test to assess simultaneous effects, and the coefficient of determination (R^2) to evaluate the model's explanatory power. In addition, Moderated Regression Analysis (MRA) was applied by including interaction terms between the independent variables and political connections to examine the moderating role of political connections in the relationship between the independent variables and tax aggressiveness.

The research model is formulated as follows:

Model 1: Direct Effects

This model tests the direct effects of capital intensity, leverage, institutional ownership and earnings management on tax aggressiveness.

$$TA_i = \alpha + \beta_1 CI_i + \beta_2 LEV_i + \beta_3 INST_i + \beta_4 EM_i + \varepsilon_i$$

Model 2: Moderation Regression Model

This model tests the role of political connections in moderating the relationship between the independent variables and tax aggressiveness.

$$TA_i = \alpha + \beta_1 CI_i + \beta_2 LEV_i + \beta_3 INST_i + \beta_4 EM_i + \beta_5 PC_i + \beta_6 (CI_i \times PC_i) + \beta_7 (LEV_i \times PC_i) + \beta_8 (INST_i \times PC_i) + \beta_9 (EM_i \times PC_i) + \varepsilon_i$$

Notes:
TA = Tax Aggressiveness (proxied by ETR)
CI = Capital Intensity
LEV = Leverage
INST = Institutional Ownership
EM = Earnings Management
PC = Political Connections
α = Constant
β_1–β_9 = Regression coefficients
ε = Error term

RESULTS AND DISCUSSION

Descriptive Statistical Analysis

The final dataset comprises 116 firm-year observations from 29 mining companies listed on the Indonesia Stock Exchange (IDX) between 2021 and 2024. These companies were selected based on their status as continuously listed, the availability of comprehensive financial statement data throughout the observation period, and the use of the rupiah in financial reporting. To provide an overview of the sample's distribution and variance, descriptive characteristics of the data—such as the mean, median, maximum value, minimum value and standard deviation for each variable—are presented below.

[Table 3. Descriptive Statistics]

Based on the descriptive statistics presented in Table 3, the tax aggressiveness (TA) variable has a mean of 0.246065 and a standard deviation of 0.137913, as shown in the descriptive statistical analysis in Table 3. This indicates that the variation in tax aggressiveness amongst mining companies is relatively small, as the standard deviation is smaller than the mean. With a mean of 0.206732 and a standard deviation of 0.159800, the capital intensity (CI) indicator shows a moderate level of variation in fixed asset investment amongst the companies. The leverage (LEV) variable recorded a mean value of 0.349473 with a standard deviation of 0.192815, indicating that the debt structure of mining companies was relatively stable during the observation period.

Furthermore, the average institutional ownership (INS) figure shows a standard deviation of 0.724597 and a mean of 0.173617, indicating that amongst the mining companies in this sample, INS tends to be relatively high and exhibits limited variation. However, the earnings management (EM) variable has a standard deviation of 4.149257 and a mean of -1.043457; the standard deviation is greater than the mean, indicating that the variation in earnings management amongst these companies is quite significant. With regard to political connections (PC), the mean value of 0.171857 with a standard deviation of 0.144533 indicates relatively low variation in the level of political connections amongst these mining companies.

Overall, these findings suggest that earnings management exhibits the highest variation amongst the reported variables, signifying differences in the level of managerial discretion and financial reporting standards amongst mining companies. The same does not apply to tax aggressiveness, capital intensity, leverage, INS and PC, which remained constant over the 2021–2024 period, suggesting that the financial structure and corporate governance of mining companies did not undergo significant changes. These results highlight the diversity of managerial behaviour, particularly in profit management practices and tax-related decision-making within the Indonesian mining industry.

Model Selection

In the Chow test, the decision criteria are as follows: if the p-value of the cross-sectional chi-squared statistic is less than 0.05, the Fixed Effects model is selected; if it is greater than 0.05, the Mixed Effects model is selected.

[Table 4. Chow Model Selection]

Based on the results of the Chow test presented in Table 4, a cross-sectional chi-squared value of 0.0000 was obtained, where 0.0000 < 0.05, according to the statistical test results; therefore, it can be concluded that the Fixed Effects Model, which is the best model compared to the Mixed Effects Model, is the acceptable model.

The Hausman test, in its basic application for decision-making, states that if the p-value of the cross-sectional chi-squared test is < 0.05, then the Fixed-Effects Model is selected; if the p-value is > 0.05, then the Random-Effects Model is selected, as shown in Table 5.

[Table 5. Hausman Model Selection]

Based on the results of the statistical tests carried out, a cross-sectional random probability value of 0.0639 was obtained, where 0.0639 > 0.05; therefore, compared with the Fixed Effects Model, the Random Effects Model is more appropriate. Consequently, the Random Effects Model is more suitable for application than the Fixed Effects Model. To ascertain whether the Random Effects Model is more appropriate than the General Effects Model, a Lagrange Multiplier (LM) test was subsequently carried out, the results of which are presented in Table 6.

[Table 6. Lagrange Multiplier (LM) Model Selection]

The Fixed Effects Model is not as appropriate as the Random Effects Model. Therefore, the use of the Random Effects Model is preferred over the Fixed Effects Model. To confirm whether the Random Effects Model is more appropriate than the General Effects Model, a Lagrange Multiplier (LM) test must be carried out.

Test of Classical Assumptions

Normality Test

[Figure 1. Normality]

In the regression normality test, a p-value of 0.0000 was obtained, as shown in Figure 1. This result is smaller than the 5% significance level (0.05) (0.0000 < 0.05). It can be concluded that the data are not normally distributed if the p-value is smaller than the significance level; conversely, if the p-value is greater than alpha, the data are normally distributed.

According to Sungkono & Wulandari, (2022), the Central Limit Theorem applies when the sample size exceeds 30 observations (n > 30). As this study used 116 observations, the assumption of normality based on the Central Limit Theorem is considered to be met.

Multicollinearity Test

[Table 7. Multicollinearity Test]

Based on the results of the multicollinearity test using the correlation matrix, as shown in Table 7, no correlation coefficients between independent variables exceeding 0.80 were found. The strongest association was found between the leverage (LEV) and political connections (PC) variables, at 0.281023, whilst the weakest correlation was found between the institutional ownership (INS) and political connections (PC) variables, at –0.344223. All correlation values between the independent variables were below the 0.80 threshold; therefore, it can be concluded that the research model does not exhibit multicollinearity and that these independent variables are suitable for use in the regression model.

Heteroscedasticity Test

[Table 8. Heteroscedasticity Test]

Based on Table 8, the heteroscedasticity test was conducted using the Glejser approach, which involves regressing the absolute values of the residuals against the independent variables. The results show that the p-values for Capital Intensity (X1) are 0.5460, Leverage (X2) are 0.0546, Institutional Ownership (X3) are 0.3086, Earnings Management (X4) are 0.4769, and Political Connections (Z) are 0.2486. All these values are greater than 0.05, indicating that there is no heteroscedasticity in the regression model.

Partial Significance Test (t-test)

[Table 9. t-test]

Based on the results of the partial significance test presented in Table 9, this study examines the influence of capital intensity, leverage, institutional ownership, earnings management, and political connections on tax aggressiveness. As tax aggressiveness is proxied by the Effective Tax Rate (ETR), a higher ETR indicates lower tax aggressiveness, whilst a lower ETR indicates higher tax aggressiveness. Therefore, the interpretation of the regression coefficients must take into account the inverse relationship between the ETR and tax aggressiveness.

The Effect of Capital Intensity on Tax Aggressiveness

According to Table 9, capital intensity (CI) has a regression coefficient of 0.003049 with a p-value of 0.9739 (> 0.05). These results indicate that capital intensity has a positive coefficient in relation to the Effective Tax Rate (ETR); however, this relationship is not statistically significant. As the ETR is inversely related to tax aggressiveness, this positive coefficient suggests a tendency towards lower tax aggressiveness. Nevertheless, as the relationship is not statistically significant, there is insufficient empirical evidence to conclude that capital intensity influences tax aggressiveness. Therefore, H2 is not supported.

From an Agency Theory perspective, firms with high investment in fixed assets are more likely to utilise depreciation charges to reduce taxable income. However, the non-significant finding suggests that mining companies do not consistently use depreciation charges as a primary mechanism in tax planning. This indicates that investment in fixed assets is primarily intended to support operational activities and enhance long-term production capacity, rather than to facilitate aggressive tax planning.

The findings of this study are consistent with those of (Hendayana *et al*., 2024) and (Sumiati & Ainniyya, 2021), who reported that capital intensity has no significant effect on tax aggressiveness. However, these findings differ from those of (Purwantoro *et al*., 2024), who found that capital intensity has a positive and significant effect on tax aggressiveness.

The Effect of Leverage on Tax Aggressiveness

Based on Table 9, leverage (LEV) has a regression coefficient of 0.190804 with a p-value of 0.0099 (< 0.05). These results indicate that leverage has a positive and statistically significant effect on the Effective Tax Rate (ETR). As the ETR is inversely related to tax aggressiveness, this positive coefficient suggests that firms with higher leverage tend to exhibit lower levels of tax aggressiveness. Therefore, H3 is not supported.

This finding suggests that the use of debt financing does not necessarily encourage companies to engage in aggressive tax practices. Conversely, companies with higher leverage have derived tax benefits through the tax shield mechanism arising from interest expenses, which are deductible from taxable income under Article 6(1) of Law No. 36 of 2008. Consequently, firms can achieve tax savings without needing to adopt more aggressive tax planning strategies (Sabaruddin *et al*., 2024). Furthermore, from an agency theory perspective, highly leveraged firms are generally subject to stricter oversight by creditors, thereby limiting management's discretion to engage in aggressive tax practices.

This finding is consistent with (Prasetyo & Wulandari, 2021) and (Sari & Ajimat, 2023), who found that leverage does not encourage companies to engage in tax aggressiveness. However, these findings contradict those of (Hendayana *et al*., 2024) and (Khan & Nuryanah, 2023), who reported that leverage increases tax aggressiveness through the utilisation of interest expense deductions to reduce taxable income. Furthermore, this study uses the Effective Tax Rate (ETR) as a proxy for tax aggressiveness, whereby a higher ETR reflects a lower level of tax aggressiveness. Differences in the proxies used to measure tax aggressiveness may contribute to differing interpretations of the relationship between leverage and tax aggressiveness.

The Effect of Institutional Ownership on Tax Aggressiveness

Institutional ownership (INS) has a regression coefficient of −0.227631 with a p-value of 0.0266 (< 0.05). These results indicate that institutional ownership has a negative and statistically significant effect on the Effective Tax Rate (ETR). As the ETR is inversely related to tax aggressiveness, this negative coefficient suggests that firms with higher levels of institutional ownership tend to exhibit higher levels of tax aggressiveness. Therefore, H4 is supported.

From an agency theory perspective, institutional investors possess greater resources, expertise and access to information, enabling them to influence managerial decision-making. Rather than merely acting as a monitoring mechanism to constrain managerial behaviour, institutional investors may encourage managers to adopt tax planning strategies that increase after-tax profits and maximise shareholder value. Consequently, higher institutional ownership may increase firms' incentives to adopt more tax-efficient strategies, which in turn leads to higher levels of tax aggressiveness.

This finding is consistent with (Jiang *et al*., 2020) and (Jewartowski & Kaldonski, 2024), who found that institutional ownership encourages firms to adopt tax efficiency strategies that enhance shareholder value and increase tax aggressiveness. However, these findings contradict those of (Hendrianto, 2020), who argues that stronger institutional oversight reduces tax aggressiveness by limiting management's discretion and preventing firms from adopting aggressive tax practices. These differing findings may be attributed to variations in the research samples, observation periods, and the proxies used to measure tax aggressiveness. This study uses the Effective Tax Rate (ETR) as a proxy for tax aggressiveness, whereby a lower ETR reflects a higher level of tax aggressiveness.

The Effect of Earnings Management on Tax Aggressiveness

The earnings management (EM) variable has a regression coefficient of −0.001278 with a p-value of 0.7578 (> 0.05). This finding suggests that earnings management has a negative but statistically insignificant effect on the Effective Tax Rate (ETR). As the ETR is inversely related to tax aggressiveness, this negative coefficient indicates that higher levels of earnings management tend to increase tax aggressiveness by reducing the Effective Tax Rate (ETR). However, this relationship is not statistically significant. Therefore, Hypothesis H5 is not supported.

According to agency theory, managers have discretion in financial reporting due to information asymmetry between managers and shareholders. Although managers have the flexibility to adjust reported profits, this discretion is not always used to reduce the company's tax liability. Conversely, earnings management may be undertaken to maintain earnings stability, improve financial performance, fulfil contractual obligations, or meet investor expectations. Consequently, financial reporting decisions and tax planning decisions may be driven by different managerial objectives.

Furthermore, mining companies operate in a highly regulated environment, characterised by intensive government oversight and industry-specific tax regulations. Differences between financial accounting standards and tax regulations limit the ability of accrual-based earnings management to directly influence taxable income. Therefore, although the findings suggest that higher levels of earnings management tend to increase tax aggressiveness through a lower ETR, this relationship is not statistically significant. This indicates that earnings management is not a significant determinant of tax aggressiveness in mining companies.

These findings are consistent with (Alfarizi *et al*., 2021) and (Mulyaningsih *et al*., 2023), who found that earnings management does not significantly influence tax aggressiveness. (Alfarizi *et al*., 2021) argue that earnings management is primarily aimed at improving financial reporting, rather than at minimising tax liabilities, whilst (Mulyaningsih *et al*., 2023) state that earnings management is driven by broader organisational objectives and political cost considerations, rather than tax avoidance. However, these findings differ from those of (Marfiana *et al*., 2021), who found that earnings management significantly increases tax aggressiveness because managers simultaneously manipulate accounting profits and tax-related reporting to reduce the firm's tax burden. These findings also differ from those of (Delgado *et al*., 2023), who reported that earnings management significantly increases the Effective Tax Rate (ETR), which indicates lower tax aggressiveness. These differences may be attributed to variations in industry characteristics, the institutional environment, the tax system, corporate governance mechanisms, and the research period across the various studies.

The Effect of Political Connections on Tax Aggressiveness

Political connections (PC) have a regression coefficient of −0.000926 with a p-value of 0.9931 (> 0.05). These results indicate that political connections have a negative but statistically insignificant effect on the Effective Tax Rate (ETR). As the ETR is inversely related to tax aggressiveness, this negative coefficient suggests that firms with political connections tend to exhibit higher tax aggressiveness through a lower ETR. However, this relationship is not statistically significant. Therefore, Hypothesis H1 is not supported.

According to agency theory, political connections may provide managers with greater access to government resources and institutional support. Nevertheless, these advantages do not necessarily encourage firms to engage in aggressive tax planning. Firms with political connections are often subject to stricter public scrutiny and reputational concerns, which may prompt them to remain compliant with tax regulations despite their political ties.

Furthermore, mining firms operate in a highly regulated industry, where taxation, licensing and operational activities are closely monitored by the government. Consequently, political connections alone are insufficient to significantly influence tax aggressiveness, as corporate tax decisions remain subject to regulatory oversight and governance mechanisms.

This finding is consistent with (Rudyanto *et al*., 2023), who reported that political connections have no direct effect on tax aggressiveness, as their influence depends on business ethics and the quality of corporate governance. These findings are also consistent with (Abdullah *et al*., 2022), who suggest that political connections primarily mitigate the negative consequences associated with tax aggression, rather than directly encouraging firms to engage in aggressive tax practices. Therefore, political connections alone cannot explain the variation in tax aggression amongst mining firms.

Simultaneous Significance Test (F-Test)

[Table 10. F-Test]

Based on the results of the F-test presented in Table 10, and taking into account the findings of the F-test, the F-statistic value of 0.000324 < 0.05 indicates that, simultaneously, the variables Capital Intensity, Leverage, Institutional Ownership and Earnings Management, with Political Connections as the moderator variable, have a significant effect on Tax Aggressiveness in mining companies listed on the IDX during the period 2021–2024.

This indicates that the regression model used in this study is appropriate (consistent with the data) and can be used to explain the influence of the independent variables on the dependent variable.

Coefficient of Determination (R^2) Test

[Table 11. R^2 Test]

Based on the coefficient of determination (R^2) results presented in Table 11, the adjusted R-squared value is 0.150154 (15.02 per cent), indicating that the combined effect of Capital Intensity, Leverage, Institutional Ownership, Earnings Management and Political Connections explains 15.02 per cent of Tax Aggressiveness. The remaining 84.98 per cent is explained by other variables not included in the model.

Moderated Regression Analysis (MRA)

[Table 12. Model Test for Moderated Regression Analysis (MRA)]

Based on the results of the moderated regression analysis (MRA) presented in Table 12, the following conclusions can be drawn from the preceding table.

Political Connections Do Not Moderate the Effect of Capital Intensity on Tax Aggressiveness

The interaction coefficient between capital intensity and political connections (CI_PC) has a p-value of 0.6865 (> 0.05), indicating that political connections do not significantly moderate the relationship between capital intensity and tax aggressiveness. Therefore, Hypothesis H6 is not supported.

From an agency theory perspective, firms with high capital intensity are more likely to reduce their taxable income through depreciation charges (M. R. Sari & Indrawan, 2022). However, the findings suggest that political connections do not significantly moderate the relationship between capital intensity and tax aggressiveness. One possible explanation is that fixed assets in mining companies primarily represent long-term operational investments, such as heavy machinery, extraction facilities and production infrastructure, which are acquired to support production efficiency rather than for aggressive tax planning. Although depreciation charges can reduce taxable income, the recognition and measurement of depreciation are governed by accounting standards and tax regulations, thereby limiting management's discretion to utilise depreciation policies solely for tax purposes. Consequently, companies with political connections may not gain additional flexibility in utilising capital-intensive investments as a mechanism to increase tax aggressiveness (Oktavian & Mukhibad, 2022).

Furthermore, the mining industry is subject to relatively strict regulatory oversight due to its strategic importance and significant contribution to government revenue. Consequently, firms with political connections may still be subject to accounting and tax compliance requirements similar to those of firms without such connections, thereby reducing the potential for political connections to influence the tax implications of capital-intensive investments. These findings suggest that industry characteristics and regulatory constraints play a more substantial role than political connections in determining how capital intensity influences corporate tax behaviour.

Empirical evidence examining political connections as a moderating variable in the relationship between capital intensity and tax aggressiveness remains limited, particularly amongst mining companies in Indonesia. Therefore, this study contributes to the literature by presenting evidence that political connections do not always strengthen the relationship between capital intensity and tax aggressiveness in highly regulated industries. These findings suggest that the tax consequences of capital-intensive investments are more likely to be influenced by operational requirements and compliance with applicable accounting and tax regulations than by a firm's political affiliations (Putri & Aryati, 2023).

Political Connections Do Not Moderate the Effect of Leverage on Tax Aggressiveness

The interaction coefficient between leverage and political connections (LEV_PC) has a p-value of 0.5696 (> 0.05), indicating that political connections do not significantly moderate the relationship between leverage and tax aggressiveness. Therefore, Hypothesis H7 is not supported.

Leverage provides tax benefits to firms through the tax shield effect arising from deductible interest expenses. However, the findings suggest that the presence of political connections does not significantly alter the relationship between debt financing and tax aggressiveness. Firms with high leverage generally face stricter scrutiny from creditors, investors and regulators, which encourages management to adopt more cautious financial and tax policies.

Previous studies have produced inconsistent findings regarding the moderating role of political connections in this relationship. (Andrianti *et al*., 2025) and (Amelia *et al*., 2023) found that political connections weaken the effect of leverage on tax aggressiveness, as firms with political connections are more vulnerable to public scrutiny and reputational concerns. Conversely, (Anggraini & Noviari, 2024) documented a reinforcing effect arising from the greater flexibility enjoyed by firms with political connections in implementing tax-saving strategies. The findings of this study indicate that political connections neither strengthen nor weaken the effect of leverage on tax aggressiveness in Indonesian mining firms, suggesting that debt financing decisions are likely driven more by operational funding needs than by political considerations.

Political Connections Moderate the Effect of Institutional Ownership on Tax Aggressiveness

The interaction term between institutional ownership and political connections (INS_PC) has a p-value of 0.0335 (< 0.05), indicating that political connections significantly moderate the relationship between institutional ownership and tax aggressiveness. Therefore, Hypothesis H8 is supported.

From an agency theory perspective, institutional investors possess substantial resources, information and monitoring capabilities that enable them to influence managerial decisions, including corporate tax strategies (Rennath & Trisnawati, 2023). Political connections can reinforce this role by providing firms with better access to government agencies, regulatory information and policy developments (Firmansyah *et al*., 2022). Consequently, institutional investors in firms with political connections are better able to encourage management to implement tax planning strategies, thereby strengthening the influence of institutional ownership on a firm's tax aggressiveness (Mardianto & Juniyanti, 2020).

Empirical studies examining political connections as a moderator variable in the relationship between institutional ownership and tax aggressiveness remain limited, particularly amongst mining companies in Indonesia. Therefore, this study contributes to the existing literature by presenting empirical evidence that political connections strengthen the influence of institutional ownership on tax aggressiveness within a highly regulated industry.

Political Connections Do Not Moderate the Effect of Earnings Management on Tax Aggressiveness

The p-value for the interaction term between earnings management and political connections (EM_PC) was 0.3918 (> 0.05), indicating that political connections do not significantly moderate the relationship between earnings management and tax aggressiveness. Consequently, Hypothesis H9 is not supported.

From an agency theory perspective, managers may engage in earnings management to achieve specific reporting objectives arising from conflicts of interest between managers and shareholders. However, earnings management is primarily aimed at influencing financial reporting outcomes, rather than tax planning decisions. Furthermore, managerial discretion in implementing earnings management is constrained by accounting standards, external audits, and corporate governance mechanisms (Wawolangi, 2016). Consequently, whilst companies with political connections may enjoy certain advantages when dealing with government bodies, these political ties do not necessarily afford managers greater flexibility to combine profit management practices with aggressive tax strategies.

Furthermore, firms with political connections tend to attract greater public attention and regulatory scrutiny, thereby prompting management to exercise greater caution in financial reporting and tax-related decision-making (Lestari *et al.*, 2025). Consequently, political connections do not strengthen the relationship between earnings management and tax aggressiveness, as managers must still be accountable to shareholders and other stakeholders whilst complying with applicable accounting and tax regulations.

Empirical studies examining the moderating role of political connections in the relationship between earnings management and tax aggressiveness remain limited, particularly in developing countries and highly regulated industries. Therefore, the findings of this study contribute to the literature by providing additional empirical evidence that political connections do not always strengthen the relationship between financial reporting discretion and corporate tax behaviour.

CONCLUSION

This study examines the influence of capital intensity, leverage, institutional ownership and earnings management on tax aggressiveness, with political connections as a moderating variable, amongst mining companies listed on the Indonesia Stock Exchange during the period 2021–2024.

The empirical findings show that leverage has a positive and significant effect on the Effective Tax Rate (ETR). As the ETR is inversely related to tax aggressiveness, these results suggest that companies with higher leverage tend to exhibit lower tax aggressiveness. These findings suggest that highly leveraged companies benefit from the tax shield provided by deductible interest expenses, thereby enabling them to achieve tax efficiency through legitimate debt financing rather than aggressive tax planning strategies. Conversely, institutional ownership has a significant negative effect on the ETR. Given the inverse relationship between the ETR and tax aggressiveness, this finding implies that higher institutional ownership is associated with higher tax aggressiveness.

Meanwhile, capital intensity and earnings management do not have a significant effect on tax aggressiveness. Similarly, political connections do not have a significant direct effect on tax aggressiveness. These findings suggest that the investment structure, financial reporting practices, and political connections of mining companies do not directly explain the variation in tax aggressiveness during the observation period.

Regarding moderating effects, political connections do not significantly moderate the relationship between capital intensity, leverage, and earnings management with tax aggressiveness. However, political connections significantly moderate the relationship between institutional ownership and tax aggressiveness by strengthening the influence of institutional ownership on tax aggressiveness. This finding suggests that the presence of political connections enhances the effectiveness of institutional investors in influencing a company's tax decisions, thereby encouraging the adoption of more aggressive tax strategies.

Overall, these findings suggest that tax aggressiveness among Indonesian mining firms is primarily linked to corporate financial structure and governance mechanisms. Specifically, leverage is associated with lower tax aggressiveness, whilst institutional ownership is associated with higher tax aggressiveness. Conversely, capital intensity, earnings management and political connections have limited direct effects on corporate tax aggressiveness.

From a practical perspective, these findings highlight the importance of maintaining an appropriate capital structure and strengthening corporate governance to encourage responsible tax behaviour. From a theoretical perspective, this study contributes to agency theory by demonstrating that political connections do not automatically increase managerial discretion in tax-related decisions. Instead, their influence depends on the corporate governance structure, particularly the role of institutional ownership.

This study has the limitation of a relatively low adjusted R-squared value, indicating that a significant portion of the variation in tax aggressiveness is explained by factors outside the research model. Therefore, further research is recommended to include additional determinants, examine other industrial sectors, or extend the observation period in order to provide a more comprehensive understanding of the factors influencing corporate tax aggressiveness.

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Conflict of Interest Statement: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

LIST OF TABLE

Table 1 */ Sample Selection Criteria*

NO	SAMPLE CRITERIA	NUMBER
1	Mining companies listed on the Indonesia Stock Exchange (IDX) for the consecutive years 2021–2024.	64
2	Mining companies that have consistently published annual reports and audited financial statements for the 2021–2024 period.	19
3	Mining companies that incurred losses during the 2021–2024 period.	16
	Number of companies selected as sample	29
	Reserch year	4
	Total reserch sample data	116

***Table 2** / Operational Definitions of Variables*

No	Variable	Description	Sources
1.	Tax Aggressiveness	Tax aggressiveness describes a company's actions to lower its tax obligations through a range of tax planning strategies, whether legal or illegal, reflecting the extent of its willingness to minimize tax liabilities	(Rudyanto *et al*., 2023)
2.	Capital Intensity	Capital intensity represents the proportion of a firm's fixed assets relative to its total assets, indicating the degree to which the company invests in tangible assets.	(Ved & Sjarief, 2022)
3.	Leverage	Leverage refers to the extent to which a company relies on debt-based financing in its capital structure, reflecting its financing strategy to support operational activities, business expansion, and the optimization of financial performance.	(Ho, 2024)
4.	Institutional Ownership	Institutional ownership refers to a shareholding structure that indicates the proportion of ownership held by institutions or institutional entities such as investment firms, pension funds, and other financial institutions and reflects the degree of concentration of ownership among shareholders with relatively greater resources and access to information.	(Yahaya, 2025)
5.	Earnings Management	Earnings management refers to actions taken by managers to influence the financial reporting process by utilizing specific accounting policies to alter reported earnings, either to increase or decrease them in accordance with management's interests.	(Nguyen *et al*., 2024)
6.	Political Connection	Political connections refer to a situation in which a company has direct or indirect ties to the government or political actors, as evidenced by the presence of controlling shareholders, directors, or commissioners who hold or have held political office or have close ties to government officials.	(Kalbuana *et al*., 2022b)

***Table 3** / Descriptive Statistics*

	TA	CI	LEV	INS	EM	PC
Mean	0.246065	0.206732	0.349473	0.724597	-1.043457	0.171857
Median	0.223750	0.175891	0.306372	0.768000	0.036000	0.162281
Maximum	0.827204	0.746728	0.842216	0.981121	1.862000	0.600000
Minimum	0.000000	7.28E-07	0.040610	0.100001	-28.47500	0.000000
Std. Dev.	0.137913	0.159800	0.192815	0.173617	4.149257	0.144533

***Table 4** / Chow Model Selection*

Effects Test	Statistic	d.f.	Prob.
Cross-section F	5.309654	(28,82)	0.0000
Cross-section Chi-square	119.975352	28	0.0000

***Table 5** / Hausman Model Selection*

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	10.431228	5	0.0639

Table 6 */ Lagrange Multiplier (LM) Model Selection*

	Test Hypothesis		
	Cross-section	**Time**	**Both**
Brousch-Pagan	33.08560	1.971661	35.05726
	(0.0000)	(0.1603)	(0.0000)
Honda	5.752008	-1.404158	3.074394
	(0.0000)	(0.9199)	(0.0011)
King-Wu	5.752008	-1.404158	0.454880
	(0.0000)	(0.9199)	(0.3246)
Standardized Honda	6.710115	-1.213913	-0.430603
	(0.0000)	(0.8876)	(0.6666)
Standardized King-Wu	6.710115	-1.213913	-2.028850
	(0.0000)	(0.88776)	(0.9788)
Gourieroux, *et al*.	--	--	33.08560
	--	--	(0.0000)

Table 7 */ Multicollinearity Test*

	CI	**LEV**	**INS**	**EM**	**PC**
CI	1.000000	-0.106067	0.015169	0.041054	0.176225
LEV	-0.106067	1.000000	-0.067522	0.010430	0.281023
INS	0.015169	-0.067522	1.000000	-0.260779	-0.344223
EM	0.041054	0.010430	-0.260779	1.000000	0.121043
PC	0.176225	0.281023	-0.344223	0.121043	1.000000

***Table 8** / Heteroscedasticity Test*

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.022842	0.013480	1.694543	0.0930
CI	-0.009705	0.016023	-0.605684	0.5460
LEV	0.026338	0.013558	1.942625	0.0546
INS	-0.016073	0.015714	-1.022877	0.3086
EM	0.000442	0.000620	0.713744	0.4769
PC	-0.022609	0.019494	-1.159813	0.2486

***Table 9** / t-test*

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.342520	0.084887	4.035016	0.0001
CI	0.003049	0.092898	0.032822	0.9739
LEV	0.190804	0.072732	2.623393	0.0099
INS	-0.227631	0.101288	-2.247368	0.0266
EM	-0.001278	0.004135	-0.309104	0.7578
PC	-0.000926	0.107154	-0.008637	0.9931

***Table 10** / F-Test*

Weighted Statistics			
R – square	0.187104	**Mean dependent var**	0.127560
Adjusted R – square	0.150154	**S.D. dependent var**	0.105139
S.E. of regression	0.096924	**Sum squared resid**	1.033376
F-statistic	5.063718	**Durbin-Watson stat**	2.187444
Prob(F-statistic)	0.000324		

***Table 11** / R^2 Test*

Weighted Statistics			
R – square	0.187104	**Mean dependent var**	0.127560
Adjusted R – square	0.150154	**S.D. dependent var**	0.105139
S.E. of regression	0.096924	**Sum squared resid**	1.033376
F-statistic	5.063718	**Durbin-Watson stat**	2.187444
Prob(F-statistic)	0.000324		

***Table 12** / Model Test for Moderated Regression Analysis (MRA)*

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.586272	0.142141	4.124588	0.0001
CI	-0.037875	0.118078	-0.320762	0.7490
LEV	0.256528	0.099471	2.578927	0.0113
INS	-0.555329	0.174700	-3.178769	0.0019
EM	0.004635	0.008571	0.540715	0.5898
PC	-0.965528	0.533729	-1.809024	0.0733
CI_PC	0.220527	0.544833	0.404761	0.6865
LEV_PC	-0.284935	0.499515	-0.570423	0.5696
INS_PC	1.342061	0.623183	2.153558	0.0335
EM_PC	-0.056836	0.066100	-0.859842	0.3918

LIST OF FIGURE

Figure 1 */ Normality*