

The Effect of Capital Expenditures (CAPEX), Tax Planning, and ESG Disclosure on Firm Value

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ABSTRACT

This study examines whether capital expenditures (Capex), tax planning, and environmental, social, and governance (ESG) disclosure are associated with firm value among mineral and coal mining companies listed on the Indonesia Stock Exchange during 2019–2025. A quantitative panel-data design was applied to 91 firm-year observations from 13 companies selected through purposive sampling. The findings show that Capex, ETR, and ESG disclosure jointly affect firm value (Prob. F = 0.001445). Individually, Capex has a negative and significant coefficient (−1.124264; $p = 0.0148$), and ETR also has a negative and significant coefficient (−0.764349; $p = 0.0101$), while ESG disclosure is statistically insignificant (−0.111901; $p = 0.5366$). The model explains 16.22% of the variation in transformed firm value ($R^2 = 0.162228$). These results indicate that investment intensity and effective tax burden are relevant to market valuation, whereas the breadth of ESG disclosure alone is not sufficient to explain short-run differences in firm value.

INTRODUCTION

Mineral and coal mining remains strategically important to Indonesia because it supplies energy and industrial inputs, contributes to export earnings, and supports economic activity in producing regions. The sector also carries a distinctive financial profile: projects are capital intensive, development periods are long, exposure to commodity cycles is substantial, and operations generate material environmental and social impacts. These characteristics make market valuation especially sensitive to how firms allocate long-term investment, manage recurring cash outflows such as taxes, and communicate their sustainability practices. The relevance of these issues has increased as Indonesia simultaneously promotes downstream mineral processing and strengthens expectations for responsible mining and sustainable finance (Kementerian ESDM, 2024).

Firm value reflects the market's assessment of a company's current position and future economic prospects. In market-based research, Tobin's Q is frequently used because it compares a firm's market valuation with the book-based resources committed to the business. A value above one is commonly interpreted as the market assigning a premium relative to the accounting base used in the ratio, whereas a value below one indicates a lower market assessment. Prior Indonesian evidence has also employed Tobin's Q to examine the association between corporate disclosure and firm value (Silviana & Krisnawati, 2020). For mining companies, this market assessment may change quickly when investors reassess investment requirements, tax efficiency, commodity conditions, and the credibility of non-financial information.

Capital expenditures represent one of the most visible long-term resource-allocation decisions in a capital-intensive industry. Additional spending on mining equipment, processing facilities, infrastructure, and supporting technology may improve future capacity and efficiency, yet the cash commitment is immediate while the economic return may only appear after several reporting periods. Consequently, the market can interpret a large increase in Capex either as a credible growth signal or as an indication of higher funding needs and project risk. Earlier findings are mixed: Aulya et al. (2022) reported no significant effect of capital expenditure on firm value, whereas Suriawinata et al. (2023) documented a negative direct relationship but also showed that profitability can transmit a more favorable indirect effect. These differences imply that the value relevance of Capex depends on the quality, timing, and expected payoff of investment rather than on expenditure magnitude alone.

Tax planning introduces a second channel through which management can influence cash retention and investors' assessment of efficiency. This study uses the Effective Tax Rate (ETR), calculated as income tax expense relative to profit before tax, to represent the effective tax burden observed in financial statements. Lower ETR values may be associated with more efficient tax management when they arise from lawful incentives, timing choices, and other compliant arrangements. Nevertheless, tax outcomes also convey information about regulatory exposure and governance quality. Evidence therefore remains heterogeneous. Vu and Le (2021) found a negative relationship between tax

planning and firm value, while Abu (2022) reported a more favorable association under appropriate governance conditions. The implication is that investors may evaluate not only the amount of tax saved, but also the sustainability and credibility of the underlying tax strategy.

A third consideration is ESG disclosure. Mining activities interact directly with land, energy, emissions, occupational safety, local communities, and public regulation, making environmental, social, and governance information highly relevant to a broad group of stakeholders. However, the amount of information disclosed does not necessarily equal the quality or economic effectiveness of ESG implementation. Empirical results are accordingly inconsistent. Aydoğmuş et al. (2022) found that stronger ESG performance can be associated with higher firm value, while Christy and Sofie (2023) reported that aggregate ESG disclosure was not significantly related to firm value in an Indonesian setting. Similar variation is visible in research on social-responsibility disclosure, including the insignificant association documented by Silviana and Krisnawati (2020).

The coexistence of these mixed findings creates a relevant research gap for Indonesian mineral and coal mining companies. Capex, tax planning, and ESG disclosure are often examined separately, even though investors receive the three types of information simultaneously. A capital-intensive investment program changes future capacity and financing needs; tax management affects after-tax resources; and ESG disclosure provides information about sustainability, governance, and stakeholder-related risks. Examining them in one panel model therefore offers a more integrated view of the information set available to the market. The 2019–2025 observation window also captures a period in which mining companies faced substantial changes in commodity conditions, downstream investment requirements, tax policy, and sustainability expectations.

Accordingly, this study evaluates the simultaneous and partial effects of Capex, tax planning proxied by ETR, and ESG disclosure on the firm value of mineral and coal mining companies listed on the Indonesia Stock Exchange. The contribution is twofold. First, the study provides updated evidence from a sector in which long-term investment, fiscal management, and sustainability considerations are economically intertwined. Second, the final empirical specification explicitly addresses distributional and variance problems in the initial model through a Box–Cox transformation before re-estimating the panel model. This treatment allows the hypotheses to be evaluated using a specification whose residual characteristics are more appropriate for statistical inference.

THEORETICAL REVIEW

Signalling Theory

Signalling Theory explains how parties with superior information communicate observable cues to reduce information asymmetry. Corporate decisions and disclosures can therefore affect market perceptions when investors regard them as credible indicators of future prospects (Connelly et al., 2011). In the present setting, Capex communicates management's willingness to commit resources to future productive capacity, ETR provides an observable outcome of

tax-management decisions, and ESG disclosure communicates how the company reports its environmental, social, and governance responsibilities. The market response to these signals need not be uniformly positive; it depends on whether investors judge the underlying actions to be economically credible and value creating.

For Capex, the theoretical expectation is conditional. Investment may signal growth opportunities when the project is expected to raise productivity and cash flows, but the same expenditure can signal higher financing requirements, execution risk, or delayed returns when the expected benefits are uncertain. For ETR, an efficient effective tax burden can indicate managerial ability to preserve after-tax resources within regulatory boundaries, whereas unusually aggressive outcomes may create concerns about tax risk. Thus, Signalling Theory is useful not only for predicting a market response but also for explaining why the direction of that response may differ across industries and periods.

Stakeholder Theory

Stakeholder Theory broadens the objective of the firm beyond shareholders by recognizing employees, communities, customers, suppliers, government, and the natural environment as groups whose interests affect organizational continuity and value creation. Contemporary stakeholder research emphasizes that firms create durable value by managing relationships and competing claims rather than treating non-shareholder interests as peripheral (Mahajan et al., 2023). This perspective is particularly relevant to mining because operating continuity depends on regulatory legitimacy, workforce safety, community acceptance, and environmental stewardship.

ESG disclosure is one mechanism through which companies make these responsibilities visible. Greater disclosure can reduce uncertainty and demonstrate attention to stakeholder expectations, but the market may distinguish between extensive reporting and substantive performance. Khaeria et al. (2025) emphasize the role of stakeholder pressures in encouraging ESG transparency while also highlighting the importance of meaningful implementation. This distinction is central to the present study because the ESG measure captures the breadth of reported items rather than independently verifying the real-world impact of each program.

Research Relationships and Hypotheses

The first expected relationship concerns Capex and firm value. When fixed-asset investment supports productive expansion and credible future cash flows, investors may respond favorably; when investment absorbs large resources without visible near-term benefits, valuation may weaken. Prior evidence therefore supports testing the relationship without assuming that the empirical direction must be positive (Aulya et al., 2022; Suriawinata et al., 2023). H2 states that Capex has a significant effect on firm value.

The second relationship concerns tax planning. A lower effective tax burden can preserve internal funds and post-tax earnings, but its value implication depends on compliance, transparency, and perceived tax risk.

Studies have reported both negative and positive associations, suggesting that the market response remains context dependent (Abu, 2022; Vu & Le, 2021). H3 states that tax planning, proxied by ETR, has a significant effect on firm value.

The third relationship concerns ESG disclosure. Stakeholder-oriented disclosure may support reputation, legitimacy, and risk management, yet the response can be delayed or depend on the quality and materiality of individual ESG dimensions. Consequently, aggregate disclosure scores do not always produce a direct market-value effect (Aydoğmuş et al., 2022; Christy & Sofie, 2023). H4 states that ESG disclosure has a significant effect on firm value. Finally, because investors can evaluate financial-investment, tax, and sustainability information jointly, H1 states that Capex, tax planning, and ESG disclosure simultaneously have a significant effect on firm value.

METHODOLOGY

This research adopts a quantitative explanatory design using balanced panel data. The population consists of 28 mineral and coal mining companies listed on the Indonesia Stock Exchange, while purposive sampling was applied to identify firms with the annual reports, audited financial information, sustainability information, and tax-related data required to calculate all research variables consistently over 2019–2025. The selection process produced 13 companies observed for seven years, yielding 91 firm-year observations. Secondary data were collected from published annual reports, financial statements, sustainability reports, and market-price information used in the measurement of Tobin's Q.

Panel regression is appropriate because the dataset combines cross-sectional differences among companies with time-series variation within the same firms. This structure allows the analysis to incorporate unobserved firm-specific variation and to use more information than a single cross-section. The use of panel data is consistent with the combination of cross-section and time dimensions described in Indonesian empirical research, including Kristanti et al. (2024), and with the broader econometric treatment of panel models discussed by Baltagi (2021).

Firm value is the dependent variable and is proxied by Tobin's Q. Capex, ETR, and ESG disclosure are the independent variables. Capex is calculated as the change in fixed assets from the previous year to the current year divided by current total assets. ETR equals total income tax expense divided by profit before tax. ESG disclosure is measured through content analysis: each of 84 GRI-based disclosure items receives a score of one when disclosed and zero otherwise; the total disclosed items are then divided by 84. The Tobin's Q specification follows the market-value approach used by Silviana and Krisnawati (2020).

The analytical sequence begins with descriptive statistics and panel-model selection. The Common Effect Model, Fixed Effect Model, and Random Effect Model are compared through the Chow, Hausman, and Lagrange Multiplier tests. Residual normality, multicollinearity, and heteroskedasticity are then assessed before hypothesis testing. The initial specification did not satisfy residual normality and homoskedasticity. Rather than using the initial estimates

as the basis for conclusions, the dependent variable was transformed with the Box–Cox family of power transformations. The transformation is intended to improve distributional shape and variance stability, not to manufacture statistical significance (Box & Cox, 1964; Atkinson et al., 2021).

The estimated Box–Cox parameter was $\lambda = -0.651876$, so Tobin's Q was transformed using the power form $(Y^\lambda - 1)/\lambda$. Model selection and diagnostic testing were then repeated using the transformed dependent variable. The final specification was a Random Effect Model. Because the dependent variable is transformed, regression coefficients are interpreted on the transformed Tobin's Q scale. Accordingly, the discussion focuses on coefficient direction, statistical significance, and model explanatory power rather than translating coefficients directly into one-unit changes in the original Tobin's Q metric.

Hypotheses are evaluated at a 5% significance level. The F-test assesses the joint effect of all independent variables, whereas t-tests evaluate each coefficient separately. A probability below 0.05 is treated as statistical evidence of an effect, consistent with the decision rule used in related panel-data analysis (Kristanti et al., 2024). The R-squared and adjusted R-squared statistics are reported to indicate how much variation in the transformed dependent variable is explained by the included predictors.

Table 1. Operationalization of Research Variables

Variable	Operational Measure	Scale
Firm Value (Tobin's Q)	(Equity Market Value + Debt) / (Equity Book Value + Debt)	Ratio
Capital Expenditures (Capex)	(Fixed Assets (t) – Fixed Assets (t–1)) / Total Assets (t)	Ratio
Tax Planning (ETR)	Total Income Tax Expense / Profit Before Tax	Ratio
ESG Disclosure	Number of GRI-based items disclosed / 84 items	Ratio

Source: Authors' processed data (2026).

RESULTS

The descriptive statistics show substantial heterogeneity across firms and years. The mean Tobin's Q is 2.172707, indicating that the sample is, on average, valued above the book-based denominator used in the ratio. Nevertheless, the range from 0.643832 to 12.918190 shows that market valuation differs markedly across observations. The standard deviation of 2.248259, slightly above the mean, further confirms wide dispersion in firm value.

Capex has a mean of 0.021746, meaning that the average net increase in fixed assets is approximately 2.17% of total assets under the study's operational definition. Its minimum of –0.061242 does not represent literal negative investment; it indicates that fixed assets in that observation were lower than in the preceding period relative to total assets. ETR averages 0.268157, or 26.82% of profit before tax. Because the observation period spans changes in Indonesia's statutory corporate income-tax rate, ETR is interpreted as an effective burden rather than a direct one-to-one measure of aggressive tax behavior. ESG disclosure averages 0.691523, meaning that the sampled firms report about 69.15% of the 84 disclosure items on average.

Table 2. Descriptive Statistics

Statistic	Tobin's Q	CAPEX	ETR	ESG Disclosure
Mean	2.172707	0.021746	0.268157	0.691523
Maximum	12.918190	0.316471	0.717842	1.000000
Minimum	0.643832	-0.061242	0.044835	0.297619
Std. Deviation	2.248259	0.061366	0.109257	0.195411
Observations	91	91	91	91

Source: Authors' processed data (2026).

Diagnostic testing of the initial model indicated that the residuals were not normally distributed (Jarque-Bera = 643.0856; $p = 0.0000$). The initial heteroskedasticity test also identified a problem because the ESG coefficient in the absolute-residual regression had a probability of 0.0073. Multicollinearity was not a concern: the largest absolute pairwise correlation among Capex, ETR, and ESG disclosure was only 0.133265, well below the 0.80 screening threshold used in the study. These findings motivated the Box-Cox transformation of Tobin's Q.

After estimating λ at -0.651876 and applying the transformation, the panel-model selection procedure was repeated. The Chow test continued to favor the Fixed Effect Model over the Common Effect Model, but the Hausman test produced a probability of 0.6872, supporting the Random Effect Model over the Fixed Effect Model. The Lagrange Multiplier test also favored random effects over the pooled specification, with a Breusch-Pagan cross-section probability of 0.0000. Consequently, the Random Effect Model was retained as the final estimator.

The transformation materially improved the residual diagnostics. The Jarque-Bera statistic fell to 0.651370 with a probability of 0.722033, indicating that residual normality could no longer be rejected at 5%. Pairwise correlations among the independent variables remained low because the transformation affected only the dependent variable. The post-transformation heteroskedasticity test produced probabilities of 0.7360 for Capex, 0.2864 for ETR, and 0.1414 for ESG disclosure; all exceeded 0.05. The final specification therefore satisfied the diagnostic criteria used in this study.

Table 3. Final Model Selection and Diagnostic Summary

Assessment	Key Result	Decision
Chow test	Cross-section F p = 0.0000	FEM over CEM
Hausman test	$\chi^2 = 1.478755$; p = 0.6872	REM over FEM
Lagrange Multiplier	Breusch-Pagan cross-section p = 0.0000	REM over CEM
Residual normality	Jarque-Bera = 0.651370; p = 0.722033	Satisfied
Multicollinearity	Highest correlation = 0.133265	No problem
Heteroskedasticity	CAPEX p=.7360; ETR p=.2864; ESG p=.1414	Not detected

Source: Authors' processed data (2026).

Table 4 reports the final Random Effect Model using Box-Cox-transformed Tobin's Q as the dependent variable. Capex has a coefficient of -1.124264 and a p-value of 0.0148. ETR has a coefficient of -0.764349 and a p-value of 0.0101. Both are statistically significant at 5% and their signs are negative. ESG disclosure has a coefficient of -0.111901 with a p-value of 0.5366, indicating that its partial effect is not statistically distinguishable from zero. The constant is positive and significant.

The model-level results provide a different but complementary perspective. The F-statistic equals 5.615610 and its probability is 0.001445, so the joint null hypothesis that the three explanatory coefficients are simultaneously zero is rejected. R-squared is 0.162228, implying that Capex, ETR, and ESG disclosure together explain approximately 16.22% of the variation in the transformed firm-value measure. Adjusted R-squared is 0.133339. Thus, the model is jointly significant even though its explanatory power is limited and one predictor, ESG disclosure, is individually insignificant.

Table 4. Random Effect Model Estimation after Box-Cox Transformation

Variable	Coefficient	Std. Error	t-Statistic	Probability
Constant	0.671014	0.189987	3.531901	0.0007
CAPEX	-1.124264	0.452036	-2.487111	0.0148
ETR	-0.764349	0.290646	-2.629832	0.0101
ESG Disclosure	-0.111901	0.180353	-0.620458	0.5366

Source: Authors' processed data (2026).

Table 5. Hypothesis Testing Summary

Hypothesis	Statement	Probability	Decision
H1	CAPEX, Tax Planning, and ESG Disclosure jointly affect firm value	0.001445	Accepted
H2	CAPEX affects firm value	0.0148	Accepted (negative)
H3	Tax Planning (ETR) affects firm value	0.0101	Accepted (negative)
H4	ESG Disclosure affects firm value	0.5366	Not accepted

Source: Authors' processed data (2026).

DISCUSSION

Capital Expenditures and Firm Value

The negative and significant Capex coefficient indicates that, during the observation period, increases in fixed-asset investment relative to total assets were associated with lower transformed firm value after other variables were held constant. Because Tobin's Q was transformed, the coefficient magnitude should not be read as a direct 1.124264-unit decrease in original Tobin's Q. The statistically meaningful information is the negative direction and the evidence that the relationship differs from zero at the 5% level.

This result is economically plausible for a capital-intensive mining industry. Major investment projects require cash and financing before they begin to generate production, efficiency gains, or operating cash flows. When capital spending rises faster than the visible return from those projects, investors may assign more weight to execution risk, funding pressure, and the time required to recover the investment. A large Capex program can therefore reduce current market valuation even when management expects it to create value over a longer horizon. The result should not be interpreted as evidence that mining firms should avoid investment; rather, it indicates that the market does not reward expenditure merely because it is large.

From a signalling perspective, the finding demonstrates that a corporate action does not carry a fixed meaning. Capex can signal expansion and confidence, but investors evaluate the credibility of that signal by considering the project's economics, funding structure, completion horizon, and expected contribution to cash flow. If those benefits are uncertain or distant, the same investment decision may be interpreted as a stronger commitment of resources and risk. This interpretation is consistent with Connelly et al. (2011), who emphasize that the value of a signal depends on how receivers interpret its credibility and informational content.

The result is also consistent with Suriawinata et al. (2023), who found that capital expenditure could have a negative direct relationship with firm value while contributing positively through profitability. Their finding suggests an important mechanism: investment creates market value when it is converted into operating performance. By contrast, Aulya et al. (2022) found no significant direct effect,

while Mispiyanti (2020) and Islamiyah and Fidiana (2024) reported more favorable relationships in other corporate settings. Taken together, the evidence reinforces the importance of sector context and investment effectiveness. For management, the implication is to accompany large capital commitments with credible information about economic feasibility, expected returns, funding sources, milestones, and the operational outcomes against which investors can evaluate project quality.

Tax Planning (ETR) and Firm Value

ETR also has a negative and significant coefficient. Since ETR is defined as income tax expense divided by profit before tax, the finding is best interpreted as evidence that a higher effective tax burden is associated with lower transformed firm value. It would be misleading to phrase the result simply as “more tax planning reduces firm value,” because lower ETR values, not higher ones, are generally associated with greater tax efficiency under the proxy used in this study. The empirical result therefore indicates that, all else equal, firms retaining a larger share of pretax earnings after income-tax expense tend to receive a more favorable market valuation.

The result can be explained through the cash-flow and information channels of tax management. Lawful planning that reduces unnecessary tax leakage can preserve internally generated funds for operations, capital projects, debt service, or shareholder distributions. A comparatively efficient ETR may consequently signal managerial competence in controlling a recurring cash outflow. At the same time, the market is unlikely to reward a low tax burden unconditionally. An unusually low ETR without transparent economic or regulatory justification may raise concerns about sustainability, future assessments, penalties, or reputational exposure. The value implication of tax planning therefore depends on both efficiency and credibility.

The negative direction is consistent with Vu and Le (2021), who documented a negative association between tax planning and firm value in Vietnamese non-financial firms, and with Apriani and Martini (2024), who reported a negative relationship involving tax-planning variables in Indonesian mining companies. Other studies have produced different results. Abu (2022), for example, showed that tax planning may support firm value when governance mechanisms are adequate. Such variation is reasonable because ETR is shaped not only by managerial planning but also by statutory rates, incentives, deferred tax effects, the composition of taxable income, and firm-specific fiscal circumstances.

For the 2019–2025 Indonesian observation period, this caution is important because the statutory corporate income-tax rate changed during the sample window. Accordingly, ETR should be treated as an overall indicator of the effective tax burden rather than a pure measure of aggressive tax avoidance. The practical implication is not to minimize ETR at any cost. Management should pursue tax efficiency through legitimate incentives, timing choices, and robust tax governance, while clearly documenting the basis for material differences between effective and statutory tax rates. This approach makes tax efficiency more likely to be interpreted as a credible financial-management signal rather than as an additional source of regulatory risk.

ESG Disclosure and Firm Value

The ESG disclosure coefficient is negative but statistically insignificant. Therefore, the negative sign should not be treated as evidence that wider ESG disclosure destroys firm value. The appropriate conclusion is that the variation in the aggregate disclosure index does not provide sufficient statistical evidence of a partial effect on transformed Tobin's Q after Capex and ETR are controlled. This result is particularly informative because the sample's average ESG disclosure index is already relatively high at approximately 69.15%.

One explanation is the distinction between disclosure breadth and substantive ESG performance. The study assigns equal binary scores to disclosed items, so the index captures how many indicators are reported rather than the quality, materiality, target achievement, or independently verified impact of those disclosures. A company can therefore obtain a high score by reporting many topics even when investors remain uncertain about the economic consequences of the underlying programs. This interpretation is supported by Khaeria et al. (2025), who similarly stress that stakeholder pressure encourages ESG transparency, while meaningful sustainability outcomes require implementation that extends beyond formal reporting. This helps explain why a broad disclosure score may not immediately translate into a valuation premium.

The use of one aggregate ESG index can also conceal differences among environmental, social, and governance dimensions. Investors may consider certain dimensions more relevant to mining-sector risk than others, and positive effects in one pillar can be offset by weak or neutral effects elsewhere. Supporting evidence shows that sustainability dimensions do not contribute uniformly to market-oriented financial performance; environmental performance can display a stronger relationship while social and governance components show more moderate effects (Budiharjo et al., 2026). An aggregate score may therefore dilute dimension-specific value relevance.

From a Stakeholder Theory perspective, the insignificant short-run market response does not imply that ESG is economically unimportant. Mining companies depend on relationships with employees, surrounding communities, regulators, suppliers, and environmental stakeholders. Effective ESG programs can protect social legitimacy, reduce operating disruption, improve safety, and lower environmental or governance risk. Those benefits may emerge over multiple periods rather than in the same year that an indicator is disclosed. Hence, the market may require evidence of sustained outcomes before incorporating the information into firm value.

The result is consistent with Christy and Sofie (2023), who found no significant aggregate ESG-disclosure effect in an Indonesian setting, and it also resonates with the insignificant CSR-disclosure result reported by Silviana and Krisnawati (2020). By contrast, Aydoğmuş et al. (2022) and Wu et al. (2022) documented positive value effects in other settings. The divergence suggests that ESG valuation is contingent on measurement, industry, market maturity, and the credibility of disclosed outcomes. For mining companies, the implication is to move beyond increasing the number of reported items and instead emphasize material targets, measurable results, consistency across years, and evidence that

sustainability initiatives are integrated into operating and capital-allocation decisions.

Simultaneous Effect of Capex, Tax Planning, and ESG Disclosure

Although ESG disclosure is insignificant on its own, the F-test shows that Capex, ETR, and ESG disclosure are jointly significant. This is not contradictory. The F-test asks whether the explanatory variables, considered collectively, add statistically meaningful information to the model; the t-tests ask whether each coefficient can be distinguished from zero after the other variables are controlled. Consequently, a significant model can contain one or more individually insignificant regressors.

The finding supports the view that market valuation is based on a portfolio of signals rather than on a single corporate metric. Capex indicates how aggressively the company is committing resources to future operations, ETR provides information about the effective tax burden and tax-management outcomes, and ESG disclosure describes the breadth of sustainability information available to stakeholders. Investors can interpret these dimensions together when forming expectations about future cash flows, risk, governance, and long-term resilience. In this sense, the significant F-test is consistent with Signalling Theory because multiple financial and non-financial signals can collectively shape market assessment.

Nevertheless, R-squared of 0.162228 shows that the three variables explain only 16.22% of the variation in transformed firm value. The remaining variation is associated with factors outside the specified model. In the mining sector, plausible omitted influences include profitability, leverage, firm size, growth, commodity prices, exchange-rate movements, project risk, and broader macroeconomic conditions. The modest explanatory power therefore limits any claim that Capex, ETR, and ESG disclosure are the dominant determinants of valuation. Instead, they should be viewed as a statistically relevant subset of a wider information environment.

This combined interpretation also clarifies the study's practical message. Capital investment should be judged by the quality of expected returns rather than by expenditure volume, tax efficiency should be balanced with compliance and transparency, and ESG reporting should demonstrate material outcomes rather than disclosure quantity alone. Evaluating the three dimensions jointly can provide management and investors with a more coherent picture than using any single indicator in isolation.

CONCLUSIONS AND RECOMMENDATIONS

This study provides evidence from 91 observations of 13 Indonesian mineral and coal mining companies during 2019–2025. After the initial panel model failed residual normality and homoskedasticity diagnostics, Tobin's Q was transformed using the Box–Cox procedure with $\lambda = -0.651876$. Repeating the model-selection tests identified the Random Effect Model as the appropriate final specification, and the transformed model satisfied the diagnostic criteria applied in the study.

The results lead to four principal conclusions. First, Capex, tax planning proxied by ETR, and ESG disclosure have a significant simultaneous effect on firm

value (Prob. F = 0.001445). Second, Capex has a negative and significant partial effect (coefficient = -1.124264 ; $p = 0.0148$). Third, ETR also has a negative and significant partial effect (coefficient = -0.764349 ; $p = 0.0101$), meaning that a higher effective tax burden is associated with lower transformed firm value. Fourth, ESG disclosure does not have a statistically significant partial effect (coefficient = -0.111901 ; $p = 0.5366$). R-squared of 0.162228 indicates that the model explains 16.22% of the variation in transformed firm value, so most variation remains attributable to other factors.

For company management, the Capex finding should be used to strengthen project discipline, not to reduce investment indiscriminately. Large projects should be supported by transparent feasibility assumptions, expected returns, funding plans, implementation milestones, and evidence of productivity or cash-flow improvements. Tax planning should focus on sustainable efficiency within legal and regulatory boundaries; material ETR movements should be supported by clear disclosure and governance so that lower effective tax burdens are not interpreted as aggressive behavior. ESG strategy should prioritize material, measurable, and verifiable outcomes, with reporting that connects sustainability initiatives to operational risk, stakeholder relationships, and long-term economic performance.

For investors, the findings suggest that Capex, ETR, and ESG disclosure should be interpreted jointly with operating performance and risk indicators. A high Capex ratio is not inherently positive unless the investment is likely to earn an adequate return, while a low ETR deserves evaluation of the underlying tax position and compliance quality. Likewise, a high ESG disclosure score should be assessed together with the quality and materiality of the reported programs. Regulators can support more informative capital-market decisions by encouraging consistent, comparable, and decision-useful sustainability and tax-related disclosures.

FURTHER STUDY

Future research can expand the explanatory model by incorporating profitability, leverage, firm size, growth, commodity-price exposure, and macroeconomic controls. These variables are particularly relevant given the relatively modest R-squared reported in this study. Researchers may also test lagged Capex and lagged ESG effects because the benefits of investment and sustainability initiatives may require several periods before they are reflected in market valuation.

Further studies may separate environmental, social, and governance dimensions rather than relying exclusively on an aggregate disclosure index, use measures that capture ESG quality or performance in addition to disclosure breadth, and compare alternative firm-value proxies. Cross-sector or cross-country designs could also clarify whether the relationships documented here are specific to Indonesian mining or reflect broader patterns in capital-intensive industries.

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