

THE IMPACT OF TAX COMPLIANCE ON FUTURE CERTAINTY: AN ARTIFICIAL INTELLIGENCE MODELING OF OPTIMIZATION INVESTMENT PORTFOLIO

Muljanto Siladjaja¹

¹Pasca Sarjana Magister Manajemen
Universitas Dirgantara Marsekal Suryadarma
Jakarta-Indonesia

*Corresponding Author: muljanto@unsurya.ac.id

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Abstract: Tax compliance is proven as a quality metric, indicating the likelihood of achieving future certainty without the possibility of total loss of investment returns, and it is a new indicator of no tax avoidance. Unambiguously, the dividend policy's signaling effect predicts future firm value: management tends to adopt a high-growth payout policy to take advantage of low-cost capital financing, which is associated with lower internal conflict intensity. The concept of the information usefulness of financial reporting has been tested using a multilevel, multiple-data-panel regression with a sample of 154 Indonesian manufacturing listed companies. This model includes a dummy variable reflecting high or low earnings quality as a guideline for highly prospective investment decisions. This statistical testing shows that investors have a favorable view of high compliance, with tax management designed to be more "prudent". The positive market price movement reflected the view that aggressive tax accruals had negatively affected investors' perceptions, and that adherence to accounting standards and tax compliance serves as a practical benchmark for assessing management's ethical decisions in illustrating real future earnings. In testing the rational decision-making process, the decision tree, Bayes' Theorem, and payoff matrix table provide supporting evidence for game theory, including artificial intelligence-based modeling to estimate firm value precisely, and illustrate the real future earnings as a constructive impact of positive earnings management. This payout policy should be established as a minimum standard to enhance transparency regarding future sustainability and serve as a valid indicator of expected returns.

Keywords: Tax Compliance, Rational decision-making, Future Certainty

Abstrak: Tingkat kepatuhan terhadap peraturan perpajakan membantu para investor untuk menghitung tingkat pengembalian periode mendatang, hal ini berperan sebagai pengukuran baru terhadap pelaporan keuangan yang berkualitas tinggi. Adanya fenomena kebijakan dividen, yang mencerminkan itikad dan kemauan baik manajemen untuk memperkecil tingkat intensitas konflik internal. Konsep terhadap tingkat kemanfaatan informasi kinerja keuangan dilakukan dengan pengujian model regresi data panel bermoderasi, Sampel yang digunakan 154 perusahaan terbuka industri manufacturing Indonesia berjumlah 154 perusahaan, model dilengkapi penggunaan dummy variabel untuk membedakan perusahaan yang berpotensi laporan berkualitas tinggi atau rendah. Pengujian menunjukkan bahwa pelaku pasar modal mempunyai persepsi "positif" terhadap kebijakan manajemen pajak yang "kehati-hatian". Pergerakan harga saham yang positif menunjukkan bahwa persepsi negative terhadap kebijakan Tax Accruals yang bersifat opportunistic. Hal ini terkait dengan adanya konsekuensi terhadap fluktuasi biaya agensi, terhadap pelanggaran semua peraturan legal yang berlaku fenomena "efek kemudian hari sebagai faktor pengganggu untuk menghitung prospek secara akurat. Manajemen mempunyai prioritas untuk memperkecil konflik internal dalam rangka memperoleh pendanaan dengan tingkat resiko yang rendah. Pada pengambilan

Keputusan dan Teorema Bayes digunakan untuk menunjukkan keberadaan Teori Permainan melalui Tabel Matrix Payoff untuk memperoleh utilitas yang maksimal, termasuk permodelan Kecerdasan Buatan terhadap kebijakan manajemen pajak yang “taat”. Secara tidak tersirat, tingkat kepatuhan menunjukkan keyakinan untuk memperoleh kinerja mendatang yang lebih baik, sebagaimana kebijakan dividen dapat ditentukan sebagai sebuah “keharusan” sebagai indikasi manajemen mempunyai pengharapan “positif”, termasuk tingkat pengembalian periode mendatang

Kata Kunci: Kualitas Tax Accruals, Pola Pengambilan Keputusan Rationalitas, Kepastian Masa Mendatang

INTRODUCTION

Tax compliance is a proven indicator of tax exposure and is widely recognized as a quality metric, reflecting management optimism, belief, and faith in achieving sustainability. This component of compliance, as an implicit factor in high financial reporting quality, is where the investor has full awareness of opportunistic behavior and sustains business growth as a sign of future certainty. This current circumstance indicates that accounting information should have high earnings quality, reflecting “real earnings”. Investors need reliable accounting information, and consistent tax treatment is a key indicator of high information quality because it ensures compliance with legal regulations. (Kałdoński & Jewartowski, 2020a). Shin & Ki (2019) found that tax compliance is a highly accurate indicator of efficient contracting, suggesting no turbulence in agency costs and a “real” future firm value, which signals a low chance of market price volatility. (Liu & Lee, 2019), and the well-established survivability of running the going-concern business model (Rezaee & Tuo, 2019). Assumably, low tax accruals are a biased error in tax management, which is a widely open window for capturing abnormal returns; this speculative investment decision led to “taking action profit” in the short term. (Ping, 2016; Savor & Wilson, 2016). Due to the investor’s contribution to the positive market reaction, they were alert to the volatile fluctuations of agency costs in the following period. This circumstance can be reflected in the calculation of taxable income related to the government’s fiscal authority, which had a significant impact on corporate policy. Therefore, tax compliance is a “must” indicator for publishing high-quality accounting information (Ozili, 2016; Alipour et al., 2019; Ason et al., 2021), underlining that no existing opportunistic accruals are at risks of tax investigation.

Dichev et al. (2016) and Harris (2024) found that signaling can influence earnings distortion by disseminating information that indicates the company is on the right track. Opportunity behavior has remained an open question due to a gap in information acquisition when assessing accounting treatment policy. Quality measurement is used to signal low-risks firms with highly prospective prospects, reflecting management’s belief and confidence in high sustainability. Persakis & Iatridi (2017) and L (2019), including the majority probability of efficient contracting (Scott, 2016). In practice, tax management is a clear illustration of detecting high or low tax accruals, where the zero-tolerance limit for opportunistic tax accruals is a fundamental factor in mismatches in the firm’s future value, commonly known as total loss investment return. This gap has no meaningful impact on market price movement; substantially, the investor had no recognized limit of any violation because it created a new obstacle to predicting the actual performance in the future, where it was linked to the investment as a safely secured area (Elayan et al., 2016; Bassiouny et al., 2016).

The dividend policy remains an unfinished issue, where it has been utilized as an “active signaling” mechanism to change investor perceptions, provide an overview of the future strategic plans, and influence the firm’s market value (Chansarn & Chansarn, 2016; Deng et al., 2017; Sinha & Kumar, 2024). Siladjaja & Jasman (2024) found that management can choose a payout policy with high growth as an essential decision, which is aimed at smoothing agency conflicts and enhancing financing flexibility to create incremental market value (Islam et al., 2022). The proof is illustrated by several listed Indonesian manufacturing companies, which had an average dividend payout ratio of 30.674% for the period 2000-2020, while the average company’s sales and retained earnings were less than 25%, as shown in Figure 1 below.

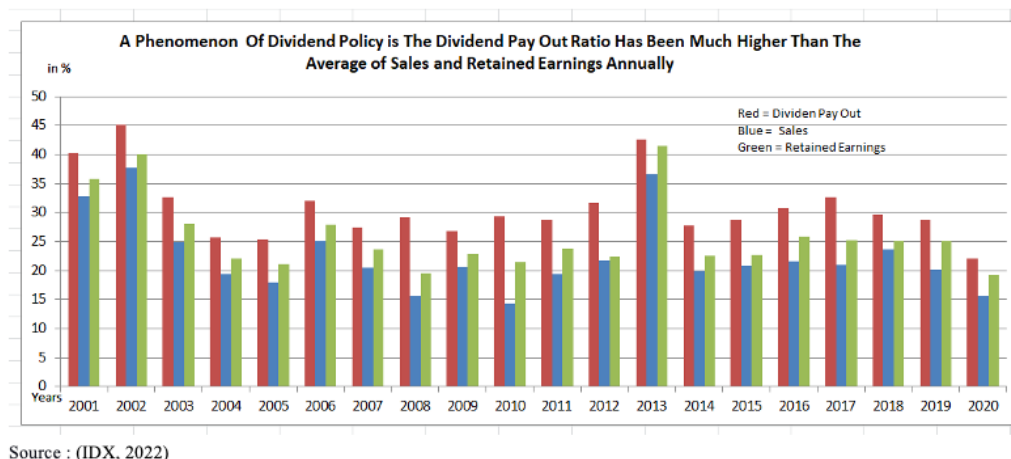


Figure 1. The Implementation Of High-Growth Payout Policy

Figure 1 illustrates that management’s policy in implementing a high growth payout policy encourages all shareholders’ perception of a highly prospective firm, where the low-risks investment returns are needed basically in achieving the better prospect; this signal is a crucial role of the two-way traffic communication model in leveling up the predictable future returns, where the smooth market price movement as future certainty indicator. Testably, the payout policy with high growth is a sign of low risks, suggesting a high probability of achieving better returns. Referring to “good news” as a positive indicator of high shareholder involvement in monitoring and evaluating strategic corporate policy, management’s absolute advantage lies in obtaining funding for expanded operational activities at a low cost of capital. Pathak & Ranaje (202) examined the mutual relationship between dividend policy and quality measurement, showing that the signaling effect is positively associated with confidence in prospects; thus, a compliance policy can serve as a valid indicator of the Peach Lemon Effect (Akerlof, 1970), which relates to separate high- and low-performing firms. Dividend policy is a practical consequence of agency theory, which illustrates management’s positive integrity characteristics, including high transparency as an ethical function, with subsequent effects. Indirectly, this corporate payout policy is used to predict future returns; Sinha & Damle (2025) underline that the policy’s positive impact is to reduce the firm’s risks.

Based on Ryu & Chae (2014), Lee (2016), and Hlel (2024), previous studies showed that management tends to view tax savings as a “high achievement,” which is associated with a

negative perception. The company is on the right track, but it is ambiguous, and better prospects can be achieved; there is no logical reason for any violation of the available regulations. High flexibility in designing tax management is a discretionary obligation, as there is a different perception of tax-book accruals and tax compliance, which can positively influence firm value. (Jacob & Schütt, 2019); the proper tax management feature, no infringement, as the investor has high trust in better prospects (Uzezi, 2022; Delgado et al., 2023; Lee et al., 2024). Categorically, tax management refers to how management implements a “prudent” tax policy, including efforts to minimize the risks of tax investigations. This research demonstrates how investors react to tax management and dividend policy, and that opportunistic tax accruals are a widely open opportunity. In the new literature, tax management is related to expected future returns, with the corporate payout policy as a moderating variable.

The study’s objective is presented in three viewpoints below.

1. To measure tax compliance with discretionary tax accruals quality as part of quality measurement.
2. To test the impact of tax compliance on a firm’s future value, which tax compliance leads to a smooth movement of agency cost
3. To prove the relationship between the tax compliance and the fluctuation of market price as “good news”.

Considering the objective above, some identified formulation problems can be detailed into :

1. How can tax compliance be measured?
2. What is the effect of achieving tax compliance?
3. What is the relationship between tax management and firm value?

Based on the study’s objective and nformulation problem, this study pointed out how the tax compliance and corporate payout policy are related to future returns, the rational decision-making process is to anticipate the possibility of total loss; this study provides the combination between Decision Tree and Bayes Theorem; it covers the estimation of the probability of each party in maximum utility, illustrated by the payoff matrix table of estimating the likelihood of tax investigation. Formerly, the adverse effect of violating tax regulations was turbulence in future agency costs associated with predictable returns. Osegbue et al. (2018) and Helms et al. (2025) note that investors are concerned about high compliance costs. This statistical testing confirms the reciprocal relationship between the two parties; ultimately, a new mathematical model determines the minimum utility. Trippi & Jae, (1996). This artificial intelligence model has calculated the minimum probability of tax investigations using the simplex linear programming model, which is used to estimate future firm value via statistical testing. The rational decision-making process illustrates the interactive relationship between management behavior and investors’ actions as a practical implication of total loss avoidance (Askari et al., 2019). Given regulatory authorities’ efforts to build investor trust, the gap between tax and book value is not the main reason for proposing tax accruals; the main problem is the need to adjust tax regulations by adopting the fair-value measurement concept for calculating taxable income. The impact of different perceptions on taxable income calculations is a fiscal correction, with

an open risks of opportunistic tax accruals. The tax on dividends policy should be eliminated because it incentivizes management to implement this policy. Temporarily, the dividend has served as a mechanism for balancing the power of management and investors, particularly between minority and majority shareholders.

LITERATURE REVIEW

Accruals Quality and Firm Value

Tax management is an implication of the regulatory capture theory (Carrigan & Coglianese, 2016), which concerns government intervention in the setting of corporate tax rates, and the different perceptions between accounting standards and tax are not problematic for investors. In testing the relationship between implication regulation theory and agency theory, this indicator of tax management has developed into discretionary tax accruals, which is treated as a quality measurement. Conclusively, the multiplication by -1 as an item of “quality” is translated into the discretionary tax accruals quality as an instrument of tax compliance. Perotti & Wagenhofer, (2014a). Earnings quality has been an essential indicator of future returns, so investors pay close attention to accruals, which have negative consequences in the following period. (Mehrani et al., 2017). The high earnings quality indicated that there was no legal infringement under all applicable regulations, including tax regulations. To measure compliance with tax regulations (Báez-Díaz & Alam, 2012), the item of discretionary tax accruals was used as an indicator of inconsistency in calculating taxable income, which depends on management objectives. (Ryu & Chae, 2014; Lee, 2016). The flexibility in designing the tax management is commonly known as a discretionary authority in calculating the taxable income (Duy & Tran, 2020; Choudhary et al., 2016); the investors are concerned that opportunistic book-tax accruals, relating to future returns, tax compliance, and a guaranteed way to illustrate real earnings, are a better prospect. Finally, Jacob & Schüt (2019), Delgado et al. (2023), and Hlel (2024) found that investors have no tolerance for any violation, including investing in an unsecured area.

As a proxy for measuring investor perception on the “prudence” tax treatment, this study uses the measurement of the firm’s future value and tax compliance as one component of quality measurement; hence, the first hypothesis has been proposed systematically as follows,
H1a: Tax compliance has a positive contribution to the future market value of equity
H1b: Tax compliance has a positive contribution to the future market value of earnings.

Tax Management, Dividends, and Firm Value

The corporate payout policy serves as a communication channel between management and investors regarding performance reporting in the previous period (Taleb, 2012). Management should minimize the intensity of internal conflict. Chaudhary et al (2016) and Burhop & Selgert (2025) noted that dividends are an essential indicator of the firm’s current performance. Discreetly, a high-growth payout policy is a signal of prospective firms; Kato et al. (2002) proved that this signal of the free cash flow hypothesis is the managerial competence in financing the expansion operational activity, the effect is no internal conflict between majority and minority shareholders; the similar study has been done by Chansarn & Chansarn (2016), underlining dividends has to minimize the chance of the opportunistic motive; Lilian et al. (2012) found that dividends can signal a low level of misleading information, pushing management to

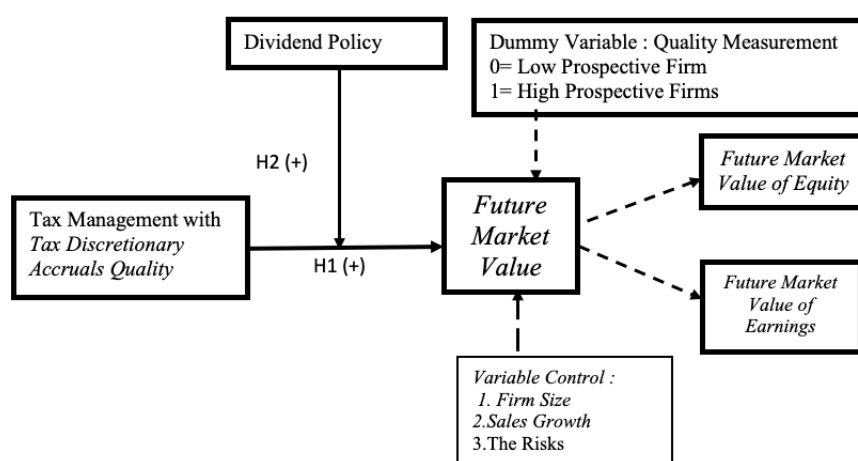
improve obedience and compliance and guarantee that no violation on all available regulation. This comparable condition is emphasized by Deng et al. (2017) and Peng & Li, (2025), who suggest that when management is optimistic about capturing a better prospect, the dividend policy serves as a “good news” signal. To emphasize the dividend policy as a free cash flow problem, Sinha & Kumar, (2024b) found that management reported high financial reporting quality, leading to the implementation of a dividend policy aimed at reducing agency costs. Empirically, the study has examined dividend policy from various perspectives, so this policy remains a debated issue to this day.

The moderating variable is used to test the impact of dividend policy as a potential trigger for management in carrying out the tax compliance and illustrating real earnings as an empirical signal of the predictable future return; then, the second hypothesis has been proposed systematically as follows,

H2a: Dividend has strengthened the positive relationship between tax management and the future market value of equity

H2b: Dividends have strengthened the positive relationship between tax management and the future market value of earnings.

Based on the theoretical illustration above, the conceptual framework is proposed below.



Note: Adopted by the study's objective and purpose

Figure 2. The Conceptual Research Framework

Based on Figure 2, this study employed a moderated multiple regression model with control variables, a measurement approach that results in a small correlation and a low significance level. As a new insight into the tax management literature, this dummy variable is intended to test the performance difference between the following categories in this sample.

1. The low prospective firm is set to 0 when earnings quality is lower than the average across all observations.
2. The high prospective is set to 1 when earnings quality is higher than the average across all observations.

METHOD

Sampling

This causal study, as a quantitative model, uses multiple regression with dummy, control, and moderating variables, and collects all secondary data from 2005 to 2024 from the Indonesia Stock Exchange (www.IDX.co.id) and Yahoo Finance. To minimize the discrepancy between the sample, purposive sampling has been used to determine whether the criteria are met. (Sekaran & Bougie, 2016). The firm has maintained a favorable dividend payout ratio and a regular dividend policy over the last four years (please see Figure 2) and has experienced positive growth. The population of listed manufacturing companies totaled 154, which implemented dividend policies as periodic corporate actions. About 445 observations were made. As a unique aspect of this research, this statistical analysis tool uses the RStudio IDE for all testing.

Variables and Measurements.

The pattern for estimating the predicted market price, this calculation model for understanding the H model further, is detailed as follows,

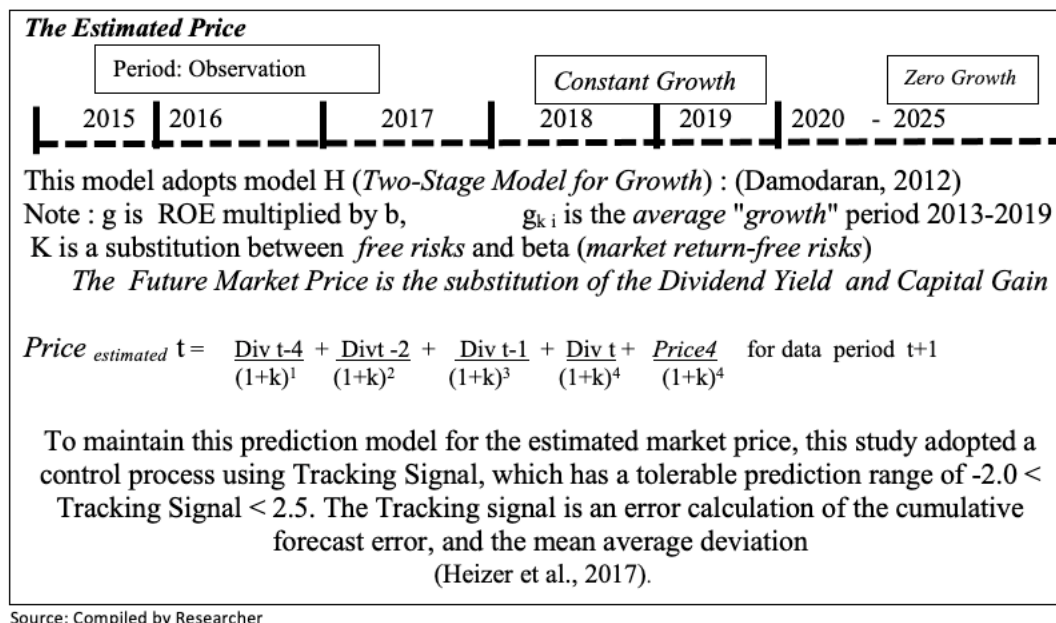


Figure 3. The Pattern of Calculating The Future Market Price

Future Market Value Of Equity

The future market value (FMV) of equity is a proxy for estimating a firm's future performance, where the comparison between the equity price and the market price at period $t+1$ is used to calculate the firm's future value. (Homer et al., 2013). The mathematical formula is arranged as follows:

$$FMV \text{ of Equity} = \text{Equity } t / \text{Market Price } t + 1$$

Future Market Value-Of Earnings

Future market value of earnings is a new measurement for estimating a firm's future performance by comparing earnings and market price in the following period. In measuring

the firm's future value, Wilcox (2007) modified this comparison between earnings and market price, and Abraham et al. (2017) used the adjusted earnings yield in period $t+1$ as a proxy for earnings. As a new insight, this study has modified the market price period $t+1$ as a proxy for market price, referring to the subsequent effect, so the mathematical formulas can be arranged as follows:

$$\text{FMV of Earnings} = \text{Earnings Per Share } t / \text{Market Price } t + 1$$

Tax Management.

The measurement of tax compliance in proper tax management uses discretionary tax accruals quality, which is treated the same as earnings quality. (Perotti & Wagenhofer, 2014). Concerning Báez-Díaz & Alam, (2012), Lee (2016), and Kałdoński & Jewartowski, (2020), the mathematical formulation can be arranged as follows :

First: The estimation of Tax Accruals

$$\text{Total Tax Accruals } t = \text{Taxable Income } t - \text{Cash Flow Operational (CFO)}t$$

Second: The estimation of Discretionary Tax Accruals

$$\text{Total Tax Accruals (TTA)}t = (\text{absolute } \varepsilon t) = \alpha_1 + \lambda_{11} (\text{CFO})t + \lambda_{12} (\text{Tax Liability})t + \lambda_{13} (\text{Sales Growth})t + \lambda_{14} (\text{Adjusted Net Profit})t + \varepsilon t$$

Expectation for every variable : $\lambda_0 > 0$; $\lambda_{11} > 0$; $\lambda_{12} > 0$; $\lambda_{13} > 0$; $\lambda_{14} > 0$

Note :

1. Adjusted Net Profit is the Net Profit after Fiscal Correction on period t .
2. Sales Growth is the sales growth in period t .
3. Tax Liability is the tax liability in period t .
4. CFO is the Cash Flow Operational in period t
5. Tax Accruals Quality (Tax Management) with Discretionary Tax Accruals Quality (DTA Quality) is the εt (absolute error value on period t) $X-1$.

Discretionary Accruals Quality as a Proxy of Earnings Quality

In calculating the indicator of high or low prospective firm performance, earnings quality is measured by the residual error (εt), where discretionary accruals are used as an instrument for violating accounting standards, following Perotti & Wagenhofer, (2014) and Zarowin (2015). As a reference for using the item of "quality". Based on Dopuch et al. (2012) and Yoon et al. (2012), this calculation model has the advantage of higher accuracy in estimating extremely low data points than Kothari et al. (2005). The mathematical formulation can be detailed as follows:

$$\text{Total Accruals } t = \beta_0 + \beta_1 \text{ A/R } t + \beta_2 \text{ A/P } t + \beta_3 \text{ INV } t + \beta_4 \text{ Profit Margin } t + \varepsilon t. \dots(d)$$

Note:

1. TAt is the Total Accruals on period t .
2. A/R t is the Account Receivables on period t .
3. A/P t is the Account Payables on period t .
4. INV t is the Inventory on period t .

5. Profit Margin $t = \text{Net Earnings on period } t$.

The expectation for every variable : $\beta_0 > 0$; $\beta_1 > 0$; $\beta_2 > 0$; $\beta_3 > 0$; $\beta_4 > 0$

A summary of all variables can be provided as follows:

Table 1. Measurement of Operational Variables

Variable	Formula	Scale
Future Market Value of equity and earnings are the dependent variables of Future returns.	$\text{Future Market Price}_t = \frac{\text{Div}_t}{(1+k)^t} + \frac{\text{Div}_{t+1}}{(1+k)^{t+1}} + \dots + \frac{\text{Div}_{t+5}}{(1+k)^{t+5}} + \frac{\text{Price}_{t+5}}{(1+k)^5}$ $\text{Future Market Value Of Equity: Equity } t / \text{Market Price } t+1$ $\text{Future Market Value Of Earnings: Earnings } t / \text{Market Price } t+1$	Ratio
Tax Compliance: as the independent variable = (absolute ϵ_t). X_{-1} as Quality Measurement	$\text{Adjusted Net Profit } j = \text{Commercial Net Income } t + \text{Fiscal Correction } t$ $\text{TTA } t = \text{Adjusted Net Profit } t - \text{Cash Flow Operational } t$ $\text{DTA } j,t = e_t = \text{TTA } t - (\alpha_1 + \lambda_{11} (\text{Cash Flow Operations})_t + \lambda_{12} (\text{Tax Liability})_t + \lambda_{13} (\text{Sales Growth})_t + \lambda_{14} (\text{Adjusted Net Profit})_t)$	Ratio
Discretionary Accruals quality = (absolute $\epsilon_{j,t}$) X_{-1}	$\text{Total Accruals (TAC)} = \text{NI } j,t - \text{CFO } j,t$ $\text{TAC}_t = \beta_0 + \beta_1 \text{A/R } t + \beta_2 \text{A/P } j,t + \beta_3 \text{INV } t + \beta_4 \text{Profit Margin } t + \epsilon_t$	Ratio
Moderated by Dividend Policy	$\text{Dividend } t = \text{Dividend } t / \text{Net Income } t-1$	Ratio
First Control Variable: is Log Natural Asset as a Proxy of Firm Size	$\text{Book Value} = \text{Value Total Assets period } t \text{ (current period)}$ $\text{Size} = \text{Log Natural (Book Value)}$	Ratio
The Second Control Variable is Sales Growth as a Proxy of Business Growth	$\text{Sales Growth } t = \frac{(\text{Sales } t - \text{Sales } t-1)}{\text{Sales } (t-1)}$	Ratio
The Third Control Variable is: Debt To Equity Ratio as a Proxy of Risks	$\text{Debt to Equity Ratio} = \frac{\text{Total Debt}}{\text{Equity}}$	Ratio

Note: Summarized by the author

RESULT

This research provides a summary of the descriptive testing below.

Table 2. The Descriptive Testing

No	Description	N	Minimum	Maximum	Mean	Std.Deviation
1	Future Market Value of Equity	254	0.105	0.510	0.350	0.212
2	Future Market Value of Earnings	254	0.121	0.950	0.375	0.280
3	Discretionary Tax Accruals Quality	254	-1.144	1.356	0.634	0.589
4	Dividend Policy	254	0.030	0.500	0.276	0.136
5	Total Asset (in 000)	254	476,149	1,447,865	859,497	63,617
6	The Growth of Sales (in 000)	254	-3.238	0.720	-0.296	0.036
7	The risks (beta)	254	0.000	1.010	0.458	0.201
8	Discretionary Accruals (Dummy Variables)	254	-0.823	1.841	0.826	0.972
a	Low Earnings Quality	115	-0.823	1.073	1.092	1.184
b	High Earnings Quality	139	-0.064	1.841	0.753	0.841

Note: std Deviation Standard Deviation. Adopted from the R language studio's output files.

Source: Secondary Data

Table 2 shows that some operating variables have standard deviation indicators higher than the mean's indicator, suggesting abnormal data distribution; this is a consequence of using residual errors and of many variations in the implementation of positive or negative earnings management; Alipour et al. (2019) and Leber (2021) Have strengthened this identical testing. Consequently, Martínez et al. (2016) found that this motive is an unhidden behavior due to the dynamic obstacles that hinder its detection, and Bushman et al. (2016) found that accruals in the balance sheet are the predominant behavior, compared to profit and loss reporting. Statistically, this abnormality in data distribution can be anticipated by the panel data regression, which features a cross-sectional and time-series collection model; implicitly, Hair et al. (2009) underlined that this model provides a better fit for testing the unbalanced panel of firms with better or worse financial performance. Based on the descriptive testing of the dummy variable test, the highly prospective firm, which is assumed to have earnings quality, is expected to have a greater effect on future returns than the firm with low earnings quality, which has a higher probability of total loss investment returns. (Ishiguro & Yamada, 2024) Explicitly, high prospective has been associated with a measurable indicator of high future certainty, as supported by Hlel (2024), who found that high tax compliance is critical to future performance.

To minimize the gap between sample observations, the outlier test was performed with a limit of ± 1.5 ; the narrow range is intended to improve validity. (Gujarati, 2011), and the significance level (sig 5%) was set to one-tailed to obtain the best-fitting model and high validity. Overall, the data collection has amounted to 2.044; the observation of the payout policy is approximately 445, with 254 valid observations, separated into high- and low-prospective-firm groups. Statistically, the summary of testing data panel is presented in Table 3, as follows:

Table 3. The Summary Of Data Panel Testing

Testing Data Panel	FMV of Equity	FMV of Earnings
Model	First Model	Second Model
Chow Testing	H0 Accepted Common Effect Model	H0 Rejected Fixed Effect Model
Hausman Testing	Not Done	H0 Rejected Fixed Effect Model
Lagrange Multiplier Testing	H0 Rejected Random Effect Model	Not Done

Source: Secondary Data, Adopted from R language studio's output files

Table 3 shows that the first model uses a random-effects model, and the second uses a fixed-effects model. None of these models has been a common effect model, so this constant coefficient is a meaningless indicator.

Using multiple moderation regression, this paper presents two models that empirically support the hypotheses above. The regression model is described below.

First Model Regression with Future Market Value of Equity.

Future Market Value Of Equity = $-0.005 + 0.060 \text{ DTA} + 0.107 \text{ DIV} - 0.137 (\text{DTA} \times \text{DIV}) + 0.006 \text{ Assets} + 0.027 \text{ Growth} - 0.129 \text{ Risks}$

Second Model: Regression with Future Market Value of Earnings.

$$\text{Future Market Value Of Earnings} = -0.121 + 0.111 \text{ DTA} + 0.336 \text{ DIV} - 0.331 (\text{DTA} * \text{DIV}) + 0.027 \text{ Assets} + 0.021 \text{ Growth} - 0.243 \text{ Risks}$$

The results of multiple regression testing are as follows:

Table 4. Coefficient Values through Innate Accruals Quality Testing.

Independent Variables	FMV of Equity		FMV of Earnings			
Description	Coefficient	H	Sig(*)	Coefficient	H	Sig(*)
Variables	-0.005		0.467	-0.121		0.189
Dependent Variable						
1. Discretionary Tax Accruals Quality (X1)	0.060	Accepted	0.049	0.142	Accepted	0.027
2. Dividend Pay Out (X2)	0.107		0.006	0.336		0.001
3. Moderating (X 1) * (X2)	-0.137	Rejected	0.087	-0.331	Rejected	0.054
Control Variable						
4. Log Total Asset (X3)	0.006		0.014	0.027		0.011
5. Sales Growth (X4)	0.027		0.007	0.021		0.003
6. Risks (X 5)	-0.129		0.001	-0.243	0.003	0.016
Dummy Variable						
High Prospective Firm	0.472		0.032	0.689		0,041
Low Prospective Firm	0.472		0.032	0.689		0,041
a. Analysis of Variance F test	4.123 (> F, 0.271)	4.399 (> F, 0.271)				
b. Significant Level	0.0000 (< 0.05)	0.0000 (< 0.05)				
c. Adjusted R Square	0.109	0.118				
d. R Square	0.236	0.280				
e. Durbin Watson	2.014 (1.845 < X<2.154)	1.926 (1.845 < X<2.154)				

Source: Secondary Data *Sig One Tail = Sig has been divided by 2 .* Adopted from R language studio's output files.

Table 4 indicates that the calculated F value exceeds the F Table value, indicating high significance and suggesting that the independent variables have a partial effect on the dependent variables. Occasionally. There is no chance of a simultaneous relationship; each dependent variable is assumed to influence the independent variable positively. In understanding the regression model, this interpretation can be detailed as follows:

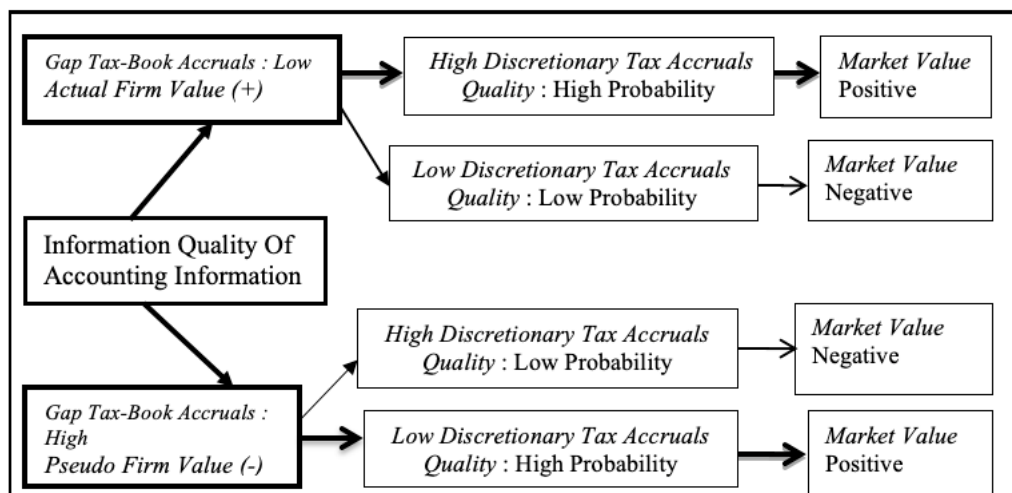
1. Testing tax management on future returns, based on the future market value of equity, has a Sig level of $0.049 < \text{the error value of } 0.05$ and a coefficient of 0.060; therefore, the H1a hypothesis is accepted. The test of tax management on future returns based on future market value of earnings has a Sig level of $0.027 < \text{the error value of } 0.05$ and a coefficient of 0.142; therefore, the H1a hypothesis is accepted. This result indicates that tax management has positively affected future market value, as reflected in equity and earnings.
2. Testing the moderating variable, dividend policy, has not strengthened the relationship between tax management and tax compliance, and the moderation effect is not significant. This identical result is in both models, where the first model has a significance level of 0.087 (greater than the error value of 0.05) and a coefficient of -0.137; therefore, the

hypothesis H2a is rejected. The testing results for dividend policy as a moderating variable: the second model has a sig level of $0.054 > 0.05$ and a coefficient of -0.331 ; the hypothesis H2a is rejected.

3. The dummy variable test indicates that highly prospective companies with high earnings quality make a greater contribution than low-prospective companies. The high prospective firm has a higher positive regression coefficient, including a smaller negative regression coefficient for the risks variable. The prospective firm has a high probability of future certainty and a low likelihood of tax investigation, as illustrated by the going-concern business model; after all, management has prioritized the payout policy over tax management, which is optional. Pragmatically, management tends to moderate the intensity of internal conflict rather than pursue proper tax management, because of low-risks financing.

DISCUSSION

This statistical testing shows that the rational decision-making process is to avoid the risks of total loss in investment, where the high-prospective firm has better performance indicators, and dividends are a crucial instrument for distinguishing between them, as in the peach lemon effect (Akerlof, 1970). Tax compliance, as one of the quality measurements, is a protective factor in distinguishing the better one. Meaningful information about good prospects has a constructive impact on rational behavior in conducting total avoidance investment returns. As with the moderating regression, this dividend did not prompt management to enhance tax management, as management's primary priority is to mitigate internal conflicts in implementing dividends. The management is concerned about the free cash problem, so tax management has been secondary. There is an inconsistency in recording fixed asset value due to the high flexibility in designing tax management policies, which depends on the management's objection. The flexibility and inconsistency in tax management indicate the application of game theory,



Note: Compiled from Researchers

Figure 3. The Decision Tree of Mapping between Tax Management and Market Value.

in which both the investor and management can anticipate each other's actions. Empirically, management can adopt a dynamic perspective in conducting positive and negative earnings management as an ethical decision; the rationality perspective could anticipate this circumstance; hence, the reciprocal relationship between investors and management has been a key driver of the stock market's turbulence.

According to Askari et al. (2019) and Jacob & Schütt (2019), predictive mapping can be systematically organized as shown below.

Based on Figure 3, the predictive model for estimating market value can be formulated using Bayes' Theorem. (Kaplan, 1996; Hutton & Stocken, 2021)

First Predictive Model: Positive Firm Value

$$P(DTAQT | M+) = \frac{P(M+ | DTAQT) \cdot P(M+)}{P(M+ | DTAQT) \cdot P(M+) + P(M+ | DTAQR) \cdot P(DTQAR)}$$

Description :

1. P(M+) is the possibility of a positive market value.
2. P(DTAQT) is the possibility of high tax compliance.
3. P(DTAR) is the possibility of low tax compliance.
4. P(M+|DTAT) is the possibility of a positive market value when implementing the proper tax management
5. P(M+|DTAR) is the possibility of a positive market value when implementing improper tax management.
6. P(DTAT|M+) is the possibility of tax compliance when the market value is positive.

Second Predictive Model: Negative Firm Value.

$$P(DTAQT | M-) = \frac{P(M- | DTAQT) \cdot P(M-)}{P(M- | DTAQT) \cdot P(M-) + P(M- | DTAQR) \cdot P(DTAQR)}$$

Description :

1. P(M-) is the probability of a negative market value.
2. P(DTAQT) is the possibility of high tax compliance.
3. P(DTAQR) is the possibility of improper tax management.
4. P(M-|DTAT) is the possibility of a negative market value when implementing the proper tax management
5. P(M-|DTAR) is the possibility of a negative market value when implementing improper tax management.
6. P(DTAT|M-) is the possibility of high tax compliance when the market value is negative.

Note :

DTAQ is Discretionary Tax Accruals Quality

The Decision Tree Model and Bayes' Theorem can be used to determine how management dynamically adjusts to the unpredictable changes in market value. This mapping of a rational decision-making model aims to determine the minimum probability of total loss in investment returns, assuming the investor is fully aware of a consistent tax management policy. The optimism and belief in the better prospect, indicating the positive market value; tax compliance as an effective corporate policy in reducing the volatility of market price; indeed, the discrepancy perception of tax book accruals is not the reason for management in running the negative earnings management; otherwise, the investor is aware of any infringement on all regulations. Substantially, "prudent" tax management plays a critical role in improving investor perception, as indicated by $P(DTAT|M+)$ and $P(DTAT|M-)$. The implementation of aggressive tax accrual quality, as a communication channel, signals bad news to investors because of the highly unpredictable tax exposure, relating to agency costs. In the gist, tax compliance has been used to flip the sign on "negative investment" to "positive return," illustrating intense pressure on "negative market value" to improve tax management as a mutually communicative process from "bad news" to "good news."

The mapping in Figure 3 serves as proof of the game-theoretic implication, where the pattern of designing proper tax management policy is used to anticipate the probability of a tax investigation. Bayes' Theorem can then calculate the likelihood that investors will make a rational investment decision. (Hutton & Stocken, 2021). As a practical implication, the process of arbitrage in intercepting total loss can be proposed in Table 5 below,

Table 5. The Payoff Matrix Table For Total Loss Avoidance

Description	High Sales Growth	Low Sales Growth
High Earnings Quality	Proper Tax Management Highly Favored Preference	Improper Tax Management Minor Preference
Low Earnings Quality	Improper Tax Management Minor Preferences	Aggressive Tax Accruals High Probability

Source: To be compiled by authors

To illustrate the broader comprehensive analysis, this payoff matrix table supports the modification of the simplex linear programming model as an artificial intelligence simulation-based predictive modeling, where Trippi & Jae, (1996) introduced this model to propose an efficient portfolio with maximum return and minimum cost, given the interactive responsiveness between the investor and management in achieving the maximum utility. At this time, this model can be solved using Excel Solver; therefore, this study shows that rationality perspectives positively affect expected future returns, and this proven operating variable is a potential factor in formulating the mathematical model.

First model: Management in Designing Tax Management

This simulation-based prediction model can be used to estimate the minimum tax investigation required due to its negative impact, and it is based on tax management. The background for using the minimum cost required is to calculate the probability of a tax exposure and agency cost. Depending on the degree of compliance with tax regulations, the mathematical formula

can be arranged systematically as follows. (Rabie et al., 2021; Babu & Jayasudha, 2022).

Minimum Cost Model : $Z = D1 X1 + D2 X2 + D3 X3 + D4 X4$

Note :

1. X1 is a policy that employs the efficient contracting approach, in which high accruals quality is a signal of the prospect.
2. X2 is a policy of opportunistic behavior with a low capacity to reach the expected future return.
3. X3 is a policy of the hybrid model I, where the efficient contracting motive has been more dominant than the opportunistic behavior motive. It is indicated by a wide-open window of opportunity, as tested statistically. Conversely, the investor prioritizes high compliance with applicable legal regulations.
4. X4 is a policy that adopts the hybrid model II, where the composition of efficient contracting has been less dominant than the opportunistic behavior motive. Because of the dynamic business cycle, the company's signaling that it is on the right track stimulates a positive movement in market prices, creating a new handicap in achieving the target performance.
5. D 1,2,3,4 is an indicator of the composite of this minimum Z (the minimum value for tax investigation)

Meanwhile, the constraint function as a target indicator can be built as follows:

1. Tax Management = $\mu1 X1 + \mu2 X2 + \mu3 X3 + \mu4 X4 > \text{Average Discretionary Tax Accruals}$.
2. Agency Cost = $\delta1 X1 + \delta2 X2 + \delta3 X3 + \delta4 X4 > \text{Average Agency Cost}$.
3. Earnings Quality = $\alpha1 X1 + \alpha2 X2 + \alpha3 X3 + \alpha4 X4 > \text{Average Earnings Quality r}$.
4. Sales Growth = $\varsigma1 X1 + \varsigma2 X2 + \varsigma3 X3 + \varsigma4 X4 > \text{Average Sales Growth}$.

Second model: Investor in Proposing the Investment Portfolio

In the other case, this simulative prediction model is used to calculate the maximum-return-on-investment portfolio using quality measurement, firm value, and tax compliance; tax management is controlled based on firm value and market price. There is limited capacity to monitor each firm's performance; the assumption of four portfolios can be arranged systematically.

Maximum Return Model : $Z = D1 X1 + D2 X2 + D3 X3 + D4 X4$

Note :

X1, X2, X3, X4 are notations of investment portfolio in company 1,2,3,4

The mathematical formula in the constraint function as a target indicator can be proposed as follows.

1. Tax Accruals Quality = $\mu1 X1 + \mu2 X2 + \mu3 X3 + \mu4 X4 < \text{Average Discretionary Tax Accruals Quality}$.
2. Cost of Capital = $\delta1 X1 + \delta2 X2 + \delta3 X3 + \delta4 X4 < \text{Average Cost of Capital Earnings Quality} = \alpha1 X1 + \alpha2 X2 + \alpha3 X3 + \alpha4 X4 < \text{Average Earnings Quality}$.
3. Market Firm Value = $\varsigma1 X1 + \varsigma2 X2 + \varsigma3 X3 + \varsigma4 X4 < \text{Average the growth of actual firm value}$.

Note :

1. This simulation model is based on a moderating regression model, where the significance level is the primary key in proposing this predictive model.
2. The constraint indicator illustrated that the expected average number is needed to reach the Z maximum
 - a. Treatment of Tax Management
 - $\mu_1 X_1$ is the proportion of tax management, which can be omitted in the primary function, as X_1 is the calculation for management in proposing the tax compliance
 - $\mu_1 X_1$ is the proportion of tax accruals quality, which can be omitted in the primary function, as X_1 is the calculation for the investor to obtain future certainty
 - b. Treatment of Agency Cost and Cost of Capital
 - $\delta_1 X_1$ is a proportion of agency costs, which can be omitted in the primary function, as X_1 is the calculation for management to grab a better prospect
 - $\delta_1 X_1$ is a proportion of the cost of capital, which can be omitted in the primary function, as X_1 is the calculation for the investor in minimizing the total loss
 - c. Treatment of Earnings Quality
 - $\alpha_1 X_1$ is a proportion of the earnings quality, which can be omitted in the primary function, as X_1 is the calculation for management in proposing the proper tax management
 - $\alpha_1 X_1$ is a proportion of the earnings quality, which can be omitted in the primary function, as X_1 is the calculation for the investor to propose maximum utility.
 - d. Treatment of Sales Growth and Firm Value
 - $\zeta_1 X_1$ is a proportion of Sales Growth, which can be omitted in the primary function, as X_1 is the calculation for management in achieving the low cost of capital financing
 - $\zeta_1 X_1$ is a proportion of market firm value, which can be omitted in the primary function, as X_1 is in the calculation for the investor to grab the positive future market value.

Finally, this comprehensive framework is used to predict how investors respond to tax management and earnings quality as a quality metric, enabling management to signal tax compliance and smooth market price volatility. Overall, the rational decision-making process serves as a theoretical framework for proposing an artificial intelligence model as a simulation-based predictive model for maximizing expected returns with minimum costs. In the gist, the high financial reporting covered the high compliance with no violence. Tax management helps maintain the community's trust by demonstrating high integrity and a commitment to complying with all applicable regulations. There is an open opportunity for tax accruals, as the gap between tax and book accruals has always existed.

CONCLUSION

The summary of this testing can be formulated empirically. Tax compliance has a positive contribution to future returns in both models, including those based on equity and earnings. In proving a reciprocal relationship between investors' perception and management performance,

the current circumstance underlined the positive contribution to accurately calculating the firm's future value. This rationality perspective has been tested in this study, in line with the assumptions of game theory. This decision-tree mapping can be used to estimate the probability of the other party's counteraction, including the calculation of each party's utility. In interpreting the statistical analysis tool, this artificial intelligence model illustrates a pattern that both management and investors can use to calculate each party's maximum utilization by balancing the benefits and losses of composing the policy. The primary role of dividends is to provide a brief guideline for detecting management's capability to achieve better prospects in the following period. The dividend is used as a moderating variable, which does not strengthen the positive impact of tax management on future returns, based on equity and earnings; management's priority is to minimize the intensity of internal conflict. To achieve low-cost capital in the future, management decided to adopt a high-growth payout policy to position the company as a low-risks, highly prospective firm. Tax management has been the second opinion because this dividend policy affects low-risks financing; it reflects a fundamental management strategy of resolving internal conflicts. On the other hand, the functional roles of dividends and tax compliance in stimulating future firm value are mutually exclusive. The high inconsistency in calculating taxable income is a management's opportunistic behavior in response to the prospect of a better outcome, indicating that the different perception of tax book accruals has not been a significant factor and the incapability of maintain the sustainable business model; the fallacy of creating the sustainable business growth and expanded target market has a valid trigger for management in designing the improper tax management.

This research provides recommendations for the regulator to establish a centralized platform for publishing financial reporting, thereby using taxable income as the basis for assessing the firm's performance and adopting fair value measurement in calculating the taxable income. The full assessment can be conducted by the tax authority, which could grant all financial institutions full access to all financial reporting to obtain the "real" information. This transparent corporate policy enables each party to use the fair value measurement concept to obtain accurate accounting information, such as real earnings, while promoting high compliance. There is no dividend tax, so the regulator can impose a mandatory dividend requirement as a regulatory obligation to signal its intent. Strictly, the regulator should mandate the publication of high-quality financial reporting as a guideline for "prudence" accounting treatment, forcing management to implement a high-consistency corporate policy, build trust within the capital market community, and adopt decision-useful accounting based on the rational perspective of total loss avoidance. If a firm is found to have low earnings quality, its management should be restructured in accordance with the regulator's findings. The SmartPLS or Structural Equation Modeling could perform this statistical testing to measure earnings quality in relation to investor action, as the more "representative" approach for future research. All data were truncated from 445 samples; after outlier testing, the final data were 254 samples. This pattern of tax management shows significant variation in design, and many data points were trimmed, requiring a new treatment for future research. For future studies, the Arbitrage Pricing Model is an optional approach to achieving the "fittest" model, including using the Security Market Line to calculate risks. It is a more comprehensive approach to shift the company's risks level so that investors' perceptions of it have more "good" and "easy" indicators.

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