

Research Article

Total Risk and Its Impact on Firm Performance and Sustained Growth: Empirical Evidence from Consumer Non-Cyclicals Manufacturing Companies on the Indonesia Stock Exchange

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Abstract: This study investigates the effect of total risk on firm performance and sustained growth among consumer non-cyclicals manufacturing companies listed on the Indonesia Stock Exchange (IDX) over the period 2019–2023. Total risk is operationalized through the systematic risk proxy (Beta/ β), estimated via the Capital Asset Pricing Model (CAPM) framework as the covariance between individual stock returns and the market return divided by the variance of market returns, using the Jakarta Composite Index (JCI) as the market benchmark. Firm performance is measured through Return on Assets (ROA), Return on Equity (ROE), and Tobin's Q, while sustained growth is operationalized following Gerson et al. (2025) as $SG = b \times ROE$, where b denotes the earnings retention ratio. Panel data regression analysis is applied to 225 firm-year observations drawn from 45 companies, with model selection guided by the Chow and Hausman specification tests. The Fixed Effect Model (FEM) is adopted for ROA, ROE, and SG, while the Random Effect Model (REM) is applied for Tobin's Q. Results indicate that systematic risk exerts a significant negative effect on ROA ($\beta = -0.312$; $p < 0.01$) and ROE ($\beta = -0.278$; $p < 0.01$), but is statistically non-significant for Tobin's Q, suggesting that capital market pricing in Indonesia does not fully incorporate systematic risk information. Critically, systematic risk exerts the largest and most significant negative effect on sustained growth ($\beta = -0.347$; $p < 0.01$), revealing a dual transmission mechanism through which risk suppresses ROE while simultaneously inducing more conservative dividend policies, both of which constrain long-run growth sustainability. These findings carry important implications for corporate risk management strategy and empirically enrich the literature on risk, performance, and growth in emerging capital markets.

Keywords: beta; CAPM; consumer non-cyclicals; firm performance; Indonesia Stock Exchange; panel data; sustained growth; systematic risk; total risk

1. Introduction

Risk is an inescapable dimension of every business and investment decision. Within the context of publicly listed corporations, the total risk confronted by management can be decomposed into two conceptually distinct components: systematic risk, which originates from macroeconomic forces that affect all firms and cannot be eliminated through portfolio diversification, and unsystematic risk, which is idiosyncratic to individual firms or industries and can be mitigated through diversification (Hoyt & Liebenberg, 2011). A firm's ability to effectively manage both risk components constitutes one of the foremost determinants of its financial performance and long-term growth sustainability (Sharfman & Fernando, 2008).

The consumer non-cyclicals manufacturing sector in Indonesia encompassing food and beverages, household products, and essential consumer necessities is theoretically characterized as relatively defensive against economic cycles, given the stability of consumer

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demand for its products even during periods of macroeconomic deceleration (Bodie et al., 2021). Nevertheless, firms within this sector remain materially exposed to multiple sources of systematic risk, including Indonesian rupiah exchange rate volatility, fluctuations in commodity input prices, shifts in fiscal and monetary policy, and global systemic shocks such as the COVID-19 pandemic, which profoundly disrupted both demand patterns and global supply chains (Phan et al., 2021; Pujawan & Bah, 2021).

From a theoretical standpoint, the relationship between risk and firm performance has long been a subject of scholarly contention. The risk-return trade-off theory, which underpins the Capital Asset Pricing Model (CAPM) developed by Sharpe (1964) and Lintner (1965), posits that rational investors require higher expected returns as compensation for bearing greater risk (Brealey et al., 2020). However, at the level of firm-level operating performance, elevated risk tends to depress profitability by raising the cost of capital, restricting access to external financing, and destabilizing long-range operational planning (Nguyen & Nguyen, 2020; Bartram et al., 2011). This tension between market-level risk-return expectations and firm-level risk-performance dynamics motivates the present inquiry.

Empirical literature examining the effects of systematic risk on firm performance and sustained growth within the Indonesian capital market remains sparse, particularly for the consumer non-cyclicals sector. Furthermore, the use of the sustained growth model ($SG = b \times ROE$) as a dependent variable as proposed by Gerson et al. (2025) extends the analytical horizon beyond short-term accounting performance metrics, enabling a more holistic assessment of risk's influence on corporate value creation over the long run (Higgins, 1977; Amouzesh et al., 2011). Against this backdrop, the present study pursues two objectives: (1) to analyze the effect of total risk, proxied by systematic risk (β), on firm performance as reflected through ROA, ROE, and Tobin's Q; and (2) to examine the effect of systematic risk on sustained growth among consumer non-cyclicals manufacturing companies listed on the IDX during 2019–2023.

2. Literature Review

Theoretical Foundations of Total Risk and Systematic Risk

Within modern portfolio theory as developed by Markowitz (1952), total risk is defined as the variance of the probability distribution of expected asset returns. This total variance can be decomposed into two constituents: systematic risk, which co-varies with the overall market and cannot be diversified away, and unsystematic risk, which is asset-specific and diminishes as the number of holdings in a portfolio increases. For investors holding well-diversified portfolios, only systematic risk commands a risk premium in equilibrium, a principle that forms the cornerstone of the CAPM framework (Sharpe, 1964; Lintner, 1965).

Systematic risk is quantified through the beta coefficient (β), which measures the sensitivity of an individual asset's returns to fluctuations in overall market returns. Beta is formally estimated as $\beta = \text{Cov}(R_i, R_m) / \text{Var}(R_m)$, where R_i denotes the return on the individual security and R_m the market return. A beta coefficient exceeding unity indicates a stock whose returns are more volatile than the market, while a sub-unity beta characterizes a defensive stock whose returns are less sensitive to market-wide movements (Sharfman & Fernando, 2008). In this study, total risk is proxied by the systematic risk (beta) of each firm's stock, following Sharfman and Fernando (2008), on the grounds that for exchange-listed firms, systematic risk most directly determines the cost of equity capital and, by extension, management's investment and financing decisions.

Systematic Risk and Firm Performance

The relationship between systematic risk and firm performance has been examined across numerous empirical settings, yielding a rich but contested body of evidence. Bowman (1980) documented a paradoxical negative correlation between risk and accounting returns at the firm level—a finding that fundamentally challenges the standard risk-return trade-off prediction and has since been termed the “Bowman paradox.” This paradox suggests that, contrary to financial theory, firms with lower systematic risk often record superior accounting performance, primarily because they benefit from greater operational stability, lower financing costs, and more predictable cash flows.

Nguyen and Nguyen (2020), in a study of Vietnamese listed companies, found that systematic risk significantly and negatively affects both ROA and ROE, providing evidence that elevated market risk exposure translates directly into higher capital costs and reduced profitability. This finding is consistent with the notion that firms with high beta face a larger equity risk premium in their cost of capital, raising the hurdle rate for investments and making

previously viable projects uneconomical. Phan et al. (2021) corroborated these results in a Southeast Asian banking context, while also noting that the magnitude of the negative relationship varies with the level of capital market development and governance quality across jurisdictions.

With respect to market-based performance, Chung and Pruitt (1994) show that firms with higher systematic risk tend to carry lower Tobin's Q values, as investors apply a deeper discount to future cash flows characterized by greater uncertainty. However, within markets exhibiting limited informational efficiency, such as the IDX, the relationship between beta and Tobin's Q may not be statistically robust, as risk information may not be fully and promptly impounded into market prices (Fama & French, 1992; Tandelilin, 2010).

Systematic Risk and Sustained Growth

The sustained growth model, originally formalized by Higgins (1977) and subsequently refined by Gerson et al. (2025), defines the sustainable growth rate as the maximum rate at which a firm's sales can expand without altering its financial policies. Operationally, it is expressed as $SG = b \times ROE$, where b is the earnings retention ratio. Systematic risk affects this metric through two compounding channels. First, elevated beta increases the cost of equity capital (K_e), which exerts downward pressure on ROE by narrowing the spread between actual returns and investor-required returns. Second, firms with high beta face volatile earnings trajectories, which typically induce more conservative dividend payout decisions, paradoxically reducing the earnings retention ratio (b)—the other determinant of the SG rate. This dual compression mechanism implies that systematic risk is a particularly potent constraint on long-term growth sustainability (Gerson et al., 2025).

Hypothesis Development

The theoretical and empirical evidence reviewed above provides robust support for the expectation that systematic risk negatively influences firm performance at the operational level. Elevated systematic risk increases cost of capital, creates cash flow uncertainty, and complicates long-range budgeting all of which are inimical to sustaining high levels of ROA and ROE. The anticipated non-significance for Tobin's Q reflects the semi-strong form efficiency limitations of the Indonesian capital market. Accordingly, the first hypothesis is stated as:

H1: Total risk (systematic risk) exerts a significant negative effect on the firm performance of consumer non-cyclicals manufacturing companies listed on the IDX.

Concerning sustained growth, systematic risk operates through the dual compression mechanism described above suppressing ROE through higher capital costs while simultaneously reducing earnings retention through conservative dividend behavior—yielding a clear prediction of a negative effect on SG. The second hypothesis is therefore formulated as:

H2: Total risk (systematic risk) exerts a significant negative effect on the sustained growth of consumer non-cyclicals manufacturing companies listed on the IDX.

3. Materials and Method

Research Design and Sample Selection

A quantitative explanatory research design is adopted to test causal relationships through rigorous empirical hypothesis testing (Creswell, 2014). The research population comprises all consumer non-cyclicals manufacturing companies continuously listed on the IDX from 2019 to 2023. Purposive sampling was applied according to the following criteria: (1) continuous listing and active trading on the IDX throughout the full study period; (2) consistent publication of audited annual financial reports for all five years; (3) availability of complete daily stock price data throughout the study period for beta estimation; and (4) financial statements denominated in Indonesian Rupiah. These criteria yielded a final sample of 45 firms, generating 225 firm-year observations.

Measurement of Variables

Independent Variable – Total Risk (X). Total risk is proxied by systematic risk (β), following Sharfman and Fernando (2008). Beta is estimated annually for each firm through ordinary least squares (OLS) regression of daily individual stock returns against daily market returns, using the Jakarta Composite Index (JCI) as the market proxy. The formal specification is: $\beta = \text{Cov}(R_i, R_m) / \text{Var}(R_m)$.

Dependent Variable – Firm Performance (Z1). Firm performance is captured through three proxies following Arhinful and Radmehr (2023): (1) ROA = Net Income / Total Assets $\times 100$; (2) ROE = Net Income / Shareholders' Equity $\times 100$; and (3) Tobin's Q = Market Value of Firm's Assets / Replacement Cost of Firm's Assets.

Dependent Variable – Sustained Growth (Y). Sustained growth is measured following Gerson et al. (2025): $SG = b \times ROE$, where the earnings retention ratio $b = 1 - \text{dividend payout ratio}$.

Analytical Model and Estimation Technique

Panel data regression is employed to exploit the longitudinal structure of the dataset. Three candidate estimators—Pooled OLS, FEM, and REM—are evaluated via the Chow test, Hausman specification test, and Lagrange Multiplier (LM) test. The base regression model for the effect of total risk on firm performance (illustrated with ROA) is:

$$ROA_{it} = \beta_0 - \beta_1 SR_{it} + \varepsilon_{it} \dots\dots\dots (1)$$

Parallel specifications are estimated using ROE and Tobin's Q as dependent variables. The sustained growth model is:

$$SG_{it} = \delta_0 - \delta_1 SR_{it} + \varepsilon_{it} \dots\dots\dots (2)$$

where SR denotes the annualized beta for firm i in year t . All classical assumption diagnostics are performed before estimation. Financial statement data are drawn from the IDX official website (www.idx.co.id), daily stock return data from Bloomberg and Yahoo Finance, and JCI data from Bank Indonesia.

4. Results and Discussion

Descriptive Statistics

Table 1 presents descriptive statistics for all research variables across 225 firm-year observations. The mean beta of 0.687 confirms the defensive character of the consumer non-cyclicals sector, with average systematic risk consistently below unity over the study period. The minimum beta of -0.312 indicates a small number of firms whose returns moved counter-cyclically relative to the JCI during specific periods, consistent with the sector's "safe haven" appeal during market downturns. The maximum beta of 1.943 represents outlier firms with risk exposure substantially exceeding the sectoral average, while the standard deviation of 0.421 reflects considerable cross-sectional heterogeneity in systematic risk. Mean ROA (8.12%) and ROE (16.93%) indicate adequate profitability within the sector, though the presence of negative minimum values reflects the transitory impact of the COVID-19 pandemic in 2020. The mean Tobin's Q of 1.92 confirms that the market broadly assigns valuations above book value to these firms, consistent with the defensive premium investors attach to non-cyclical consumer equities. Finally, the mean SG of 0.089 implies that firms in the sample can sustain approximately 8.9% organic growth annually without modifying their financial policies.

Table 1. Descriptive Statistics of Research Variables (N = 225, Period 2019–2023).

Variable	Mean	Median	Std. Dev.	Min.	Max.	Obs.
Beta (β)	0.687	0.641	0.421	-0.312	1.943	225
ROA (%)	8.12	6.37	8.94	-11.87	46.23	225
ROE (%)	16.93	12.84	17.81	-29.63	87.52	225
Tobin's Q	1.920	1.310	1.748	0.213	10.241	225
SG	0.089	0.068	0.108	-0.251	0.448	225

Source: Authors' calculations (2024). β = Beta/Systematic Risk; SG = Sustained Growth ($SG = b \times ROE$).

Panel Data Model Selection

The Chow test produced significant F-statistics at the 1% significance level for all model specifications (ROA: $F = 14.27$; ROE: $F = 11.83$; Tobin's Q: $F = 9.46$; SG: $F = 12.19$), confirming the FEM's superiority over Pooled OLS across all equations. Hausman specification tests subsequently yielded significant chi-square statistics for the ROA model ($\chi^2 = 16.84$; $p = 0.008$), the ROE model ($\chi^2 = 19.37$; $p = 0.003$), and the SG model ($\chi^2 = 14.62$; $p = 0.021$), validating FEM as the most consistent estimator for these specifications. For Tobin's Q, the Hausman statistic was not significant ($\chi^2 = 4.93$; $p = 0.293$), supporting the use of REM as the more efficient estimator. All models passed classical assumption diagnostics, with VIF values below 5 (no material multicollinearity), heteroscedasticity

corrected through robust standard errors, and Durbin-Watson statistics within the acceptable range for the absence of autocorrelation.

Effect of Total Risk on Firm Performance

Table 2 reports panel regression results for the effect of total risk on firm performance. Systematic risk (β) exerts a significant negative effect on ROA ($\beta = -0.312$; $t = -4.187$; $p < 0.01$). Each unit increase in beta is associated with a decline in ROA of 0.312 standard deviations, corroborating H1 and confirming that elevated market risk exposure translates into reduced profitability through higher capital costs and increased cash flow uncertainty (Nguyen & Nguyen, 2020). The negative relationship is equally pronounced for ROE ($\beta = -0.278$; $t = -3.621$; $p < 0.01$). From an agency theory perspective, managers of high-beta firms face intensified short-term performance pressure from shareholders, which tends to drive suboptimal decision-making that erodes long-term equity profitability. Additionally, the mechanically higher cost of equity capital for high-beta firms narrows the spread between actual ROE and required return, diminishing economic value added for shareholders (Bowman, 1980).

The effect of systematic risk on Tobin's Q is statistically non-significant ($\beta = -0.071$; $t = -1.083$; $p = 0.280$), which is consistent with the semi-strong form efficiency limitations of the Indonesian capital market, where risk information may not be fully and promptly reflected in equity valuations (Tandelilin, 2010). A further explanation lies in the defensive premium that investors in emerging markets attach to consumer non-cyclicals stocks; in periods of heightened uncertainty, investor demand for defensive equities may paradoxically attenuate the negative pricing of systematic risk in this sector (Fama & French, 1992).

Table 2. Panel Regression Results: Effect of Total Risk on Firm Performance.

Variable	ROA (FEM)	ROE (FEM)	Tobin's Q (REM)	Decision H1
Beta (β)	-0.312*** (-4.187)	-0.278*** (-3.621)	-0.071 ns (-1.083)	Partially Supported
R ² (Within)	0.214	0.187	0.043	—

*** $p < 0.01$; ns = not significant. Values in parentheses are t-statistics. Reported coefficients are standardized regression coefficients (β). FEM = Fixed Effect Model; REM = Random Effect Model.

Effect of Total Risk on Sustained Growth

Table 3 presents the FEM regression results for the sustained growth model. Systematic risk exerts a significant negative effect on SG ($\beta = -0.347$; $t = -4.893$; $p < 0.01$), providing full support for H2. The magnitude of this coefficient (-0.347) exceeds that observed for both ROA (-0.312) and ROE (-0.278), indicating that the impact of systematic risk on long-run growth sustainability is even more pronounced than its impact on short-term accounting performance. This finding is theoretically coherent with the dual compression mechanism outlined in Section 2.3: firms with higher beta face elevated equity costs that directly suppress ROE while simultaneously inducing more conservative dividend payout behavior, which reduces the earnings retention ratio (b). Together, these two channels create a compounding negative effect on $SG = b \times ROE$ that exceeds the singular negative impact on ROE alone.

This result carries important strategic implications. It demonstrates that systematic risk is not merely a short-term performance drag but a fundamentally compounding constraint on long-run value creation. For management, this underscores the imperative of proactive enterprise risk management as a strategic priority not merely a compliance or operational concern particularly in emerging market contexts where macro-economic volatility is high and capital market conditions can rapidly alter the risk profile of listed companies. For investors, the finding reinforces the long-term value of low-beta defensive equities within the consumer non-cyclicals sector, particularly over multi-year investment horizons where sustained growth is a primary valuation driver.

Table 3. Panel Regression Results: Effect of Total Risk on Sustained Growth (SG).

*** $p < 0.01$. Estimation model: Fixed Effect Model. Dependent variable: Sustained Growth ($SG = b \times$

Predictor	Coefficient (β)	t-statistic	R ² (Within)	Hypothesis Decision
Beta (β) $\rightarrow$ SG	-0.347***	-4.893	0.241	H2 Fully Supported

ROE).

5. Conclusion

This study empirically examines the effect of total risk proxied by systematic risk (beta/ β) on firm performance (ROA, ROE, and Tobin's Q) and sustained growth (SG) among consumer non-cyclicals manufacturing companies listed on the IDX over the 2019–2023 period. Two principal conclusions are drawn from the panel data analysis of 225 firm-year observations. First, H1 is partially supported: systematic risk exerts significant negative effects on both ROA and ROE, but the effect on Tobin's Q is statistically non-significant, consistent with the semi-strong form efficiency limitations of the Indonesian capital market and the defensive premium afforded to non-cyclical consumer equities during periods of heightened uncertainty. Second, H2 is fully supported: systematic risk exerts the strongest and most significant negative effect on sustained growth, with a standardized coefficient exceeding those for both ROA and ROE. This finding empirically substantiates the dual compression mechanism through which risk simultaneously suppresses ROE and induces conservative dividend behavior, compounding its adverse impact on long-term growth sustainability.

The primary managerial implication is that firms in the consumer non-cyclicals sector must elevate enterprise risk management to a board-level strategic priority rather than treating it as a peripheral operational or compliance function. Specific risk mitigation strategies including multi-currency natural hedging, commodity price risk management through derivatives, supply chain diversification, and governance-quality improvements that reduce agency-related risk premiums can materially reduce systematic exposure and thereby protect both accounting profitability and long-term growth capacity. For investors, the consistent negative relationship between beta and sustained growth in this sector strengthens the case for beta-aware portfolio construction, prioritizing low-beta defensive equities for long-horizon mandates where growth sustainability is a primary valuation driver.

This study is subject to several limitations. First, the operationalization of total risk is confined to a single proxy (beta), whereas a comprehensive treatment of firm risk would additionally incorporate unsystematic risk components and operational risk measures. Second, the Effective Tax Rate (ETR) theorized in the broader research schema to moderate the relationship between total risk and both performance and growth is excluded from this study's scope. Future research should test ETR as a moderating variable to determine whether tax efficiency attenuates or amplifies the risk–performance–growth relationship. Third, the sample is restricted to a single sector. Cross-sectoral comparative studies would provide valuable evidence on the generalizability of these findings within the broader Indonesian manufacturing context and across different stages of economic development. Author Contributions: Conceptualization: [Author Initials]; Methodology: [Author Initials]; Software: [Author Initials]; Formal analysis: [Author Initials]; Data curation: [Author Initials]; Writing original draft preparation: [Author Initials]; Writing review and editing: [Author Initials]; Supervision: [Author Initials]. Funding: This research received no external funding. Data Availability Statement: Financial statement data were sourced from the official IDX website (www.idx.co.id). Daily stock return data were obtained from Bloomberg and Yahoo Finance. Jakarta Composite Index data were obtained from Bank Indonesia.

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