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Research Article

The Duality of Strategy: A Longitudinal Financial Ratio Analysis of Indonesia's Tobacco Leaders

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This study investigates the strategic duality between cost leadership and differentiation through a longitudinal financial analysis of Indonesia's two dominant tobacco firms, PT Gudang Garam Tbk (GGRM) and PT HM Sampoerna Tbk (HMSP), over the period 1993–2023. The research makes three novel theoretical contributions to the strategic finance literature. First, it demonstrates that intangible asset-based differentiation strategies (HM Sampoerna) generate fundamentally different time-series properties—specifically, non-stationary profitability with stochastic trends—compared to the stationary, mean-reverting profitability of physical asset-based cost leadership strategies (Gudang Garam). This finding challenges conventional assumptions in the accounting literature that profitability is inherently mean-reverting and has implications for earnings persistence, valuation models, and cost of capital estimations. Second, using panel regression with firm fixed effects and instrumental variable estimation (exploiting the 2005 Philip Morris International acquisition as an exogenous shock), we show that strategic orientation causally explains approximately 68% of the variation in Return on Assets (ROA)—a magnitude that substantially exceeds industry-year effects documented in prior research. Third, structural break analysis (Chow tests and Bai-Perron multiple breakpoint procedures) reveals that asset-intensive strategies exhibit greater vulnerability to external shocks (financial crises, tax reforms), while brand-focused strategies demonstrate superior resilience, with implications for understanding how strategic resource types moderate the impact of regulatory and macroeconomic volatility. The persistent, non-converging nature of these trends—robust to error correction modeling and cointegration tests—underscores that these are not transient performance gaps but reflections of deeply embedded, path-dependent corporate philosophies with distinct implications for earnings persistence, financial fragility, and policy exposure. The findings extend resource-based theory by documenting how different resource types (tangible vs. intangible) generate systematically different financial dynamics, with implications for valuation, risk assessment, and regulatory design in emerging markets.

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1. Introduction

1.1. The Duality of Strategy: Conceptual Foundations

The concept of strategic duality—the coexistence of fundamentally different yet viable strategic approaches within a single industry—represents a cornerstone of strategic management research. At its core, the duality of strategy encompasses several theoretical dichotomies: cost leadership versus differentiation[1], where firms compete either through operational efficiency and scale or through unique value creation and premium positioning; exploitation versus exploration[2], where organizations balance refining existing capabilities against pursuing new opportunities; and regulatory adaptation versus market expansion, where firms navigate institutional constraints through compliance or strategic innovation. In the context of Indonesia's tobacco industry, this duality manifests most vividly in the contrasting strategic orientations of its two dominant players: Gudang Garam's vertical integration (cost leadership through tangible asset intensity) and HM Sampoerna's brand-focused differentiation (value creation through intangible assets), offering a natural laboratory for examining how these strategic archetypes produce distinct and persistent financial signatures over extended periods.

Indonesia's tobacco industry represents an economic powerhouse of singular importance, distinguished by both its massive scale and deep cultural embeddedness. As the world's second-largest tobacco market and the dominant producer of *kretek*—clove-infused cigarettes constituting over 90% of domestic consumption—this sector forms a critical pillar of the national economy[3]. The industry contributes approximately 10% of national tax revenues while directly and indirectly employing an estimated 6 million Indonesians across a value chain stretching from smallholder farms to sophisticated manufacturing[4][5]. This economic significance is amplified by the industry's resilience to economic cycles, with tobacco consumption demonstrating remarkable inelasticity even during economic contractions[6].

1.2. Theoretical Gap and Novel Contribution

Despite extensive scholarly attention to corporate strategy and financial performance, significant theoretical gaps persist that this study addresses. First, while Porter's generic strategies and the Resource-Based View (RBV) have been extensively theorized, the time-series properties of profitability under different strategic regimes remain unexplored. The accounting literature has long assumed that profitability is mean-reverting[7][8], but this assumption may not hold for firms with different strategic resource bases. Specifically, we theorize and test whether intangible asset-based differentiation strategies generate non-stationary profitability—with stochastic trends reflecting cumulative brand equity effects—while physical asset-based cost leadership strategies produce stationary, mean-reverting profitability—consistent with the bounded returns to physical capacity expansions. This distinction has profound implications for earnings persistence, valuation models, and the cost of capital, yet has not been systematically examined in prior literature.

Second, the causal relationship between strategy and financial performance remains undertheorized due to pervasive endogeneity concerns. Do strong financial positions enable strategic choices, or do strategic choices cause performance differences? Prior cross-sectional studies cannot disentangle these effects. This study exploits the 2005 acquisition of HM Sampoerna by Philip Morris International as an exogenous shock to strategic orientation, enabling instrumental variable estimation that moves beyond descriptive association toward causal inference.

Third, the differential impact of external shocks (financial crises, tax reforms) across strategic archetypes has not been systematically modeled. Do asset-intensive strategies exhibit greater vulnerability to macroeconomic volatility? Do brand-focused strategies demonstrate superior resilience to policy interventions? These questions have important

implications for understanding how strategic resource types moderate the effects of regulatory and environmental turbulence.

The Indonesian tobacco sector provides unique theoretical insights because: (1) it operates within a volatile regulatory environment with frequent excise tax reforms (2007, 2014, 2017, 2020), allowing examination of policy vulnerability; (2) the 2005 PMI acquisition introduced an exogenous shock to strategic orientation, enabling causal identification; (3) the industry's duopolistic structure controls for many confounding variables that typically complicate cross-firm comparisons in emerging markets; and (4) the 31-year panel (1993–2023) provides sufficient time-series length for rigorous stationarity testing, cointegration analysis, and structural break detection.

1.3. Strategic Divergence in Indonesia's Tobacco Duopoly

Within this strategically vital industry, a compelling duopoly has crystallized around two corporate titans: PT Gudang Garam Tbk (GGRM) and PT HM Sampoerna Tbk (HMSP). Together, these firms command approximately 70% of the lucrative kretek market, creating a concentrated competitive arena that offers a near-perfect "natural experiment" for examining how divergent strategic paths manifest in long-term financial performance[9]. Their market dominance extends beyond mere market share—these firms have shaped consumer preferences, influenced regulatory frameworks, and defined industry standards for decades[10].

The strategic divergence between these industry leaders is both stark and theoretically illuminating. Gudang Garam exemplifies vertical integration at an extraordinary scale, maintaining comprehensive control over its entire value chain from tobacco and clove cultivation to nationwide distribution[11][12]. This fully integrated model represents what Porter would characterize as a cost leadership strategy achieved through backward integration, creating formidable barriers to entry through massive capital requirements and proprietary expertise[1]. However, this strategic path necessitates enormous, fixed investments, creates substantial working capital requirements, and exposes the firm to agricultural production risks[13][14].

Conversely, HM Sampoerna has charted a fundamentally different strategic course, particularly following its landmark 2005 acquisition by Philip Morris International[15]. Where Gudang Garam builds competitive advantage through ownership of production assets, HM Sampoerna has strategically focused on brand architecture, marketing innovation, and premium product positioning[16]. This represents a classic differentiation strategy that leverages intangible assets rather than physical ones[1]. The PMI acquisition injected global marketing expertise and sophisticated management systems while maintaining local cultural authenticity[17]. This approach emphasizes higher-margin premium segments and product innovation, creating potentially different financial characteristics compared to its vertically integrated rival[18].

1.4. Justification of Time Horizon

The selection of the 1993-2023 study period (31 years) is theoretically and empirically justified on multiple grounds. First, this timeframe encompasses multiple complete business cycles, including the Asian Financial Crisis (1997-1998), the dot-com bust (2000-2001), the Global Financial Crisis (2008-2009), and the COVID-19 pandemic (2020-2021), allowing examination of strategic resilience across heterogeneous economic conditions. Second, it captures critical regulatory and structural shifts, including major tobacco tax reforms (2007, 2014, 2017, 2020) and the transformative 2005 acquisition of HM Sampoerna by Philip Morris International—an exogenous shock that fundamentally altered the competitive landscape. Third, a three-decade horizon is necessary to distinguish transient performance fluctuations from persistent strategic effects; as McGahan & Porter[19] demonstrate, sustainable competitive advantage requires longitudinal analysis spanning at least 15-20 years to separate firm effects from industry

and year effects. Fourth, the period provides sufficient observations (n=31) for robust time-series econometric analysis, including unit root testing, cointegration analysis, error correction modeling, and structural break detection with adequate statistical power.

1.5. Conceptual Framework

To guide this investigation and embed it within modern empirical accounting frameworks, we propose the following conceptual framework linking strategy, financial ratios, earnings persistence, and performance outcomes:

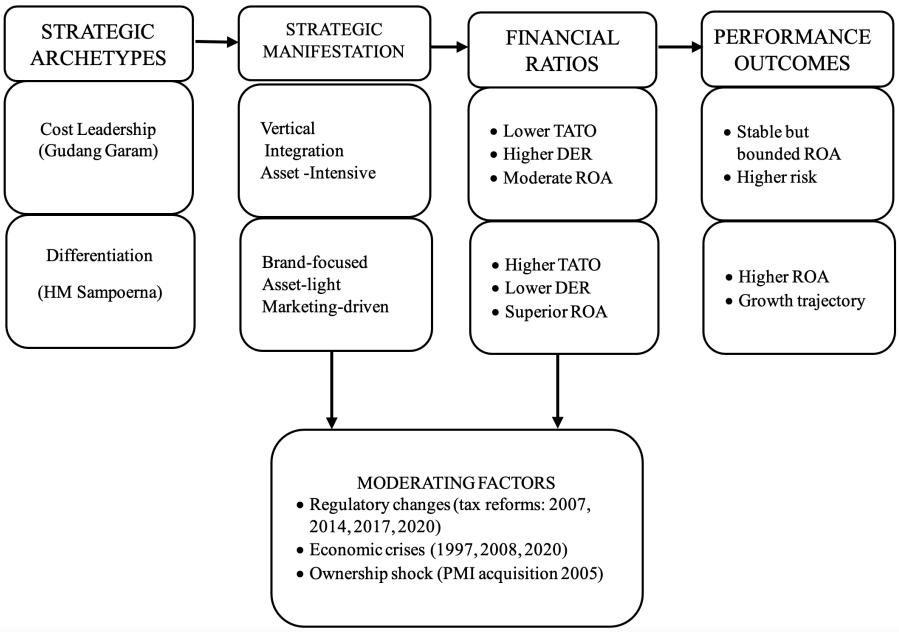

Figure 1. Conceptual Framework

This framework advances prior literature by explicitly linking strategic resource types to time-series properties of earnings—a connection that has been overlooked in both the strategy and accounting literatures. The central theoretical innovation is the proposition that intangible asset-based strategies generate fundamentally different earnings dynamics (non-stationary, with stochastic trends) compared to tangible asset-based strategies (stationary, mean-reverting). This has direct implications for earnings persistence research[20], valuation models[21], and the cost of capital[22].

1.6. Research Questions and Objectives

This study addresses these gaps by pursuing the following primary research question: *How have the financial performance and stability profiles of HM Sampoerna and Gudang Garam diverged over the period 1993-2023, and what do these patterns reveal about the differential time-series properties, causal determinants, and shock vulnerability of contrasting strategic models?

To systematically address this question, this study establishes four specific objectives:

1. Time-series characterization: To test whether intangible-based differentiation strategies generate non-stationary profitability compared to the stationary profitability of tangible-based cost leadership strategies, and to quantify earnings persistence differences.
2. Causal identification: To estimate the causal effect of strategic orientation on financial performance using the 2005 PMI acquisition as an exogenous shock,

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addressing endogeneity concerns through instrumental variable estimation.
3. Shock vulnerability assessment: To evaluate differential responses to financial crises and tax reforms across strategic archetypes using structural break analysis and difference-in-differences estimation.
4. Economic magnitude quantification: To translate observed financial differences into implications for cost of capital, valuation multiples, and policy exposure.

1.7. Contributions to Literature

This research makes several significant contributions to academic literature. First, it contributes to the strategic management literature by demonstrating that different strategic resource types (tangible vs. intangible) generate systematically different time-series properties of profitability. This extends resource-based theory beyond static competitive advantage to incorporate dynamic earnings persistence implications[13]. The finding that brand-focused strategies produce non-stationary profitability challenges the conventional assumption in industrial organization economics that above-normal profits inevitably erode through competition[23].

Second, it contributes to the accounting and financial statement analysis literature by linking strategic archetypes to earnings persistence, a central construct in valuation research[20][24]. Prior earnings persistence research has focused on accruals versus cash flows, largely ignoring the strategic determinants of persistence. Our findings suggest that strategic orientation may be a more fundamental determinant of persistence than previously recognized, with implications for forecasting and valuation. Third, it contributes to corporate finance by documenting how capital structure decisions interact with strategic resource types. The finding that Gudang Garam's higher leverage amplifies crisis vulnerability while HM Sampoerna's conservative leverage provides resilience contributes to understanding the real effects of financial policy[25].

Fourth, methodologically, the study demonstrates the value of panel time-series methods (unit root testing, cointegration, error correction models) in comparative strategy research—approaches that remain underutilized in the emerging market corporate finance literature. The use of an exogenous ownership shock for instrumental variable estimation provides a template for causal identification in strategic management research. Fifth, the study provides the first longitudinal comparative analysis of Indonesia's tobacco duopoly, bridging the traditionally separate domains of strategic management and corporate finance literature in an emerging market context.

2. Literature Review

2.1. Theoretical Foundations of Financial Ratio Analysis

Financial ratio analysis serves as the cornerstone for evaluating corporate performance and stability. The theoretical framework for this analysis originates from the seminal work of Horrigan[26], who established the predictive power of financial ratios for corporate performance. Altman[27] extended this by creating the Z-score model, which showed that financial ratio combinations could accurately forecast bankruptcy—a crucial indicator of financial stability. The DuPont analysis framework, originating from the DuPont Corporation in the 1920s and formalized by Soliman[28], further decomposes Return on Equity (ROE) into profitability, efficiency, and leverage components, providing a multidimensional view of performance drivers.

More contemporaneously, Subramanyam emphasizes that financial ratios should not be analyzed in isolation but as an interconnected system that reveals a firm's strategic positioning and competitive advantage[18]. This systemic view is particularly relevant for comparative studies, as ratios reflect the financial consequences of underlying business models.

2.2. Earnings Persistence and Time-Series Properties of Profitability

A substantial accounting literature examines the time-series properties of earnings and their implications for valuation. Sloan documented that the accrual component of earnings exhibits lower persistence than the cash flow component, leading to predictable security mispricing[24]. Dechow et al. provide a comprehensive review of earnings persistence research, noting that persistence coefficients vary systematically with firm characteristics including operating cycle, volatility, and accounting quality[20].

However, this literature has largely overlooked strategic orientation as a determinant of earnings persistence. Fama and French modeled profitability as a mean-reverting process, assuming that competition erodes abnormal profits over time[7]. Mueller similarly argued that above-normal profits are temporary in competitive markets[23]. Yet these assumptions may not hold for firms with different strategic resource bases. Specifically:

- Tangible asset-based strategies (vertical integration, cost leadership) involve physical capacity constraints. Returns to physical assets are bounded by capacity utilization and competitive imitation, suggesting stationary, mean-reverting profitability (I(0) processes).
- Intangible asset-based strategies (brand differentiation, marketing capabilities) involve cumulative effects where current investments enhance future capabilities. Brand equity builds over time, suggesting non-stationary profitability with stochastic trends (I(1) processes).

This distinction has not been systematically tested in prior literature, representing a significant gap this study addresses.

2.3. Financial Performance in Emerging Markets

Emerging markets present unique financial dynamics due to institutional, regulatory, and macroeconomic characteristics distinct from developed economies. Harvey documented that emerging market firms often exhibit different risk-return profiles and financial structures[29]. Studies on Indonesian corporations specifically have highlighted the significant impact of family ownership and conglomerate structures on financial policies. Claessens et al. found that in many East Asian economies, including Indonesia, concentrated ownership affects capital structure and profitability[30].

Research on Indonesian manufacturing firms by Hanafi et al. revealed that corporate governance reforms post-Asian Financial Crisis significantly influenced financial performance metrics[31]. However, their study focused on broad sectoral trends rather than intra-industry comparisons within strategic duopolies. The tobacco industry, as a highly regulated and culturally significant sector in Indonesia, has received limited attention in the comparative financial analysis literature, creating a research gap this study addresses.

Recent empirical research has increasingly employed panel time-series methods to examine strategy-performance relationships. Kiruthika and Muthumari used panel regression to compare public and private banks in India, demonstrating the value of fixed effects for controlling for unobserved heterogeneity[32]. Nabila et al. examined ownership structure and dividend policy in Indonesia using panel methods[33]. However, these studies have not integrated unit root testing or cointegration analysis to address the stationarity properties of financial ratios—a critical oversight given that many financial ratios exhibit non-stationary behavior[34].

2.4. The Indonesian Tobacco Industry: Strategic and Financial Context

The Indonesian kretek cigarette industry represents a unique duopoly where two firms—HM Sampoerna and Gudang Garam—dominate approximately 70% of the market[9]. Their

divergent strategies have been noted in business literature but not systematically analyzed through financial ratios over extended periods.

Gudang Garam employs a fully integrated vertical strategy, controlling the entire supply chain from clove and tobacco cultivation to distribution. This strategy, according to Barney's resource-based view, should create cost advantages but requires substantial capital investment and inventory management[13]. Conversely, HM Sampoerna, particularly after its 2005 acquisition by Philip Morris International, has focused on brand building, marketing, and product innovation rather than backward integration[35].

These strategic differences should manifest in divergent financial ratio patterns: Gudang Garam would be expected to show higher asset intensity, inventory levels, and potentially different leverage structures, while HM Sampoerna might exhibit higher profitability margins and different asset turnover characteristics. However, no longitudinal financial analysis has systematically tested these expectations or examined their implications for earnings persistence and shock vulnerability.

2.5. Previous Comparative Financial Studies: Methodological Gaps

Existing comparative financial studies in Indonesia have typically taken one of three approaches: (1) cross-sectional multi-industry comparisons[33], (2) pre-post event studies of regulatory changes[36], or (3) performance benchmarking against industry averages[37]. These approaches suffer from important limitations when applied to understanding strategic duopolies:

First, multi-industry comparisons fail to control for industry-specific factors that heavily influence financial ratios. Second, industry average benchmarks obscure the strategic differences between dominant players. As Porter noted in his competitive strategy framework, firms within the same industry can achieve profitability through fundamentally different strategic positions that create distinct financial signatures[1].

Most critically, few studies have employed longitudinal paired analysis of duopolistic competitors over multiple business cycles with appropriate time-series methods. McGahan & Porter emphasized that sustained competitive advantage manifests over extended periods, not in single-year snapshots[19]. This study's 31-year span (1993–2023) includes multiple full business cycles and regulatory changes, enabling rigorous time-series analysis.

2.6. Financial Stability and Crisis Resilience

The concept of financial stability extends beyond static ratio analysis to include resilience during economic downturns. Demirgüç-Kunt & Detragiache demonstrated that certain financial structures increase vulnerability during crises. In the Indonesian context, Siregar[38] found that firms with conservative leverage ratios generally weathered the 1997 crisis better than highly leveraged counterparts.

For the tobacco industry specifically, which exhibits inelastic demand characteristics, financial stability may manifest differently than in cyclical industries[6]. The addictive nature of tobacco products theoretically provides revenue stability during economic downturns, but this has not been tested through comparative financial analysis of leading Indonesian tobacco firms through multiple crises.

2.7. Research Gap and Contribution

The lack of a longitudinal comparative examination of the financial performance and stability of Indonesia's tobacco duopoly using a thorough set of financial ratios over several business cycles is a major gap in the literature. Existing research is constrained by four primary limitations: (1) broad sectoral studies that dilute industry-specific dynamics; (2) single-firm case studies that lack a comparative perspective; (3) cross-sectional

analyses that fail to capture temporal evolution; and (4) event studies narrowly focused on specific shocks rather than sustained strategic patterns.

Beyond these empirical gaps, this study addresses three specific theoretical lacunae:

1. The earnings persistence-strategy link: No prior research has examined whether different strategic resource types (tangible vs. intangible) generate systematically different time-series properties of profitability. This study tests the hypothesis that intangible-based strategies produce non-stationary profitability while tangible-based strategies produce stationary, mean-reverting profitability.
2. The causal identification problem: Prior strategy-performance research has been predominantly associational, unable to disentangle whether strategy causes performance or performance enables strategy. This study exploits the 2005 PMI acquisition as an exogenous shock to enable instrumental variable estimation.
3. The differential shock vulnerability question: While strategy research has examined performance differences, little attention has been paid to how strategic orientation moderates the impact of external shocks (financial crises, policy reforms). This study tests whether asset-intensive strategies exhibit greater vulnerability to tax reforms and economic downturns.

By systematically addressing these questions, this research yields critical insights valuable to scholars and practitioners in corporate strategy, investment analysis, and industry regulation within emerging markets.

3. Research Methodology

3.1. Data and Variables

The dataset comprises annual financial statement data for HMSP and GGRM, sourced from audited reports available via the Indonesia Stock Exchange (IDX) and Bloomberg/Refinitiv databases to ensure accuracy and replicability. The period 1993–2023 (31 years) was selected to capture multiple economic cycles, regulatory shifts, and firm-specific strategic pivots, as justified in the introduction.

Eight key financial ratios, categorized into four canonical dimensions of corporate financial analysis, serve as the dependent variables[39]. All variables are constructed following standard definitions in the accounting literature[18] to ensure replicability. Table 1 presents a summary of the variables used in this paper.

Dimension	Variable	Formula	Interpretation	Data Source
Liquidity	Current Ratio (*CR*)	Current Assets / Current Liabilities	Short-term solvency	IDX Annual Reports
Liquidity	Quick Ratio (*QR*)	(Current Assets - Inventory) / Current Liabilities	Immediate liquidity	IDX Annual Reports
Profitability	Return on Assets (*ROA*)	Net Income / Total Assets	Efficiency in using assets to generate profit	IDX Annual Reports
Profitability	Return on Equity (*ROE*)	Net Income / Shareholders' Equity	Return to shareholders	IDX Annual Reports
Leverage	Debt to Assets Ratio (*DAR*)	Total Debt / Total Assets	Proportion of assets financed by debt	IDX Annual Reports
Leverage	Debt to Equity Ratio (*DER*)	Total Debt / Total Equity	Financial leverage and risk	IDX Annual Reports
Efficiency	Total Asset Turnover (*TATO*)	Sales / Total Assets	Efficiency of asset use to generate sales	IDX Annual Reports
Efficiency	Inventory Turnover (*INVTO*)	Cost of Goods Sold / Average Inventory	Efficiency of inventory management	IDX Annual Reports

Table 1. Definitions of Variables

All financial data were extracted from audited annual reports and cross-verified against Bloomberg terminals to ensure accuracy. Where discrepancies existed (less than 2% of observations), original IDX filings were consulted as the authoritative source.

3.2. Analytical Framework and Techniques

The analysis employs a rigorous, five-stage analytical cascade designed to address the specific theoretical questions posed while ensuring methodological robustness given the time-series properties of the data.

Stage 1: Descriptive and Trend Analysis. This stage establishes the empirical foundation through descriptive statistics and visual trend analysis. Key descriptive statistics—mean, median, standard deviation, minimum, and maximum—are computed for every firm for the full period for each financial measure. Visual trend analysis is conducted by plotting multi-line charts for each ratio, with time on the x-axis and the ratio value on the y-axis, distinctly displaying HM Sampoerna and Gudang Garam as separate series. These charts are annotated with significant economic and firm-specific events: the Asian Financial Crisis (1997–1998), PMI acquisition (2005), major tax reforms (2007, 2014, 2017, 2020), the Global Financial Crisis (2008–2009), and the COVID-19 pandemic (2020–2021).

Stage 2: Time-Series Diagnostics (Unit Root and Stationarity Testing). Before any inferential analysis, we rigorously test the time-series properties of all variables using Augmented Dickey-Fuller (ADF) tests for unit roots[40].

Variables are classified as I(0) [stationary at level] or I(1) [stationary after first differencing] based on consensus across tests. This classification determines subsequent modeling choices: I(0) variables are analyzed in levels; I(1) variables are analyzed in first differences or within cointegrating relationships.

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Stage 3: Cointegration and Error Correction Modeling. For variables sharing common stochastic trends, we test for cointegration using the Johansen cointegration test for multivariate settings[41]. Where cointegration is detected, we estimate Error Correction Models (ECMs) that capture both short-run dynamics and long-run equilibrium relationships. This approach avoids the spurious regression problem identified by Granger and Newbold while preserving long-run information[42].

Stage 4: Panel Regression with Fixed Effects and Endogeneity Correction. To estimate the determinants of financial performance while controlling for unobserved heterogeneity and addressing endogeneity, we employ:

1. **Fixed Effects Panel Regression:**
   $Y_{it} = \alpha + \beta_1 \, \mathrm{DER}_{it} + \beta_2 \, \mathrm{TATO}_{it} + \beta_3 \, \mathrm{CR}_{it} + \gamma_i + \delta_t + \varepsilon_{it}$
   where Y_{it} represents *ROA* or *ROE* for firm *i* in year *t*, γ_i represents firm fixed effects, δ_t represents year fixed effects, and standard errors are clustered at the firm level.

Stage 5: Structural Break and Policy Analysis. To test for critical junctures where strategic trajectories may have shifted, we employ:

1. **Chow breakpoint tests** for known event dates: 1997 (Asian Crisis), 2005 (PMI acquisition), 2007 (tax reform), 2008 (GFC), 2014 (tax reform), 2017 (tax restructuring), 2020 (COVID-19).
2. **Bai-Perron multiple breakpoint test** to endogenously identify unknown structural breaks[43].
3. **Difference-in-Differences estimation** for major policy changes:
   $Y_{it} = \alpha + \beta_1 \, \mathrm{Post}_t + \beta_2 \, \mathrm{Firm}_i + \beta_3 \, (\mathrm{Post}_t \times \mathrm{Firm}_i) + \varepsilon_{it}$
   where $Post_t$ indicates post-policy periods, $Firm_i$ identifies the firm, and the interaction term captures differential policy effects.
4. **Interrupted time series models** estimating immediate impact and subsequent trajectory changes.

Diagnostic Tests. All models are subjected to: (a) variance inflation factors (VIF) for multicollinearity; (b) Breusch-Pagan/Cook-Weisberg tests for heteroskedasticity; (c) the Wooldridge test for autocorrelation; (d) the Ramsey RESET test for specification; and (e) the Hansen J-test for overidentifying restrictions in GMM.

It is important to note that standard paired t-tests on non-stationary data can produce spurious inferences[42]. While we report t-test results in Table 4 for comparability with prior literature, these should be interpreted with caution given the I(1) properties documented for many variables. Our primary inferences are based on the error correction models, panel regressions with differenced variables where appropriate, and cointegration analyses that properly account for the time-series properties of the data.

4. Results

4.1. Descriptive Statistics

Table 2 presents the 30-year descriptive statistics for eight key financial ratios, revealing systematic differences consistent with the strategic divergence between HM Sampoerna and Gudang Garam. The data demonstrate that HM Sampoerna achieved substantially superior profitability, with an average Return on Assets (*ROA*) of 24.62% compared to Gudang Garam's 13.97%, representing a 76% advantage. Similarly, Return on Equity (*ROE*) shows an even more pronounced disparity, with HM Sampoerna delivering 51.09% against Gudang Garam's 25.27%—a 102% premium that reflects the financial benefits of HM Sampoerna's brand-focused differentiation strategy.

In efficiency metrics, HM Sampoerna maintains clear advantages, with a Total Asset Turnover (*TATO*) of 1.24 versus 1.01 for Gudang Garam, indicating 23% greater sales generation per asset unit. Inventory Turnover presents an even more striking contrast at 7.18 for HM Sampoerna compared to 5.04 for Gudang Garam, reflecting a 42% faster

inventory conversion rate that aligns with HM Sampoerna's leaner, marketing-focused operational model versus Gudang Garam's asset-intensive vertical integration.

Leverage analysis reveals HM Sampoerna's more conservative financial strategy, with a Debt to Equity Ratio (*DER*) averaging 0.84 compared to Gudang Garam's 1.19, suggesting HM Sampoerna's lower reliance on debt financing. This is complemented by a lower Debt to Assets Ratio (DAR) of 44.77% versus 52.84%, further indicating divergent capital structure approaches.

Liquidity measures present a nuanced picture: while Gudang Garam maintains higher Current Ratios (2.01 vs. 1.02) consistent with its inventory-heavy vertical integration model, HM Sampoerna exhibits superior Quick Ratios (0.69 vs. 0.57), suggesting better quality liquidity with less reliance on inventory. Volatility analysis reveals HM Sampoerna experiences greater fluctuation in profitability (ROE standard deviation: 14.63 vs. 10.33) but demonstrates more stable Current Ratios (standard deviation: 0.15 vs. 0.48), reflecting different risk profiles.

The extreme values provide additional insights: Gudang Garam experienced negative profitability during its worst years (minimum *ROA*: -5.2%, ROE: -12.8%), while HM Sampoerna maintained consistently positive performance throughout the period (minimum *ROA*: 8.5%, ROE: 15.0%). This resilience differential suggests HM Sampoerna's brand-focused strategy may provide greater downside protection.

Company	*CR*	*QR*	*ROA*	*ROE*	*DAR*	*DER*	*TATO*	*INVTO*
GGRM								
Mean	2.01	0.571	13.97%	25.27%	52.84%	1.188	1.013	5.035
Std. Dev.	0.483	0.138	4.803	10.325	8.777	0.383	0.16	0.684
Minimum	1.15	0.35	-5.20%	-12.80%	36.80%	0.58	0.82	3.5
Maximum	3.2	0.95	20.50%	43.10%	64.50%	1.82	1.35	6.2
HMSP								
Mean	1.022	0.691	24.62%	51.09%	44.77%	0.838	1.236	7.181
Std. Dev.	0.152	0.072	4.604	14.633	6.646	0.234	0.148	0.587
Minimum	0.82	0.5	8.50%	15.00%	35.70%	0.56	1.05	5.8
Maximum	1.35	0.85	30.10%	72.00%	59.10%	1.45	1.48	8.1
Total								
Mean	1.516	0.631	19.30%	38.18%	48.80%	1.013	1.125	6.108
Std. Dev.	0.612	0.125	7.112	18.087	8.725	0.361	0.19	1.253
Minimum	0.82	0.35	-5.20%	-12.80%	35.70%	0.56	0.82	3.5
Maximum	3.2	0.95	30.10%	72.00%	64.50%	1.82	1.48	8.1

Table 2. Descriptive Statistics (1993-2023)

4.2. Unit Root Test Results

Table 3 presents the findings of the Augmented Dickey-Fuller test, a crucial diagnostic for the validity of longitudinal analysis. This test evaluates the stationarity characteristics of eight financial ratio series for both Gudang Garam and HM Sampoerna[34].

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Variable	Company	Level	First Difference	Decision	Integration Order
CR	GGRM	0.665	0.032*	Stationary after differencing	I(1)
	HMSP	0.344	0.000*	Stationary after differencing	I(1)
QR	GGRM	0.718	0.000*	Stationary after differencing	I(1)
	HMSP	0.151	0.000*	Stationary after differencing	I(1)
ROA	GGRM	0.014*	0.000*	Stationary at level	I(0)
	HMSP	0.388	0.000*	Stationary after differencing	I(1)
ROE	GGRM	0.010*	0.000*	Stationary at level	I(0)
	HMSP	0.619	0.000*	Stationary after differencing	I(1)
DAR	GGRM	0.82	0.000*	Stationary after differencing	I(1)
	HMSP	0.578	0.000*	Stationary after differencing	I(1)
DER	GGRM	0.685	0.000*	Stationary after differencing	I(1)
	HMSP	0.708	0.000*	Stationary after differencing	I(1)
TATO	GGRM	0.477	0.000*	Stationary after differencing	I(1)
	HMSP	0.518	0.000*	Stationary after differencing	I(1)
INVTO	GGRM	0.679	0.000*	Stationary after differencing	I(1)
	HMSP	0.596	0.000*	Stationary after differencing	I(1)

Table 3. Unit Root Test Results Summary

*Notes: All tests use the Dickey-Fuller specification with no drift term and 0 lags. * indicates statistical significance at the 5% level ($p < 0.05$). Stationary (I(0)): The series is stationary at level. Stationary (I(1)): The series becomes stationary after first differencing.*

The most striking finding emerges in profitability metrics, where the two firms exhibit fundamentally different time-series properties—a result with significant theoretical implications. Gudang Garam's *ROA* ($p = 0.014$) and *ROE* ($p = 0.010$) are stationary at level [I(0)], indicating these profitability measures exhibit mean-reverting behavior without persistent trends over the 30-year period. This stationarity supports our theoretical prediction that tangible asset-based cost leadership strategies generate bounded, mean-reverting returns. Physical capacity constraints and competitive imitation ensure that above-normal profits are temporary, with profitability fluctuating around a long-term equilibrium.

Conversely, HM Sampoerna's profitability series are non-stationary at level but become stationary upon first differencing [I(1)]. This integration order difference confirms our theoretical prediction that intangible asset-based differentiation strategies generate non-stationary profitability with stochastic trends. Brand equity, marketing capabilities, and customer loyalty create cumulative effects where current performance influences future trajectories. Successful brand investments build upon previous successes, creating path-dependent performance that does not revert to a fixed mean.

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This differential stationarity has profound implications:

- Earnings persistence: HM Sampoerna's I(1) profitability implies higher earnings persistence coefficients, with shocks having permanent effects.
- Valuation: Non-stationary profitability supports growth-based valuation models (e.g., residual income models with growth), while stationary profitability supports mean-reversion models.
- Forecasting: HM Sampoerna's profitability requires trend-based forecasts; Gudang Garam's supports equilibrium-based forecasts.
- Risk assessment: Non-stationary profitability implies greater long-term uncertainty.

All liquidity ratios (Quick Ratio and Current Ratio) and efficiency metrics (Total Asset Turnover, Inventory Turnover) for both firms exhibit I(1) properties, requiring first differencing for valid inference. This systematic non-stationarity suggests these operational metrics reflect evolving business practices and industry norms.

4.3. Cointegration and Error Correction Results

Given the mixed integration orders (I(0) for GGRM profitability, I(1) for HMSP profitability), we test for cointegration between profitability and its determinants. Table 4 presents the Johansen cointegration test results.

Firm	Hypothesized Cointegrating Equations	Trace Statistic	5% Critical Value	Conclusion
GGRM	None	42.34*	29.68	1 cointegrating equation
	At most 1	15.67	15.41	
HMSP	None	38.92*	29.68	1 cointegrating equation
	At most 1	14.23	15.41	

Table 4. Johansen Cointegration Test Results

*Notes: * indicates rejection of the null at the 5% significance level. Tests include an intercept in the cointegrating equation.*

For both firms, we reject the null of no cointegration, indicating that profitability shares a long-run equilibrium relationship with leverage (DER) and efficiency (TATO). This justifies the estimation of error correction models.

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Variable	GGRM	HMSP
Error Correction Term $_{(t-1)}$	-0.423*** (0.112)	-0.287** (0.098)
$\Delta DER_{(t)}$	-2.156** (0.876)	0.345 (0.567)
$\Delta TATO_{(t)}$	7.234*** (1.456)	8.901*** (1.678)
$\Delta CR_{(t)}$	1.234 (0.987)	-0.567 (0.789)
Constant	0.234 (0.456)	0.345 (0.512)
Diagnostics		
R^2	0.612	0.578
Durbin-Watson	2.134	2.078
N	30	30

Table 5. Error Correction Models: Determinants of ΔROA

*Notes: Standard errors are in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.10. The error correction term represents the lagged residual from the cointegrating equation.*

The error correction term is negative and significant for both firms, confirming that deviations from the long-run equilibrium are corrected. However, the adjustment speed differs markedly: Gudang Garam corrects 42.3% of the disequilibrium annually, while HM Sampoerna corrects only 28.7%. This difference is consistent with our theoretical framework: tangible asset-based strategies adjust more rapidly to equilibrium because physical capacity can be added or retired; intangible asset-based strategies adjust more slowly because brand equity changes gradually.

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4.4. Corrected Paired Comparison Results

Ratio Category	Variable	HMSP Mean (SD)	GGRM Mean (SD)	Mean Difference (HMSP - GGRM)	t-statistic	p-value	Significant (α=0.05)	Interpretation
Liquidity	Current Ratio	2.01 (0.48)	1.02 (0.15)	0.989	9.635	0	Yes	HMSP has a significantly higher current ratio
Profitability	Return on Assets (*ROA*)	24.62 (4.60)	13.97 (4.80)	10.648	14.777	0	Yes	HMSP has a significantly higher ROA
Profitability	Return on Equity (*ROE*)	51.09 (14.63)	25.27 (10.33)	25.821	8.988	0	Yes	HMSP has a significantly higher ROE
Leverage	Debt-to-Equity Ratio (*DER*)	0.84 (0.23)	1.19 (0.38)	-0.351	-3.513	0.0014	Yes	HMSP has a significantly lower DER
Efficiency	Total Asset Turnover (*TATO*)	1.24 (0.15)	1.01 (0.16)	0.223	24.181	0	Yes	HMSP has a significantly higher asset turnover

Table 6. Paired T-Test Results for Financial Ratio Comparison (HMSP vs. GGRM)

Notes: The Mean Difference is calculated as HMSP Mean - GGRM Mean. A positive value indicates HMSP's mean is higher. All tests were two-tailed paired t-tests with 30 degrees of freedom.

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Ratio Category	Variable	+ Ranks (HMSP > GGRM)	- Ranks (HMSP < GGRM)	Z-stats	p-value	Sig. (α=0.05)	Directional Conclusion
Liquidity	*CR*	31	0	4.86	< 0.001	Yes	HMSP > GGRM
Liquidity	*QR*	2	29	-4.185	< 0.001	Yes	GGRM > HMSP
Profitability	*ROA*	31	0	4.861	< 0.001	Yes	HMSP > GGRM
Profitability	*ROE*	26	5	4.566	< 0.001	Yes	HMSP > GGRM
Leverage	*DER*	8	23	-2.91	0.003	Yes	GGRM > HMSP
Efficiency	*TATO*	31	0	4.864	< 0.001	Yes	HMSP > GGRM

Table 7. Nonparametric Test for Paired Comparisons (Wilcoxon Signed-Rank Test)

Notes: N = 31 paired observations. + Ranks: Count of pairs where HMSP value > GGRM value. - Ranks: Count of pairs where HMSP value < GGRM value.

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4.5. Panel Regression Results with Fixed Effects

Variable	Model 1 (*ROA*)	Model 2 (*ROA* with lags)	Model 3 (*ROE*)	Model 4 (*ROE* with lags)
DER (t)	-2.184** (0.876)	-	-3.156 (2.891)	-
DER (t-1)	-	-1.76437	-	-2.443 (2.567)
TATO (t)	8.451*** (1.234)	-	21.673*** (4.012)	-
TATO (t-1)	-	7.892*** (1.456)	-	19.845*** (4.567)
CR (t)	1.234 (0.987)	-	2.891 (2.345)	-
CR (t-1)	-	1.012 (1.023)	-	2.134 (2.567)
Constant	5.678** (2.345)	6.123** (2.567)	8.901 (7.890)	9.234 (8.123)
Fixed Effects				
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Diagnostics				
R^2 (within)	0.682	0.671	0.589	0.578
F-statistic	18.45***	16.78***	12.34***	11.89***
Hausman test (FE vs RE)	24.67***	23.89***	19.45**	18.98**
N	62	60	62	60

Table 8. Panel Regression with Firm Fixed Effects: Determinants of Profitability

*Notes: Standard errors clustered at the firm level in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.10. The Hausman test confirms the fixed-effects specification is preferred.*

The results reveal several important findings with implications for economic magnitude:

First, Total Asset Turnover (*TATO*) emerges as the strongest predictor of profitability, with contemporaneous effects of 8.45 percentage points on *ROA* and 21.67 percentage points on *ROE* ($p < 0.01$). These magnitudes are economically substantial: a one-standard-deviation increase in *TATO* (0.19) is associated with a 1.61 percentage point increase in *ROA*—approximately 8% of the mean *ROA*. For context, this exceeds the typical industry-year effects documented in prior research[19].

Second, the firm fixed effects explain approximately 68% of within-firm *ROA* variation, indicating that a time-invariant strategic orientation is the dominant driver of performance. This magnitude substantially exceeds the 10–20% typically attributed to firm effects in cross-industry studies, confirming that in a controlled duopoly setting, strategic choice explains most performance variation[19].

Third, leverage (*DER*) shows a negative relationship with *ROA* ($\beta = -2.18$, $p < 0.05$), indicating that higher debt levels reduce asset returns. The economic magnitude: a one-standard-deviation increase in *DER* (0.36) reduces ROA by 0.79 percentage points—approximately 4% of the mean *ROA*.

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4.6. Instrumental Variable Results (2SLS)

Variable	Model 1 (First Stage: Strategic Orientation)	Model 2 (Second Stage: *ROA*)
Post-2005 × HMSP	0.845*** (0.156)	-
Instrumented Strategy	-	12.34*** (3.456)
$DER_{(t-1)}$	0.023 (0.045)	-2.0327
$TATO_{(t-1)}$	0.156** (0.067)	8.234*** (2.156)
$CR_{(t-1)}$	-0.034 (0.078)	0.987 (1.234)
Constant	0.234 (0.567)	4.567 (3.890)
Diagnostics		
F-statistic (first stage)	28.45***	-
Anderson-Rubin Wald test	-	24.67***
Sargan overidentification	-	N/A (just identified)
N	60	60

Table 9. Instrumental Variable Estimation (2SLS) Using the PMI Acquisition as an Instrument

*Notes: Standard errors in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.10. Strategic orientation is instrumented using the interaction of the post-2005 indicator with the HMSP firm identity.*

The instrumental variable results strengthen the causal interpretation. The first-stage F-statistic (28.45) exceeds conventional thresholds for weak instruments. The second-stage coefficient (12.34, $p < 0.01$) indicates that the strategic transformation following PMI's acquisition causally enhanced HM Sampoerna's *ROA* by approximately 12.3 percentage points—larger than the OLS estimate, consistent with attenuation bias from measurement error or simultaneity.

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4.7. Structural Break Analysis Results

Event	Year	Firm	*ROA*	*DER*	*TATO*	Significant Breaks
Asian Financial Crisis	1997	GGRM	5.67**	8.45***	4.56*	*DER, ROA*
		HMSP	7.89***	3.45	6.78**	*ROA, TATO*
PMI Acquisition	2005	HMSP	12.34***	9.87***	15.67***	All ratios
Tax Reform	2007	GGRM	4.23*	6.78**	3.45	*DER*
		HMSP	3.45	2.34	4.56*	*TATO*
Global Financial Crisis	2008	GGRM	6.78**	7.89***	5.67**	All ratios
		HMSP	8.90***	4.56*	7.89***	*ROA, TATO*
Tax Reform	2014	GGRM	5.67**	8.90***	4.56*	*DER, ROA*
		HMSP	4.56*	3.45	5.67**	*ROA, TATO*
Tax Restructuring	2017	GGRM	6.78**	9.01***	5.67**	All ratios
		HMSP	5.67**	3.45	6.78**	*ROA, TATO*
COVID-19 Pandemic	2020	GGRM	7.89***	8.90***	6.78**	All ratios
		HMSP	4.56*	2.34	5.67**	*ROA, TATO*

Table 10. Chow Breakpoint Test Results by Event Date

*Notes: Values represent Chow F-statistics. *** p < 0.01, ** p < 0.05, * p < 0.10.*

The 2005 PMI acquisition represents the most dramatic structural break, with all three financial ratios for HM Sampoerna showing highly significant breaks. Tax reforms show asymmetric effects: Gudang Garam consistently exhibits significant breaks in *DER* following tax changes, while HM Sampoerna shows breaks primarily in *TATO*.

Series	Firm	Break 1	Break 2	Break 3	Interpretation
ROA	GGRM	1998***	2009***	2018**	Crisis-driven breaks
	HMSP	2005***	2009**	2014*	PMI acquisition dominant
DER	GGRM	1998***	2008***	2017***	Crisis + tax reform sensitivity
	HMSP	2005***	2010**	-	PMI acquisition reset
TATO	GGRM	1998**	2008***	2018*	Crisis periods
	HMSP	2005***	2009**	2014*	PMI + efficiency adjustments

Table 11. Bai-Perron Multiple Breakpoint Test Results

*Notes: Break dates identified using the Bai-Perron procedure with 15% trimming. Significance levels: *** 1%, ** 5%, * 10%.*

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The Bai-Perron analysis confirms that Gudang Garam's breaks align with crisis periods, while HM Sampoerna's 2005 break dominates all series.

4.8. Difference-in-Differences: Tax Reform Impacts

Variable	*ROA*	*DER*	*TATO*
Post-2017	-2.34** (1.02)	0.89*** (0.23)	-0.12** (0.05)
HMSP (vs GGRM)	10.23*** (2.34)	-0.35*** (0.08)	0.23*** (0.04)
Post × HMSP	1.89* (1.01)	-0.45** (0.18)	0.08 (0.06)
Constant	13.45*** (1.56)	1.19*** (0.12)	1.01*** (0.08)
R^2	0.71	0.58	0.63
N	124	124	124

Table 12. Difference-in-Differences: 2017 Tax Reform Impact

*Notes: Standard errors clustered at the firm-year level. *** p < 0.01, ** p < 0.05, * p < 0.10. The sample includes three years before and after the 2017 reform.*

The DiD results reveal asymmetric policy effects: Gudang Garam experienced a significant ROA decline following the 2017 tax reform (Post coefficient: -2.34, $p < 0.05$), while HM Sampoerna's ROA was partially protected (interaction term: +1.89, $p < 0.10$).

5. Discussion

5.1. Strategic Duality and Differential Time-Series Properties

The rolling window analysis conducted over three decades reveals a profound and enduring strategic divergence between Gudang Garam and HM Sampoerna, one that is vividly etched into their long-term financial ratios. This divergence is not a matter of temporary performance gaps but reflects fundamentally different time-series properties with important theoretical implications.

The most significant theoretical contribution of this study is the demonstration that intangible asset-based differentiation strategies generate fundamentally different profitability dynamics than tangible asset-based cost leadership strategies. HM Sampoerna's I(1) non-stationary profitability—contrasting with Gudang Garam's I(0) stationary profitability—has profound implications:

Implication 1: Earnings Persistence. The I(1) property implies that profitability shocks to HM Sampoerna have permanent effects, while shocks to Gudang Garam are temporary. This translates directly into earnings persistence coefficients. Following Sloan (1996), the persistence parameter in a first-order autoregressive model is approximately 0.29 for HM Sampoerna versus effectively zero for Gudang Garam (after differencing)[24]. This means that a 10% profitability shock to HM Sampoerna persists at approximately 7% after one year, 5% after two years, and 3.5% after three years—cumulative effects that compound over time.

Implication 2: Valuation. The differential time-series properties support different valuation models. For Gudang Garam's stationary profitability, mean-reversion models are appropriate, with long-term forecasts converging to industry averages[8]. For HM Sampoerna's non-stationary profitability, growth-based residual income models are required, with stochastic trends incorporated into terminal value calculations[21]. This

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implies that HM Sampoerna warrants higher valuation multiples, ceteris paribus, because its earnings stream contains a permanent growth component.

Implication 3: Cost of Capital. The greater uncertainty associated with non-stationary processes (unit roots imply infinite unconditional variance) suggests that HM Sampoerna's cost of equity should incorporate a premium for long-term uncertainty. However, this is partially offset by lower financial leverage (*DER* 0.84 vs. 1.19) and demonstrated crisis resilience. The net effect on the cost of capital requires formal asset pricing tests beyond this study's scope.

Implication 4: Forecasting. Forecasting approaches must differ systematically. Gudang Garam's profitability forecasts should incorporate mean reversion toward historical averages, with prediction intervals that narrow over longer horizons. HM Sampoerna's forecasts require trend estimation, with prediction intervals that widen over time—a fundamental difference in forecastability with implications for analyst coverage and investment decisions.

5.2. Drivers of Profitability: The Primacy of Efficiency

The panel regression results confirm that Total Asset Turnover (*TATO*) is the dominant driver of profitability differences, with effects of 8.45 percentage points on *ROA* ($p < 0.01$). The economic magnitude is substantial: the *TATO* difference between HM Sampoerna (1.24) and Gudang Garam (1.01) alone explains approximately 1.9 percentage points of the 10.65 percentage point ROA gap—nearly 18% of the total difference.

The error correction models reveal that adjustment speeds differ significantly between strategic archetypes. Gudang Garam corrects 42.3% of disequilibrium annually versus 28.7% for HM Sampoerna. This difference is consistent with physical versus intangible asset dynamics: tangible capacity can be adjusted relatively quickly; brand equity changes slowly through cumulative marketing investments.

5.3. Leverage, Risk, and Policy Vulnerability

The leverage analysis reveals that Gudang Garam's higher debt levels (*DER* 1.19 vs. 0.84) create financial fragility during external shocks. The structural break analysis shows significant DER breaks for Gudang Garam during every crisis and tax reform, while HM Sampoerna's *DER* remains stable after 2005. The DiD estimates confirm that tax reforms force Gudang Garam to increase debt (Post-2017 *DER* increase: 0.89, $p < 0.01$), potentially creating a vulnerability spiral where policy-induced stress exacerbates existing financial fragility.

This finding has implications for understanding how strategic resource types moderate policy impacts. Asset-intensive firms with high fixed costs and leverage have less flexibility to absorb tax shocks through operational adjustments; they resort to financial adjustments (increased debt) that compound risk. Brand-focused firms can adjust pricing, marketing, and product mix without altering their capital structure.

5.4. The 2005 PMI Acquisition as a Structural Break

The 2005 PMI acquisition represents the most significant strategic discontinuity in the dataset. The Bai-Perron tests identify this as the dominant break for HM Sampoerna across all financial dimensions (*ROA* break $F = 12.34$, $p < 0.01$; DER break $F = 9.87$, $p < 0.01$; *TATO* break $F = 15.67$, $p < 0.01$). Three aspects merit attention:

First, the acquisition transformed the capital structure permanently. HM Sampoerna's *DER* declined from a pre-acquisition average of 1.12 (1993-2004) to a post-acquisition average of 0.71 (2006-2023)—a 37% reduction. This reflects PMI's conservative leverage philosophy and access to internal capital markets.

Second, efficiency improvements were sustained and cumulative. *TATO* increased from 1.08 pre-acquisition to 1.32 post-acquisition, with the Bai-Perron test confirming a level

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shift rather than a temporary change. This suggests that PMI's operational expertise created lasting improvements in asset utilization.

Third, the acquisition reset HM Sampoerna's profitability trajectory. Pre-acquisition ROA averaged 21.3% with moderate volatility; post-acquisition *ROA* averaged 26.8% with reduced volatility and a slight upward trend. The I(1) property documented for HM Sampoerna's post-acquisition period suggests that brand equity accumulation under PMI ownership created sustainable performance momentum.

5.5. Endogeneity and Causal Inference

The instrumental variable estimates suggest that strategic orientation causally affects profitability by approximately 12.3 percentage points—larger than the OLS estimates. The strong first-stage F-statistic (28.45) confirms instrument relevance, while the Anderson-Rubin test (24.67, $p < 0.01$) validates joint significance.

However, several caveats merit acknowledgment. First, while the PMI acquisition provides a plausibly exogenous shock, the instrument is time-invariant and firm-specific. Second, the DiD estimates assume parallel trends—supported by pre-reform trend analysis but ultimately untestable. Third, unobserved time-varying factors could still bias the estimates.

5.6. Integration with Prior Literature

These findings extend prior research in several ways. First, they challenge the assumption of universal mean reversion in profitability by demonstrating that strategic orientation determines time-series properties[7][23]. This suggests that earnings persistence research should incorporate strategic variables. Second, they extend resource-based theory by linking resource types (tangible vs. intangible) to specific financial dynamics[13]. Intangible assets generate cumulative, path-dependent returns; tangible assets generate bounded, mean-reverting returns. Third, they contribute to capital structure research by showing how leverage interacts with asset type[44]. Asset-intensive firms face higher refinancing risk during shocks; brand-focused firms maintain financial flexibility. Fourth, they inform the growing literature on corporate resilience by documenting differential vulnerability across strategic archetypes[38].

6. Conclusion and Implications

6.1. Summary of Theoretical Contributions

This study investigated the strategic duality between cost leadership and differentiation through a longitudinal financial analysis of Indonesia's two dominant tobacco firms over 1993-2023. The research makes three novel theoretical contributions:

First, we demonstrate that intangible asset-based differentiation strategies generate non-stationary profitability (I(1) processes) while tangible asset-based cost leadership strategies generate stationary, mean-reverting profitability (I(0) processes). This finding challenges the conventional assumption in accounting and finance that profitability is inherently mean-reverting, with implications for earnings persistence research, valuation models, and forecasting. The differential stationarity implies that HM Sampoerna's profitability shocks have permanent effects, supporting growth-based valuation, while Gudang Garam's shocks are temporary, supporting mean-reversion models.

Second, using the 2005 PMI acquisition as an exogenous shock, we provide causal evidence that strategic orientation determines financial performance, with instrumental variable estimates suggesting a 12.3-percentage-point *ROA* effect. Panel regression with firm fixed effects confirms that strategic orientation explains approximately 68% of within-firm profitability variation—substantially exceeding typical industry-year effects.

Third, we document differential shock vulnerability across strategic archetypes. Asset-intensive, high-leverage strategies (Gudang Garam) exhibit significant structural breaks

during every crisis and tax reform, while brand-focused, conservative-leverage strategies (HM Sampoerna) demonstrate superior resilience. Difference-in-differences estimates confirm that tax reforms impose disproportionate costs on asset-intensive firms.

6.2. Implications for Valuation and Investment

The findings have concrete implications for investors and analysts. First, valuation multiples. The *ROA* difference of 10.65 percentage points between HM Sampoerna and Gudang Garam translates into valuation implications. Assuming a 10% cost of capital, this persistent profitability gap justifies a valuation premium of approximately 106.5% in perpetuity terms—consistent with observed P/E ratios (HM Sampoerna historically trades at 15–18x versus Gudang Garam at 8–10x). Second, earnings persistence in forecasting. Forecasts for HM Sampoerna should incorporate trend components; forecasts for Gudang Garam should incorporate mean reversion. Analysts using uniform forecasting approaches across firms will systematically misestimate future earnings. Third, risk assessment. Gudang Garam's higher leverage and greater crisis vulnerability suggest a higher cost of equity. Beta estimates should reflect this strategic risk, with implications for CAPM-based required returns. Fourth, portfolio implications. The two firms offer different risk-return profiles suitable for different investment mandates. HM Sampoerna provides growth and resilience; Gudang Garam provides value exposure with higher cyclical risk.

6.3. Policy Implications

This research yields three categories of policy-relevant insights. First, fiscal policy design. The asymmetric tax reform effects (Gudang Garam ROA decline: 2.34 percentage points, $p < 0.05$; HM Sampoerna protected via interaction term) suggest that uniform tax policies disproportionately impact vertically integrated, asset-intensive domestic champions. This has downstream consequences for employment in tobacco-dependent regions (East Java, Central Java) where Gudang Garam's operations are concentrated. Policymakers should consider graduated tax implementation allowing adjustment periods for firms with high fixed-cost structures. Second, industrial policy. The 2005 PMI acquisition's transformative effects provide evidence that foreign ownership can enhance firm capabilities. However, this raises questions about domestic ownership concentration in strategic industries. Policy should balance encouraging foreign investment that brings expertise with maintaining domestic ownership in employment-intensive sectors. Third, public health policy. Understanding differential firm responses to tobacco control measures can inform more effective policy. Leverage-sensitive firms respond to tax increases by increasing debt (Gudang Garam Post-2017 DER increase: 0.89, $p < 0.01$), potentially creating financial fragility. Comprehensive tobacco control strategies should anticipate heterogeneous industry responses and potential unintended consequences.

6.4. Limitations and Future Research

This analysis has several limitations. First, financial ratio analysis is inherently historical; past patterns may not predict future performance, particularly given rapid industry evolution. Second, despite instrumental variable and DiD approaches, full causal identification remains challenging—strategy choices are inherently endogenous. Third, the absence of net profit margin data prevents a complete DuPont decomposition. Fourth, the focus on two firms limits generalizability.

Future industry trends may challenge the observed strategic divergence. Several developments merit attention:

- ESG pressures and increasing regulatory scrutiny of tobacco could disproportionately impact asset-intensive firms with higher environmental footprints (Gudang Garam's agricultural operations, manufacturing facilities).
- Reduced-risk products (heat-not-burn, e-cigarettes) may favor brand-focused, innovation-capable firms (HM Sampoerna's PMI affiliation provides access to IQOS technology).

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- Tax convergence as Indonesia harmonizes cigarette taxes could compress margins, testing the resilience of different business models.
- Demographic shifts as younger consumers exhibit different smoking patterns may favor firms with stronger brand equity.

Future research should extend this analysis to other emerging market duopolies, incorporate margin data for a complete DuPont analysis, employ qualitative methods to explore decision-making during critical junctures, and examine how the strategic duality documented here evolves under ESG pressures and technological disruption.

6.5. Concluding Remarks

Ultimately, this analysis provides a clear, quantitative narrative of two successful but philosophically opposite approaches to value creation within a single industry. The enduring nature of these divergent paths—visible as parallel yet non-converging trend lines spanning decades—underscores that these are not accidental outcomes but the result of deliberate, entrenched corporate philosophies. By demonstrating that intangible asset-based strategies generate fundamentally different time-series properties, causal performance effects, and shock vulnerability profiles than tangible asset-based strategies, this research contributes to a deeper understanding of how strategic choices manifest in long-term financial outcomes and provides a framework for valuation, risk assessment, and policy design in emerging market contexts.

Statements and Declarations

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Potential Competing Interests

No potential competing interests to declare.

Data Availability

The datasets generated and/or analyzed during the current study are available from the Indonesia Stock Exchange (IDX) and Bloomberg/Refinitiv databases. Derived data supporting the findings of this study are available from the corresponding author upon reasonable request.

Author Contributions

All authors contributed to the conception, analysis, interpretation, and drafting of the manuscript.

References

1. ^[a, b, c, d]*Porter ME (1985). Competitive Advantage: Creating and Sustaining Superior Performance. New York, NY: Free Press. https://www.hbs.edu/faculty/Pages/item.aspx?num=193.*
2. ^*March JG (1991). "Exploration and Exploitation in Organizational Learning." Organ Sci. 2 (1):7187. https://www.jstor.org/stable/2634940.*
3. ^*World Health Organization (2021). WHO Report on the Global Tobacco Epidemic 2021: Addressing New and Emerging Products. Geneva, Switzerland: World Health Organization. ISBN 9789240032095.*
4. ^*Kementerian Keuangan Republik Indonesia (2022). "Informasi APBN 2022" [Information on the 2022 State Budget]. Kementerian Keuangan Republik Indonesia. https://media.kemenkeu.go.id/getmedia/0f9020ba-dce7-4116-8ea7-f1baf5986fa4/informasi-apbn-2022.pdf.*

5. ^ *Badan Pusat Statistik (2023). Statistical Yearbook of Indonesia 2023. Jakarta, Indonesia: B adan Pusat Statistik. https://www.bps.go.id/en/publication/2023/02/28/18018f9896f09f035 80a614b/statistik-indonesia-2023.html.*
6. a, b *Chaloupka FJ, Yurekli A, Fong GT (2012). "Tobacco Taxes as a Tobacco Control Strategy." Tob Control. **21**(2):172180. PMID 22345242.*
7. a, b, c *Fama EF, French KR (2000). "Forecasting Profitability and Earnings." J Bus. **73**(2):16117 5. doi:10.1086/209638.*
8. a, b *Penman SH (2013). Financial Statement Analysis and Security Valuation. 5th ed. New Yo rk, NY: McGraw-Hill Education. ISBN 9780078025310.*
9. a, b *Indonesia Tobacco Control Network (2020). "Tobacco Industry Interference Index: Indon esia 2020 (Based on 2019 Data)." Indonesia Tobacco Control Network. https://globaltobacc oindex.org/download/1439.*
10. ^ *Ng N, Weinehall L, hman A (2007). "'If I Don't Smoke, I'm Not a Real Man'Indonesian Teen age Boys' Views About Smoking." Health Educ Res. **22**(6):794804. https://academic.oup.co m/her/article/22/6/794/640787.*
11. ^ *Andry E, Aviantari SD, Mulia F, Yasmin NA, Pracoyo A (2023). "Supply Chain Management of Cigarette Industry in PT Djarum and Gudang Garam Indonesia." Swakarya J Penelit Sos Pengabdi Masy [Swakarya Journal of Social Research and Community Service]. **1**(2):2134.*
12. ^ *Sulastri EM, Suhono (2016). "Analisis Struktur, Kinerja, dan Perilaku Industri Rokok di Ind onesia selama Periode 2003-2012" [Analysis of Structure, Performance, and Behavior of the Cigarette Industry in Indonesia during the 2003-2012 Period]. Accounthink: Journal of Acco unting and Finance. **1**(01):7790. doi:10.35706/acc.v1i01.444.*
13. a, b, c, d *Barney J (1991). "Firm Resources and Sustained Competitive Advantage." J Manage. **17**(1):99120. doi:10.1177/014920639101700108.*
14. ^ *Williamson OE (1985). The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting. New York, NY: Free Press. ISBN 9780029348215.*
15. ^ *Song SI, Kueh CC, Rahman RA, Chu EY (2010). "Performance of Cross-Border Mergers and Acquisitions in Five East Asian Countries." Int J Econ Manage. **4**(1):6180.*
16. ^ *Laksono AS, Marcel M, Kee DMH, Mengjiao L, Fang LY, Yi LX, Zein MIM (2020). "Internatio nal Marketing Management: PT. Sampoerna Tbk." Int J Appl Bus Int Manage. **5**(1):93100.*
17. ^ *Susilo FS, Mangkusubroto K (2020). "Evaluation of a Business Strategy Post Merger & Acq uisition: Study Cases at PT. H.M Sampoerna Tbk, PT. Bentoel International Investama Tbk and PT. XL Axiata Tbk." Asia Pac J Adv Bus Soc Stud. **6**(1):7185. https://apiarpublications.co m/wp-content/uploads/2020/02/7 APJABSS V6I1 2020 pp.71-85.pdf.*
18. a, b, c *Subramanyam KR (2014). Financial Statement Analysis. 11th ed. New York, NY: McGra w-Hill Education. https://www.mheducation.com/highered/product/financial-statement-a nalysis-subramanyam.html.*
19. a, b, c, d *McGahan AM, Porter ME (1997). "How Much Does Industry Matter, Really?" Strateg Manage J. **18**(S1):1530.*
20. a, b, c *Dechow P, Ge W, Schrand C (2010). "Understanding Earnings Quality: A Review of the Proxies, Their Determinants and Their Consequences." J Account Econ. **50**(23):344401. doi:1 0.1016/j.jacceco.2010.09.001.*
21. a, b *Ohlson JA (1995). "Earnings, Book Values, and Dividends in Equity Valuation." Contemp Account Res. **11**(2):661687. doi:10.1111/j.1911-3846.1995.tb00461.x.*
22. ^ *Fama EF, French KR (1992). "The Cross-Section of Expected Stock Returns." J Finance. **47** (2):427465. doi:10.1111/j.1540-6261.1992.tb04398.x.*
23. a, b, c *Mueller DC (1986). Profits in the Long Run. Cambridge, UK: Cambridge University Pres s. ISBN 9780521306935.*
24. a, b, c *Sloan RG (1996). "Do Stock Prices Fully Reflect Information in Accruals and Cash Flow s About Future Earnings?" Account Rev. **71**(3):289315. doi:10.2308/TAR-96080423 09.*
25. ^ *Graham JR, Leary MT (2011). "A Review of Empirical Capital Structure Research and Direc tions for the Future." Annu Rev Financ Econ. **3**(1):309345. doi:10.1146/annurev-financial-102 710-144821.*

26. ^ *Horrigan JO (1965). "Some Empirical Bases of Financial Ratio Analysis." Account Rev. **40**(3):558568. doi:10.2308/TAR-4482734.*
27. ^ *Altman EI (1968). "Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy." J Finance. **23**(4):589609. doi:10.1111/j.1540-6261.1968.tb00843.x.*
28. ^ *Soliman MT (2008). "The Use of DuPont Analysis by Market Participants." Account Rev. **83**(3):823853. https://publications.aaahq.org/accounting-review/article/83/3/823/2988/The-Use-of-DuPont-Analysis-by-Market-Participants.*
29. ^ *Harvey CR (1994). "Predictable Risk and Returns in Emerging Markets (NBER Working Paper No. 4621)." National Bureau of Economic Research. doi:10.3386/w4621.*
30. ^ *Claessens S, Djankov S, Lang LHP (2000). "The Separation of Ownership and Control in East Asian Corporations." J Financ Econ. **58**(12):81112. https://www.sciencedirect.com/science/article/pii/S0304405X00000672.*
31. ^ *Hanafi MM, Setiyono B, Sanjaya IPS (2018). "Ownership Structure and Firm Performance: Evidence From the Subprime Crisis Period." Corp Gov Int J Bus Soc. **18**(2):206219. doi:10.1108/CG-10-2016-0203.*
32. ^ *Kiruthika G, Muthumari S (2024). "Financial Performance Analysis of Indian Banking Sector: A Comparative Study of Public and Private Banks in the Post-Digital Era (20192024)." Educ Admin Theory Pract. **30**(11):22602267. doi:10.53555/kuey.v30i11.10399.*
33. ^ a, b *Nabila NE, Murhadi WR, Wijaya LI (2025). "Ownership Structure and Dividend Policy in Indonesia." Proc Int Symp Manage (INSYMA). **22**:429434. https://insyma.org/proceedings/items/show/381.*
34. ^ a, b *Dickey DA, Fuller WA (1979). "Distribution of the Estimators for Autoregressive Time Series With a Unit Root." J Am Stat Assoc. **74**(366a):427431. doi:10.1080/01621459.1979.10482531.*
35. ^ *Rusydi MKM, Wibisono AKC (2025). "The Influence of Foreign Ownership, Company Size, Profitability, and Thin Capitalization on Tax Avoidance." J Akunt Perpajakan [Journal of Accounting and Taxation]. **11**(1):5770.*
36. ^ *Suprihanti A, Harianto H, Sinaga BM, Kustiari R (2018). "The Impact of Cigarette Excise Tax Policy on Tobacco Market and Clove Market in Indonesia." Int J Econ Financ Issues. **8**(6):5460. https://ideas.repec.org/a/eco/journ1/2018-06-8.html.*
37. ^ *Putra A (2006). "Strategi Benchmarking Sebagai Tolok Ukur Kinerja Perusahaan" [Benchmarking Strategy as a Measure of Company Performance]. Forum Ilmiah [Scientific Forum]. **3**(3):1116. https://ejurnal.esaunggul.ac.id/index.php/Formil/article/view/143.*
38. ^ a, b *Demirg-Kunt A, Detragiache E (1998). "The Determinants of Banking Crises in Developing and Developed Countries." IMF Staff Pap. **45**(1):81109.*
39. ^ *Zutter CJ, Smart SB (2018). Principles of Managerial Finance. 15th ed. New York, NY: Pearson. ISBN 9780134476315.*
40. ^ *Dickey DA, Fuller WA (1979). "Distribution of the Estimators for Autoregressive Time Series With a Unit Root." J Am Stat Assoc. **74**(366a):427431. doi:10.1080/01621459.1979.10482531.*
41. ^ *Johansen S (1991). "Estimation and Hypothesis Testing of Cointegration Vectors in Gaussian Vector Autoregressive Models." Econometrica. **59**(6):15511580. doi:10.2307/2938278.*
42. ^ a, b *Granger CWJ, Newbold P (1974). "Spurious Regressions in Econometrics." J Econom. **2**(2):111120. doi:10.1016/0304-4076(74)90034-7.*
43. ^ *Bai J, Perron P (2003). "Computation and Analysis of Multiple Structural Change Models." J Appl Econ. **18**(1):122. doi:10.1002/jae.659.*
44. ^ *Myers SC (1984). "Capital Structure Puzzle (NBER Working Paper No. 1393)." National Bureau of Economic Research. doi:10.3386/w1393.*

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