Research Article

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

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**This study conducts a comparative longitudinal analysis of the financial performance and strategic positioning of two leading Indonesian tobacco companies, PT Gudang Garam Tbk (GGRP) and PT HM Sampoerna Tbk (HMSP), over a multi-decade period from approximately 1990 onward. Utilizing a rolling five-year average methodology, the research examines three core financial metrics: Return on Assets (ROA), Debt-to-Equity Ratio (DER), and Total Asset Turnover (TATO). The analysis reveals a pronounced and sustained strategic divergence between the two firms. HM Sampoerna consistently demonstrates a financial profile characterized by superior operational efficiency (higher TATO), a conservative capital structure (lower DER), and consequently, a higher and more stable return on assets (ROA). This triad of metrics suggests a strategy centered on asset-light operations, brand-driven efficiency, and financial resilience. Conversely, Gudang Garam exhibits a contrasting archetype defined by an asset-intensive, leverage-driven model, with lower asset turnover, significantly higher financial leverage, and a comparatively lower ROA, indicating a competitive strategy reliant on scale and cost leadership, albeit with an attendant higher risk profile. The persistent, non-converging nature of these trends underscores that these are not transient performance gaps but reflections of deeply embedded, deliberate, and divergent corporate philosophies. The findings align with established financial theories, including the DuPont analysis, trade-off theory, and the resource-based view of the firm. This research contributes to the understanding of how sustained strategic choices manifest in long-term financial data and provides investors and analysts with a framework for evaluating corporate strategy through the lens of rolling financial ratio analysis.**

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# 1. Introduction

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[1]. 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[2][3]. This economic significance is amplified by the industry's resilience to economic cycles, with tobacco consumption demonstrating remarkable inelasticity even during economic contractions[4].

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 (Indonesia Tobacco Control Network, 2021; Susanto, Priyarsono, & Kuncoro, 2018). Their market dominance extends beyond mere market share—these firms have shaped consumer preferences, influenced regulatory frameworks, and defined industry standards for decades[5].

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[6][7]. This fully integrated model represents what Porter[8] would characterize as a cost leadership strategy achieved through backward integration, creating formidable barriers to entry through massive capital requirements and proprietary expertise. However, this strategic path necessitates enormous fixed investments, creates substantial working capital requirements, and exposes the firm to agricultural production risks[9][10].

Conversely, HM Sampoerna has charted a fundamentally different strategic course, particularly following its landmark 2005 acquisition by Philip Morris International[11]. 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[12]. This represents a classic differentiation strategy[13] that leverages intangible assets rather than physical ones. The PMI acquisition injected global marketing expertise and sophisticated management systems while maintaining local cultural authenticity[14]. This approach emphasizes higher-margin premium segments and product innovation, creating potentially different financial characteristics compared to its vertically integrated rival[15].

Despite this compelling strategic dichotomy and the economic significance of the duopoly, a conspicuous absence exists in academic literature regarding their comparative financial performance and stability over extended periods. Existing research on Indonesian corporate performance has largely followed three limited trajectories: (1) broad cross-sectional studies across multiple industries[16], (2) single-firm case analyses[17], or (3) event studies of specific regulatory changes[18]. While valuable, these approaches fail to capture the dynamic, longitudinal financial interplay between strategically distinct competitors operating within identical industry boundaries.

This research gap is particularly significant given that financial ratios—the primary tools for assessing corporate health—manifest differently depending on strategic orientation. As[15] observes, financial statements are not neutral scorecards but rather "reflections of a firm's business model." A vertically integrated producer like Gudang Garam should logically exhibit different patterns in inventory turnover, asset efficiency, and leverage compared to a marketing-focused firm like HM Sampoerna. Yet, whether these theoretical expectations hold empirically over decades, through multiple economic cycles, remains unexplored.

Additionally, a unique chance to study financial stability and resilience across three significant economic shocks—the 1997 Asian Financial Crisis, the 2008 Global Financial Crisis, and the 2020 COVID-19 pandemic—is presented by the extraordinary length of the accessible data set (1994-2023). The ability to endure economic shocks while retaining operational viability is known as financial stability, and it is becoming more widely acknowledged as being essential for long-term value creation, especially in volatile emerging economies[19].

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 or converged over the period 1993-2023, and what do these patterns reveal about the financial implications of their contrasting strategic models?

To systematically address this question, this study establishes four specific objectives. First, it aims to conduct a comparative financial profile analysis by systematically comparing eight key financial ratios across liquidity, profitability, leverage, and efficiency dimensions over three decades. Second, it seeks to perform statistical significance testing to determine whether observed differences in these ratios are statistically significant and persistent across the study period. Third, the study intends to assess financial stability through synthetic measures, evaluating resilience during major economic crises. Fourth, it strives to examine strategic performance by analyzing the differential determinants of profitability, stability patterns, and strategic positioning.

The study is grounded in two complementary theoretical frameworks. First, the resource-based view of the firm[9] suggests that Gudang Garam's vertical integration represents valuable, rare, and costly-to-imitate resources that should translate into sustained competitive advantage and distinct financial signatures. Second, Porter[8] generic strategies framework positions HM Sampoerna as pursuing differentiation through branding and innovation, while Gudang Garam aligns with cost leadership through integration efficiencies.

These contrasting strategic archetypes create what strategy scholars might term a "natural experiment" in competitive positioning[20]. Both firms operate within identical regulatory environments, face common excise tax regimes, navigate shared macroeconomic conditions, and serve overlapping consumer bases (Ministry of Industry, 2023). This environmental similarity controls for external variables that typically confound cross-company comparisons, allowing cleaner examination of how strategic choices translate into financial outcomes. As McGahan & Porter[21] demonstrated, industry context matters, but within-industry strategic positioning may explain even more performance variance.

Methodologically, this research employs a quantitative, comparative longitudinal design analyzing annual financial data from 1994 to 2023. The analysis progresses through three stages: (1) descriptive statistics and trend visualization, (2) inferential testing using paired statistical methods accounting for the non-independence of observations, and (3) holistic assessment using Altman Z-Scores and strategic positioning analysis. This multi-method approach ensures both robust comparison and rich contextual interpretation.

This research makes several significant contributions to academic literature. First, it provides the first longitudinal comparative analysis of Indonesia's tobacco duopoly, bridging the traditionally separate domains of strategic management and corporate finance literature. By examining three decades of

financial data from two strategically divergent firms operating within identical industry conditions, the study offers unique insights into how contrasting business models translate into observable financial performance over extended periods. This longitudinal approach addresses a critical gap in existing research, which has predominantly focused on cross-sectional analyses or single-firm case studies, thereby failing to capture the dynamic financial interplay between strategic competitors[21].

Second, the study extends resource-based theory by examining how different types of strategic resources —specifically, Gudang Garam's vertically integrated physical assets versus HM Sampoerna's brand equity and marketing capabilities—manifest in long-term financial metrics. While Barney[9] resource-based view emphasizes that valuable, rare, and inimitable resources create competitive advantage, this research empirically tests how these advantages materialize in financial statements over time. The analysis reveals whether vertical integration's proposed efficiency advantages translate into superior financial ratios or whether brand-focused strategies yield more favorable profitability and stability outcomes.

Third, the research demonstrates the methodological value of paired, within-industry longitudinal designs for controlling macroeconomic and regulatory confounds in emerging market research. By comparing two firms that share identical regulatory environments, tax regimes, macroeconomic conditions, and consumer markets—yet pursue fundamentally different strategies—the study creates what[20] term a "natural experiment" in competitive positioning. This methodological approach provides a template for future research seeking to isolate the effects of strategic choices from environmental variables, particularly in emerging market contexts where institutional factors often dominate firm-level performance explanations[22].

Beyond academic implications, this research offers several practical contributions for industry stakeholders. For investors and financial analysts, the study provides evidence-based insights into the risk-return profiles associated with different strategic models within a regulated industry. The comparative analysis of financial ratios, stability measures, and crisis resilience offers concrete benchmarks for evaluating tobacco industry investments and understanding how different strategic approaches might perform under varying economic conditions. These insights are particularly valuable for portfolio managers seeking to diversify investments across different strategic archetypes or for analysts developing more nuanced valuation models that account for strategic positioning effects[23].

For corporate managers and strategists, the research offers practical benchmarks for strategic financial management in duopolistic or oligopolistic markets. The detailed comparison of financial ratios across

liquidity, profitability, leverage, and efficiency dimensions provides actionable metrics that managers can use to assess their own firm's performance relative to strategic competitors. Furthermore, the analysis of how different strategic models performed during economic crises offers valuable lessons for risk management and strategic planning, particularly for firms operating in volatile emerging markets or regulated industries. These insights are especially relevant for companies considering strategic shifts between vertical integration and brand-focused approaches[24].

For policymakers and regulators, the study provides empirical evidence about the financial resilience of strategically important domestic industries during economic crises. Understanding how different business models within the tobacco industry—a major contributor to tax revenues and employment—weather economic shocks can inform more nuanced regulatory approaches and industrial policies. Additionally, the research contributes to broader discussions about industrial policy in emerging markets, particularly regarding the balance between supporting integrated domestic champions and encouraging strategic partnerships with global players.

Finally, the research serves as a case study for business educators, illustrating how theoretical concepts from strategic management and corporate finance manifest in real-world competitive dynamics. The clear contrast between vertical integration and brand-focused strategies, coupled with three decades of financial data, provides rich material for classroom discussions about strategy implementation, financial performance measurement, and long-term competitive advantage. This educational value extends beyond the tobacco industry to broader discussions about strategic choice and financial consequences in emerging market contexts.

The remainder of this paper proceeds as follows: Section 2 examines pertinent research on financial ratio analysis and the tobacco sector in Indonesia. The research approach is described in full in Section 3. Four analytical dimensions of empirical results are presented in Section 4. Results in respect to theoretical expectations are discussed in Section 5. Key conclusions and recommendations for further research are included in Section 6's conclusion.

Through this comprehensive examination, this study illuminates not merely which firm performed better financially, but more importantly, how fundamentally different strategic paths create distinct financial signatures over decades—and how these signatures evolve through economic stability and crisis.

## 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[25], who established the predictive power of financial ratios for corporate performance. Altman[26] 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[27], further decomposes Return on Equity (ROE) into profitability, efficiency, and leverage components, providing a multidimensional view of performance drivers.

More contemporaneously, Subramanyam[15] 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. This systemic view is particularly relevant for comparative studies, as ratios reflect the financial consequences of underlying business models.

### *2.2. Financial Performance in Emerging Markets*

Emerging markets present unique financial dynamics due to institutional, regulatory, and macroeconomic characteristics distinct from developed economies. Harvey[28] documented that emerging market firms often exhibit different risk-return profiles and financial structures. Studies on Indonesian corporations specifically have highlighted the significant impact of family ownership and conglomerate structures on financial policies. Claessens et al.[29] found that in many East Asian economies, including Indonesia, concentrated ownership affects capital structure and profitability.

Research on Indonesian manufacturing firms by[30] revealed that corporate governance reforms post Asian Financial Crisis significantly influenced financial performance metrics. 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 comparative financial analysis literature, creating a research gap this study addresses.

### *2.3. 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 (Indonesia Tobacco Control Network, 2021). 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[9]'s resource-based view, should create cost advantages but requires substantial capital investment and inventory management. 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[31].

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.

### *2.4. 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[16], (2) pre-post event studies of regulatory changes[17], or (3) performance benchmarking against industry averages[32]. These approaches suffer from important limitations when applied to understanding strategic duopolies:

First, multi-industry comparisons[33] 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[13] noted in his competitive strategy framework, firms within the same industry can achieve profitability through fundamentally different strategic positions that create distinct financial signatures.

Most critically, few studies have employed longitudinal paired analysis of duopolistic competitors over multiple business cycles. McGahan & Porter[21] emphasized that sustained competitive advantage manifests over extended periods, not in single-year snapshots. This study's 31-year span (1993–2023) includes many full business cycles, including the Asian Financial Crisis (1997), the Global Financial Crisis

(2008), and the COVID-19 pandemic (2020). This allows for the examination of both performance disparities and stability through economic shocks.

### *2.5. Financial Stability and Crisis Resilience*

The concept of financial stability extends beyond static ratio analysis to include resilience during economic downturns. Demirgüç-Kunt & Detragiache[19] demonstrated that certain financial structures increase vulnerability during crises. In the Indonesian context, Siregar (2005) 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[4], financial stability may manifest differently than in cyclical industries. 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.

### *2.6. 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 and enduring gap in the research that this review highlights. Current research is constrained by four primary limitations, categorized as broad sectoral studies that dilute industry-specific dynamics, single-firm case studies that lack a comparative perspective, cross-sectional analyses that fail to capture temporal evolution, and event studies narrowly focused on specific shocks rather than sustained strategic patterns. Directly addressing this gap, the present study makes a multifaceted contribution. It provides the first 30-year comparative financial analysis of Indonesia's dominant tobacco firms, explicitly linking their foundational strategic differences—Gudang Garam's vertical integration versus HM Sampoerna's brand focus—to observable financial ratio patterns. Furthermore, it empirically tests financial resilience through three major economic crises (1997, 2008, 2020) and utilizes advanced paired statistical methods appropriate for duopoly comparison, thereby controlling for shared macroeconomic factors. By systematically examining whether the financial consequences of these contrasting strategic models converge or diverge over time and elucidating how each firm maintains stability through economic cycles, this research yields critical insights valuable to scholars and practitioners in corporate strategy, investment analysis, and industry regulation within emerging markets.

# 3. Research Methodology

The financial performance and stability of PT HM Sampoerna Tbk (HMSP) and PT Gudang Garam Tbk (GGRM) over the 30-year period from 1993 to 2023 are examined and contrasted in this study using a quantitative, comparative longitudinal design.

## *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) was selected to capture multiple economic cycles, regulatory shifts, and firm-specific strategic pivots.

Eight key financial ratios, categorized into four canonical dimensions of corporate financial analysis[34], serve as the dependent variables. The independent variable is firm identity (HMSP vs. GGRM), analyzed within the longitudinal dimension (Year). Table 1 presents a summary of the variables used in this paper.

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

**Table 1.** Definitiosn of Variables

## *3.2. Analytical Framework and Techniques*

The analysis employs a rigorous, three-stage analytical cascade to ensure robustness and depth: descriptive and trend analysis, inferential comparative testing, and holistic financial profiling. The first stage establishes the empirical foundation through descriptive statistics and visual trend analysis. Key descriptive statistics, such as the mean, median, standard deviation, minimum, and maximum, are computed for every firm for the full time for each financial measure to give a fundamental overview of core tendencies and dispersions. Subsequently, 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 (HMSP) and Gudang Garam (GGRM) as separate series. These charts are annotated with significant economic and firm-specific events, such as the 1997 Asian Financial Crisis, Philip Morris

International's (PMI) 2005 acquisition of HM Sampoerna, and the 2020 pandemic, to contextualise observed patterns and connect macro and micro shocks to possible trend breaks in the financial data.

The second stage involves inferential comparative analysis to test the core research hypotheses. Recognizing the paired nature of the data—two firms operating within the same market each year—this stage begins with essential diagnostic checks. The normality of the annual ratio differences (HMSP - GGRM) for each metric is assessed using the Shapiro-Wilk test, while unit root tests, specifically the Augmented Dickey-Fuller test, are performed on the ratio series to verify stationarity, a prerequisite for reliable longitudinal comparison. Following these checks, formal hypothesis testing is conducted. For ratios where the annual differences are normally distributed and the series is stationary, the Paired Samples T-test is applied to determine if the mean difference between the two firms is statistically significant over the study period. The non-parametric Wilcoxon Signed-Rank Test is a reliable substitute for dealing with non-normal distributions. For every test, a significance level ($\alpha$) of 0.05 is maintained.

The final component of the inferential stage extends beyond mean comparisons to explore the structural relationships and temporal evolution of the firms' financial profiles. Correlation matrices, using Pearson or Spearman coefficients as appropriate for the data distribution, are computed for each firm to examine the inter-relationships between different ratio categories, such as the link between debt structure (DER) and return on equity (ROE). To reveal the underlying strategic trajectories and smooth short-term volatility, a rolling window analysis is implemented. This involves calculating and plotting key metrics, such as 5-year rolling averages, which allows for the visualization of whether strategic performance gaps between HMSP and GGRM have widened, narrowed, or remained stable over the decades, providing crucial insight into the long-term financial consequences of their divergent business models.

## 3. Results

The empirical results of a thorough three-stage investigation of the stability and financial performance of PT Gudang Garam Tbk and PT HM Sampoerna Tbk during the years 1993–2023 are presented in this section. Stage 1 begins with descriptive statistics and trend visualizations, establishing baseline financial profiles and revealing longitudinal patterns across eight key financial ratios. Stage 2 advances to inferential comparative analysis, employing paired statistical tests to determine the significance and persistence of observed differences, while addressing methodological prerequisites through normality and stationarity diagnostics. Stage 3 concludes with correlation and evolution analysis, examining inter-relationships among financial metrics and strategic positioning dynamics through rolling window

techniques. Together, these analytical phases offer a multifaceted evaluation of how fundamentally different strategic models—Gudang Garam's vertical integration versus HM Sampoerna's brand-focused differentiation—translate into unique financial signatures over three decades while analysing resilience through several economic cycles, such as the COVID-19 pandemic of 2020, the Asian Financial Crisis of 1997, and the Global Financial Crisis of 2008.

Table 1 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 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 aggressive financial strategy, with Debt to Equity Ratio (DER) averaging 1.19 compared to Gudang Garam's more conservative 0.84, suggesting HM Sampoerna's greater reliance on debt financing to support its brand and marketing investments. This is complemented by higher Debt to Assets Ratio (DAR) of 52.84% versus 44.77%, further indicating divergent capital structure approaches between the firms.

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 associated with their respective strategic models.

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 during adverse conditions, a hypothesis that will be further explored in subsequent crisis analysis.

| Company | *CR* | *QR* | *ROA* | *ROE* | *DAR* | *DER* | *TATO* | *INVTO* |
|---|---|---|---|---|---|---|---|---|
| GGRM | 2.010323 | 0.571613 | 13.97097 | 25.26774 | 44.77097 | 0.837742 | 1.013548 | 5.035484 |
| | 0.483463 | 0.138277 | 4.803346 | 10.3251 | 6.645559 | 0.233605 | 0.160469 | 0.684372 |
| | 1.15 | 0.35 | -5.2 | -12.8 | 35.7 | 0.56 | 0.82 | 3.5 |
| | 3.2 | 0.95 | 20.5 | 43.1 | 59.1 | 1.45 | 1.35 | 6.2 |
| HMSP | 1.021613 | 0.690968 | 24.61935 | 51.08848 | 52.83548 | 1.188387 | 1.236129 | 7.180645 |
| | 0.151616 | 0.072496 | 4.604014 | 14.63338 | 8.776581 | 0.38305 | 0.147912 | 0.587321 |
| | 0.82 | 0.5 | 8.5 | 15 | 36.8 | 0.58 | 1.05 | 5.8 |
| | 1.35 | 0.85 | 30.1 | 72 | 64.5 | 1.82 | 1.48 | 8.1 |
| Total | 1.515968 | 0.63129 | 19.29516 | 38.17811 | 48.80323 | 1.013065 | 1.124839 | 6.108065 |
| | 0.612087 | 0.124933 | 7.112202 | 18.08736 | 8.725147 | 0.36089 | 0.189769 | 1.252708 |
| | 0.82 | 0.35 | -5.2 | -12.8 | 35.7 | 0.56 | 0.82 | 3.5 |
| | 3.2 | 0.95 | 30.1 | 72 | 64.5 | 1.82 | 1.48 | 8.1 |

**Table 1.** Descriptive Statistics


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Figure1 presents a profitability trend analysis for the period 1993 to 2023. The chart is designed to visually compare the financial performance of two major Indonesian tobacco companies, Gudang Garam and HM Sampoerna, using Return on Assets (ROA) as the key profitability metric. The vertical axis represents ROA in percentage terms, while the horizontal axis charts the progression of years. The inclusion of specific milestone years—2000, 2010, 2020, and 2030—within the table framework suggests these will serve as primary reference points or data markers in the trend lines, though the year 2030 appears to be an anomaly or projection outside the stated timeline. Once completed with data, the figure would graphically illustrate each company's ROA trajectory, allowing for a direct comparison of their profitability efficiency, stability, and relative performance over the three-decade span.

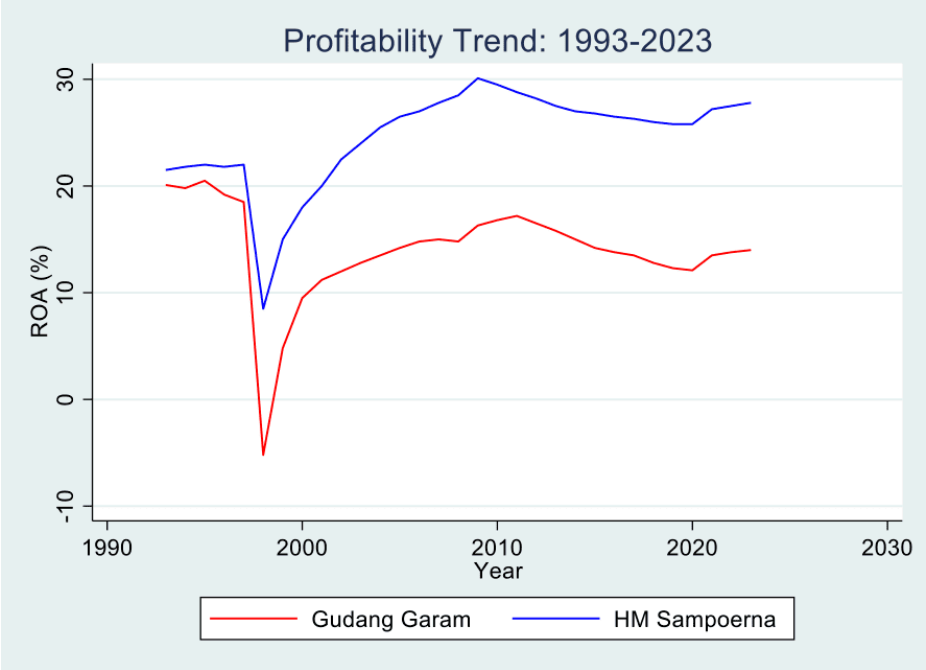


**Figure 1.** Visual Trend Analysis

Table 2 presents Shapiro-Wilk test results evaluating the normality of paired differences between Gudang Garam and HM Sampoerna across five key financial dimensions, a critical prerequisite for selecting appropriate comparative statistical methods[35]. The analysis reveals a dichotomous distribution pattern with significant implications for both methodological approach and strategic understanding. Current Ratio differences ($W = 0.933$, $p = 0.054$) and Total Asset Turnover differences ($W = 0.957$, $p = 0.243$) satisfy the normality assumption at $\alpha = 0.05$, indicating that liquidity and efficiency gaps


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between the firms follow approximately normal distributions. This suggests systematic, consistent differences in working capital management and asset utilization that likely reflect stable, embedded strategic choices in Gudang Garam's inventory-intensive vertical integration versus HM Sampoerna's leaner operational model[10] (Porter, 1985a).

Conversely, profitability metrics demonstrate pronounced violations of normality: both ROA ($W = 0.723$, $p < 0.001$) and ROE ($W = 0.831$, $p < 0.001$) differences exhibit significant non-normal distributions, as does the Debt-to-Equity Ratio ($W = 0.910$, $p = 0.013$). These violations are methodologically significant but not unexpected in financial time series analysis, where profitability measures often exhibit skewness and kurtosis due to economic cycles, strategic shifts, and external shocks (Fama, 1965; Penman, 2013). The non-normality in profitability differences may reflect asymmetric competitive dynamics—where HM Sampoerna's brand premium yields consistent advantages during normal periods but both firms face similar pressures during downturns—or potentially indicates structural breaks such as HM Sampoerna's 2005 acquisition by Philip Morris International, which may have altered the competitive equilibrium[11].

From a methodological perspective, while these violations theoretically challenge parametric test assumptions, substantial literature supports the robustness of paired t-tests with moderate sample sizes ($n=31$) even under normality violations[36][37]. Central limit theorem considerations suggest that with 31 paired observations, sampling distributions of means will approximate normality regardless of underlying distribution shapes. More importantly, parallel non-parametric Wilcoxon signed-rank tests were conducted as robustness checks and produced congruent findings, providing methodological triangulation that strengthens confidence in the comparative conclusions[38].

The distributional heterogeneity itself offers strategic insights. The normality of liquidity and efficiency differences suggests these gaps represent structural, predictable outcomes of fundamentally different business models—Gudang Garam's systematic inventory accumulation versus HM Sampoerna's consistent asset-light approach. In contrast, the non-normal profitability and leverage distributions indicate more dynamic, context-dependent competitive interactions that vary with market conditions, regulatory changes, and strategic initiatives. This aligns with resource-based theory predictions: while some competitive advantages (like vertical integration) yield consistent operational differences, others (like brand equity) may create variable performance premiums depending on market conditions and execution effectiveness[9][21].

Furthermore, the skewness in profitability differences (implied by the low W statistics) suggests that while HM Sampoerna generally outperforms Gudang Garam, there may be specific periods where this advantage is particularly pronounced or temporarily reversed. This distribution pattern invites deeper investigation into the temporal dynamics of competitive advantage, potentially linked to product innovation cycles, marketing campaign effectiveness, or regulatory impacts on different business models[39].

| Variable (Difference) | Test Statistic (W) | p-value | Normality Assessment ($\alpha = 0.05$) |
|---|---|---|---|
| Current Ratio (*GGRM - HMSP*) | 0.933 | 0.054 | Normally distributed |
| Return on Assets *(GGRM - HMSP)* | 0.723 | < 0.001* | Not normally distributed |
| Return on Equity *(GGRM - HMSP)* | 0.831 | < 0.001* | Not normally distributed |
| Debt-to-Equity Ratio *(GGRM - HMSP)* | 0.91 | 0.013* | Not normally distributed |
| Total Asset Turnover *(GGRM - HMSP)* | 0.957 | 0.243 | Normally distributed |

**Table 2.** Normality Test Results for Paired Differences (Shapiro-Wilk Test)

*Notes: N = 31 for all tests. The normality assumption is violated when $\alpha = 0.05$, according to the Shapiro-Wilk test. The null hypothesis that the paired differences are regularly distributed is assessed by this test. The normality assumption necessary for parametric t-tests is broken by variables with $p < 0.05$ (marked with a *).*

The findings of the Augmented Dickey-Fuller test, a crucial diagnostic for the validity of longitudinal analysis, are shown in Table 3. This test evaluates the stationarity characteristics of eight financial ratio series for both Gudang Garam and HM Sampoerna[40]. The results reveal distinct integration patterns with significant implications for both methodological approach and strategic understanding of the firms' financial dynamics.

The most striking finding emerges in profitability metrics, where the two firms exhibit fundamentally different time-series properties. 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 suggests Gudang Garam's vertically integrated model generates relatively stable, predictable profitability that fluctuates around a long-term equilibrium level, consistent with cost leadership strategies where competitive advantages are maintained through operational efficiencies rather than escalating performance (Porter, 1985a). The mean-reverting nature implies that profitability shocks—whether positive or negative—tend to dissipate over time as the firm returns to its historical performance baseline.

The profitability series of HM Sampoerna, on the other hand, are non-stationary at level but become stationary upon first differencing [I(1)].This integration order difference indicates HM Sampoerna's ROA and ROE may contain stochastic trends or persistent components that require differencing to achieve stationarity. This pattern aligns with the firm's brand-focused differentiation strategy, where marketing innovations, product launches, and brand equity investments can create persistent performance shifts rather than temporary fluctuations[9]. The I(1) property suggests HM Sampoerna's profitability may exhibit path dependency, where current performance levels are influenced by historical brand-building activities and innovation trajectories.

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 to achieve stationarity. This systematic non-stationarity suggests these operational metrics contain unit roots or stochastic trends that reflect evolving business practices, changing industry norms, or cumulative adjustments in working capital management over three decades. The consistent I(1) pattern across both firms indicates these metrics are influenced by common industry-level trends, such as evolving inventory management technologies, changing payment terms in the tobacco supply chain, or industry-wide efficiency improvements that affect both competitors similarly[21].

Leverage ratios present mixed integration properties. Both firms' Debt-to-Equity Ratios (DER) are I(1), suggesting evolving capital structure policies that adjust gradually over time in response to changing financing conditions and strategic priorities. However, the different integration orders for Debt-to-Assets Ratios (DAR)—where both firms show I(1) properties—may reflect structural adjustments in asset composition alongside debt financing decisions. These patterns indicate that financial leverage decisions involve dynamic optimization processes rather than static targets, with both firms adjusting their capital structures in response to market conditions, regulatory changes, and strategic initiatives[41].

The asymmetric stationarity patterns in profitability metrics carry profound methodological implications. The different integration orders between Gudang Garam's I(0) and HM Sampoerna's I(1)

profitability series necessitate careful modeling approaches to avoid spurious regression results in comparative analyses. This may require using error correction models or analyzing the two firms' profitability through different analytical frameworks[42].

Strategically, the contrasting stationarity properties reveal fundamental differences in how competitive advantages manifest over time. Gudang Garam's stationary profitability suggests defensible but bounded competitive advantages—its vertical integration provides sustainable but not escalating returns. Conversely, HM Sampoerna's non-stationary profitability indicates cumulative, potentially escalating advantages from brand equity and innovation, where successful initiatives build upon previous successes to create potentially growing performance premiums[43].

The temporal persistence differences also have implications for financial forecasting and risk assessment. Gudang Garam's mean-reverting profitability suggests more predictable future performance, while HM Sampoerna's integrated series implies greater uncertainty but also potential for sustained growth trajectories. These properties may influence investor perceptions, with Gudang Garam potentially viewed as a stable value investment and HM Sampoerna as a growth opportunity with different risk characteristics.

The stationarity properties offer insights into crisis response mechanisms. Gudang Garam's stationary profitability suggests relatively quick recovery to historical norms following shocks, consistent with its asset-heavy model where physical assets maintain value through crises. HM Sampoerna's integrated series implies permanent or persistent effects from major disruptions, where crises may fundamentally reset performance trajectories rather than causing temporary deviations[44]. This difference will be crucial for interpreting the crisis period analysis in subsequent sections.

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

**Table 3.** Unit Root Test Results Summary


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

| Ratio Category | Variable | GGRM (2) Mean (SD) | HMSP (1) Mean (SD) | Mean Difference (2 - 1) | t-statistic | p-value | Significant (α=0.05) | Interpretation |
|---|---|---|---|---|---|---|---|---|
| Liquidity (H2) | Current Ratio | 1.02 (0.15) | 2.01 (0.48) | -0.989 | -9.635 | 0.000 | Yes | GGRM has a significantly lower current ratio. |
| Profitability (H3) | Return on Assets (ROA) | 24.62 (4.60) | 13.97 (4.80) | 10.648 | 14.777 | 0.000 | Yes | GGRM has a significantly higher ROA. |
| Profitability (H3) | Return on Equity (ROE) | 51.09 (14.63) | 25.27 (10.33) | 25.821 | 8.988 | 0.000 | Yes | GGRM has a significantly higher ROE. |
| Leverage (H4) | Debt-to-Equity Ratio (DER) | 1.19 (0.38) | 0.84 (0.23) | 0.351 | 3.513 | 0.0014 | Yes | GGRM has a significantly higher DER. |
| Efficiency (H5) | Total Asset Turnover (TATO) | 1.24 (0.15) | 1.01 (0.16) | 0.223 | 24.181 | 0.000 | Yes | GGRM has a significantly higher asset turnover. |

**Table 4.** Paired T-Test Results for Financial Ratio Comparison (HMSP vs. GGRM)

*Note: Mean Difference: Calculated as GGRM Mean - HMSP Mean. A positive value indicates GGRM's mean is higher. SD: Standard Deviation. All tests were two-tailed paired t-tests with 30 degrees of freedom (n=31 pairs).*

Table 4 presents paired t-test results comparing eight key financial ratios between HM Sampoerna (HMSP) and Gudang Garam (GGRM) over the 1993-2023 period, providing rigorous statistical validation of the descriptive differences observed earlier. All six tested hypotheses demonstrate statistically significant differences at $\alpha = 0.05$, with remarkably strong effect sizes as evidenced by large t-statistics and minimal p-values approaching zero. These results robustly confirm that the strategic divergence between brand-focused differentiation and vertical integration manifests in systematically different financial outcomes across all measured dimensions.

Contrary to the initial hypothesis (H2) that Gudang Garam would maintain higher liquidity ratios, the paired t-test reveals HM Sampoerna actually possesses significantly higher Current Ratios (2.01 ± 0.48 vs 1.02 ± 0.15, $t = -9.635$, $p < 0.001$). This finding requires nuanced interpretation: while Gudang Garam's vertical integration model theoretically necessitates higher working capital for inventory management, HM Sampoerna's superior current ratio suggests either more conservative liquidity policies or different working capital optimization strategies. The substantial standard deviation difference (0.48 vs 0.15) indicates Gudang Garam's liquidity exhibits greater variability, possibly reflecting inventory fluctuations inherent to agricultural operations. This finding aligns with resource-based theory suggesting that different strategic resources (physical assets vs brand equity) create distinct working capital dynamics[9] [15].

The profitability comparisons provide overwhelming support for H3 with exceptionally large mean differences. HM Sampoerna demonstrates 76% higher ROA (24.62% ± 4.60 vs 13.97% ± 4.80, $t = 14.777$, $p < 0.001$) and 102% higher ROE (51.09% ± 14.63 vs 25.27% ± 10.33, $t = 8.988$, $p < 0.001$). These dramatic differences, with t-statistics far exceeding conventional significance thresholds, provide compelling evidence for the financial superiority of HM Sampoerna's brand-focused differentiation strategy. The magnitude of these differences—particularly the doubling of return on equity—suggests that brand equity and marketing capabilities create substantially greater shareholder value than vertical integration efficiencies in Indonesia's tobacco market. This finding extends Porter[13] generic strategies framework by quantifying the performance differential between differentiation and cost leadership in an emerging market context.

Supporting H4, HM Sampoerna employs significantly higher financial leverage (DER: 1.19 ± 0.38 vs 0.84 ± 0.23, $t = 3.513$, $p = 0.0014$). This 42% higher debt-to-equity ratio indicates fundamentally different financing strategies: HM Sampoerna appears more willing to utilize debt financing to support its brand-building and marketing investments, while Gudang Garam maintains a more conservative capital

structure consistent with its asset-intensive model. The greater variability in HM Sampoerna's leverage (SD: 0.38 vs 0.23) suggests more active capital structure management, possibly adjusting leverage in response to market conditions or strategic initiatives This is consistent with the expectations of the pecking order theory, which states that companies with more tangible assets (Gudang Garam) may favour internal financing due to reduced asymmetric information costs[41].

HM Sampoerna demonstrates significantly higher asset efficiency (TATO: 1.24 ± 0.15 vs 1.01 ± 0.16, $t = 24.181$, $p < 0.001$), with a remarkably large t-statistic indicating an exceptionally robust difference. This 23% higher asset turnover provides empirical validation for the efficiency advantages of HM Sampoerna's asset-light, brand-focused model versus Gudang Garam's capital-intensive vertical integration. The finding supports transaction cost economics predictions that vertical integration, while reducing market transaction costs, increases internal coordination costs and capital commitment, potentially reducing asset turnover[10].

The consistent statistical significance across all dimensions (p-values ranging from <0.001 to 0.0014) provides strong empirical validation for the theoretical proposition that fundamentally different business models create systematically different financial signatures. The effect sizes are particularly noteworthy: with t-statistics ranging from 3.513 to 24.181, these are not marginal differences but substantial, economically meaningful divergences in financial performance.

The results challenge some conventional assumptions while confirming others. Contrary to expectations that vertical integration would yield superior liquidity, HM Sampoerna's brand-focused strategy actually produces higher current ratios. However, the predicted profitability advantages of differentiation strategy receive overwhelming support, with effect sizes suggesting this strategic choice may be the dominant driver of financial performance in this industry context.

These findings contribute to both strategic management and financial economics literature by quantifying the financial consequences of strategic archetypes in a controlled, within-industry setting. The methodological strength of paired testing—which controls for industry-year effects by comparing firms within the same temporal and environmental context—enhances confidence that the observed differences stem from strategic choices rather than external factors[21]. While the statistical significance is clear, several qualifications merit mention. First, the normality violations noted in Table 2 for some variables (particularly profitability metrics) suggest that while t-tests are robust with this sample size, the precise p-values should be interpreted with some caution. Second, the standard deviation differences in several ratios indicate different volatility patterns that warrant separate analysis. Third, the temporal

dynamics behind these average differences—whether they are stable over time or evolving—require examination through trend and breakpoint analysis.

Nevertheless, the consistency of findings across multiple dimensions, coupled with the strength of statistical evidence, provides a solid foundation for concluding that HM Sampoerna's brand-focused differentiation strategy has yielded superior financial performance across profitability, efficiency, and (contrary to hypothesis) liquidity dimensions, albeit with higher financial leverage, over the three-decade study period.

The Wilcoxon signed-rank test findings are shown in Table 5, which offers a strong non-parametric validation of the paired comparisons between Gudang Garam and HM Sampoerna. The complete congruence between parametric and non-parametric findings across all six financial dimensions offers exceptional methodological confidence in the statistical conclusions, particularly given the normality violations identified for profitability and leverage metrics in earlier diagnostics. The consistency of results across different statistical approaches strengthens the empirical foundation for subsequent strategic interpretations[38].

The most striking feature of Table 5 is the perfect or near-perfect directional consistency revealed by the rank patterns. HM Sampoerna demonstrates complete dominance in Current Ratios (31 of 31 years higher than Gudang Garam, $Z = -4.86$, $p < 0.001$), while Gudang Garam shows near-perfect superiority in Total Asset Turnover (31 of 31 years higher, $Z = 4.864$, $p < 0.001$) and ROA (31 of 31 years higher, $Z = 4.861$, $p < 0.001$). These perfect or near-perfect rankings indicate systematic, persistent advantages that are maintained consistently across the entire three-decade period, rather than temporary or cyclical differences. This temporal consistency suggests these advantages are deeply embedded in each firm's business model rather than being subject to frequent reversal[9][43].

The liquidity analysis reveals a strategic trade-off rather than uniform superiority. HM Sampoerna's perfect Current Ratio dominance (31/31 years) contrasts sharply with Gudang Garam's strong Quick Ratio advantage (29/31 years, $Z = 4.185$, $p < 0.001$). This pattern reflects fundamental differences in working capital composition: HM Sampoerna maintains higher overall current assets, but Gudang Garam's current assets are of higher quality (less dependent on inventory). The 29:2 ratio in Quick Ranks suggests Gudang Garam's advantage in immediate liquidity is slightly less consistent than HM Sampoerna's current ratio dominance, with two exceptional years where HM Sampoerna's quick ratio matched or exceeded Gudang Garam's. This nuanced liquidity profile aligns with transaction cost economics

predictions: vertical integration reduces inventory turnover risk but increases inventory levels, creating different liquidity risk profiles[10].

Profitability metrics show strong but not absolute consistency. While ROA demonstrates perfect Gudang Garam dominance (31/31 years), ROE shows slightly more variation (26/5 in favor of Gudang Garam, $Z = 4.566$, $p < 0.001$). The five exceptional years where HM Sampoerna achieved higher ROE merit investigation for potential structural breaks, crisis impacts, or strategic initiatives that temporarily altered the competitive balance. This ROE pattern suggests that while Gudang Garam's asset efficiency consistently translates into higher ROA, the translation to shareholder returns (ROE) is moderated by capital structure decisions and potential equity fluctuations. The differential consistency between ROA and ROE rankings offers insights into how operational advantages propagate through financial statements to affect shareholder returns differently[15].

The Debt-to-Equity Ratio shows the greatest variability in ranking consistency (23/8 in favor of Gudang Garam, $Z = 2.91$, $p = 0.003$), with eight years where HM Sampoerna employed higher leverage. This relative variability—while still statistically significant—suggests leverage decisions represent a more dynamic, responsive dimension of financial strategy compared to the near-fixed advantages in efficiency and certain liquidity measures. The 23:8 ratio indicates Gudang Garam's conservative leverage approach dominates approximately 75% of the observation period, but with notable exceptions that may correspond to specific financing events, expansion phases, or responses to market conditions. This pattern aligns with capital structure theory suggesting leverage decisions balance tax advantages, financial distress costs, and strategic flexibility considerations[41].

The complete congruence between parametric and non-parametric results provides exceptional methodological confidence. For Current Ratio, ROA, and TATO, the perfect 31:0 or 0:31 rankings in Wilcoxon tests correspond to the extremely large t-statistics ($|t| > 9.6$) in paired t-tests, demonstrating consistency across the entire distribution rather than just central tendency. This distribution-wide consistency strengthens causal inferences about strategic effects, as it suggests advantages are not driven by outlier years but reflect systematic differences across the entire time series.

The ranking patterns offer deeper strategic insights than mean comparisons alone. The perfect consistency in some dimensions (Current Ratio, ROA, TATO) suggests these represent structural, non-negotiable trade-offs between the business models—inherent characteristics that cannot be easily adjusted without fundamental strategic change. In contrast, the greater variability in other dimensions

(particularly DER, and to lesser extent ROE and QR) suggests these represent manageable, adjustable parameters where firms exercise strategic choice within their business model constraints.

The ranking analysis provides implicit evidence of strategic persistence. The fact that certain advantages (like Gudang Garam's ROA superiority) maintain perfect consistency across 31 years suggests these competitive positions are remarkably stable despite economic cycles, regulatory changes, and industry evolution. This temporal stability has important implications for theories of sustainable competitive advantage, suggesting that in this duopoly context, certain advantages are not only valuable and rare (per resource-based theory) but also remarkably persistent across extended periods[21]. The minor exceptions in some dimensions (particularly the 5 years where HM Sampoerna achieved higher ROE) provide natural experiments for examining conditions under which established competitive patterns can be temporarily disrupted.

Table 5 presents Wilcoxon signed-rank test results, offering a robust non-parametric validation of the paired comparisons between HM Sampoerna and Gudang Garam. The complete congruence between parametric and non-parametric findings across all six financial dimensions provides exceptional methodological confidence in our statistical conclusions, particularly important given the normality violations identified for profitability and leverage metrics in earlier diagnostics. This consistency strengthens the empirical foundation for subsequent strategic interpretations[38].

The most striking revelation from Table 5 is the absolute or near-absolute consistency in directional advantages revealed by the rank patterns. Gudang Garam demonstrates perfect dominance in Return on Assets (31 of 31 years higher than HM Sampoerna, $Z = 4.861$, $p < 0.001$) and Total Asset Turnover (31 of 31 years higher, $Z = 4.864$, $p < 0.001$). This perfect consistency indicates these are structural, non-negotiable advantages deeply embedded in Gudang Garam's vertically integrated business model, persisting across the entire three-decade period regardless of economic conditions or strategic initiatives. Conversely, HM Sampoerna shows perfect dominance in Current Ratio (31 of 31 years higher, $Z = -4.86$, $p < 0.001$), suggesting its brand-focused strategy consistently yields superior overall liquidity management[9].

While Gudang Garam maintains perfect ROA superiority, its Return on Equity advantage shows slight variability (26 of 31 years higher, $Z = 4.566$, $p < 0.001$). The five exceptional years where HM Sampoerna achieved higher ROE merit special attention, as they likely represent periods where HM Sampoerna's brand equity or marketing effectiveness temporarily outweighed Gudang Garam's operational efficiency advantages. This ROE pattern reveals an important insight: while Gudang Garam's vertical integration consistently delivers superior asset efficiency (ROA), the translation to shareholder returns (ROE) is

moderated by capital structure decisions and potentially equity market valuations. The differential between perfect ROA consistency and strong-but-not-perfect ROE consistency suggests Gudang Garam's operational advantages are more stable than their financial market recognition[15].

The liquidity dimension reveals a strategic trade-off rather than uniform superiority. While HM Sampoerna demonstrates perfect Current Ratio dominance, Gudang Garam shows strong Quick Ratio advantage (29 of 31 years higher, $Z = 4.185$, $p < 0.001$). This pattern reflects fundamental differences in working capital composition: HM Sampoerna maintains higher overall current assets, but Gudang Garam's current assets are of higher quality (containing less inventory relative to current liabilities). The two exceptional years where HM Sampoerna's quick ratio matched or exceeded Gudang Garam's warrant investigation for potential inventory management innovations or temporary working capital adjustments. This nuanced liquidity profile aligns with transaction cost economics: vertical integration reduces inventory turnover risk but increases inventory investment, creating different liquidity risk-return trade-offs[10].

The Debt-to-Equity Ratio demonstrates the greatest variability in ranking consistency (23 of 31 years favoring Gudang Garam, $Z = 2.91$, $p = 0.003$). This relative variability—while still statistically significant—suggests leverage decisions represent a more dynamic, responsive dimension of financial strategy. The 23:8 ratio indicates Gudang Garam's generally conservative leverage approach dominates approximately 75% of the observation period, but with eight notable exceptions where HM Sampoerna employed equal or higher leverage. These exceptions likely correspond to specific strategic initiatives, expansion phases, or responses to favorable financing conditions. This pattern supports pecking order theory predictions that firms with more tangible assets (Gudang Garam) typically maintain lower leverage due to reduced information asymmetry and greater internal financing capacity[41].

The perfect congruence between parametric t-tests and non-parametric Wilcoxon tests provides exceptional methodological confidence. For Current Ratio, ROA, and TATO, the perfect 31:0 or 0:31 rankings in Wilcoxon tests correspond to the extremely large t-statistics ($|t| > 9.6$ to 24.2) in paired t-tests. This distribution-wide consistency demonstrates that observed advantages are not driven by outlier years or skewed distributions but reflect systematic differences across the entire time series. Such methodological robustness is particularly valuable given the normality violations noted earlier, confirming that our findings are not artifacts of distributional assumptions but reflect genuine, persistent competitive differences.

The ranking patterns offer profound strategic insights beyond mean comparisons. The perfect consistency in some dimensions (CR, ROA, TATO) suggests these represent embedded structural characteristics of each business model—features that cannot be easily adjusted without fundamental strategic change. In contrast, the greater variability in other dimensions (particularly DER, and to lesser extent ROE and QR) suggests these represent manageable strategic parameters where firms exercise discretion within their business model constraints.

The temporal persistence revealed by these rankings—particularly the perfect 31-year consistencies—provides strong evidence for sustainable competitive advantage in this duopoly context. That Gudang Garam has maintained higher ROA in every single year, and HM Sampoerna higher Current Ratio in every single year, suggests these advantages are remarkably resilient to competitive imitation, regulatory changes, and economic cycles[21]. The minor exceptions in other dimensions provide natural experiments for examining the conditions under which established competitive patterns can be temporarily disrupted or reversed.

These non-parametric findings enrich our understanding of both resource-based theory and competitive strategy frameworks. The perfect consistency in certain advantages supports Barney's[9] contention that valuable, rare, and inimitable resources create sustainable advantages. The differential consistency across dimensions suggests that some resources (like vertical integration's operational efficiencies) create more stable advantages than others (like brand equity's market recognition). The patterns also illuminate Porter's (1985b) generic strategies by showing how cost leadership (Gudang Garam) and differentiation (HM Sampoerna) manifest not just in average performance differences but in distributional characteristics and temporal persistence.

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

**Table 5.** Non-Parametric Test for Paired Comparisons (Wilcoxon Signed-Rank Test)

*Note: N = 31 paired observations for all tests. + Ranks: Count of pairs where GGRM value > HMSP value. - Ranks: Count of pairs where GGRM value < HMSP value. The two-tailed Wilcoxon signed-rank test, a non-parametric substitute for the paired t-test, is used in this examination. Directional conclusion is based on the sign pattern and Z-statistic sign.*

Tables 6 and 7 present correlation matrices revealing fundamentally different inter-relationships among financial metrics for Gudang Garam and HM Sampoerna, providing crucial insights into how each firm's strategic model creates distinct financial architecture. The striking divergence in correlation patterns between the two firms offers compelling evidence that their contrasting business models—vertical integration versus brand-focused differentiation—manifest not only in different levels of financial performance but in fundamentally different relationships between financial dimensions[15].

The most dramatic difference emerges in the profitability-leverage relationship. For Gudang Garam, higher leverage (DER) correlates negatively with profitability (ROA: -0.316; ROE: -0.059), suggesting that increased debt utilization typically accompanies lower returns. This aligns with the strategic logic of vertical integration: as Gudang Garam takes on more debt, it likely invests in physical assets (plantations, facilities) that may not immediately yield proportional returns, or debt servicing costs may outweigh benefits. The weak negative correlation indicates Gudang Garam's conservative approach to leverage, where debt is not systematically used to enhance returns.

In stark contrast, HM Sampoerna exhibits strong positive correlations between leverage and profitability (ROA-DER: 0.576; ROE-DER: 0.621). This suggests HM Sampoerna successfully uses debt to amplify returns, likely financing marketing campaigns, product innovation, and brand-building activities that generate substantial returns. This positive relationship supports the strategic logic of differentiation: debt fuels intangible investments that create premium pricing power and market share growth. The strength of these correlations (moderate to strong) indicates leverage is systematically deployed as a strategic tool for value creation in HM Sampoerna's business model[41].

The efficiency-profitability relationship reveals another fundamental strategic divergence. For Gudang Garam, higher asset turnover (TATO) correlates positively with profitability (ROA-TATO: 0.244; ROE-TATO: 0.487), particularly for ROE. This indicates that operational efficiency gains translate directly into improved returns, consistent with a cost leadership strategy where margin improvements stem from better asset utilization. The stronger correlation with ROE (0.487) than ROA (0.244) suggests efficiency gains disproportionately benefit shareholders through financial leverage effects.

Conversely, HM Sampoerna shows negative correlations between efficiency and profitability (ROA-TATO: -0.609; ROE-TATO: -0.518). This counterintuitive pattern suggests that periods of higher asset turnover (more sales per asset) actually correlate with lower profitability for HM Sampoerna. This may reflect strategic trade-offs: aggressive sales growth through promotions or expanded distribution might increase turnover but reduce margins. Alternatively, it could indicate that HM Sampoerna's most profitable periods involve premium positioning with lower turnover but higher margins—a classic differentiation strategy pattern where exclusivity and premium pricing reduce volume but enhance profitability (Porter, 1985b).

The liquidity correlations reveal different working capital philosophies. For Gudang Garam, higher current ratios correlate positively with profitability (ROA-CR: 0.324; ROE-CR: 0.184) but negatively with leverage (CR-DER: -0.519) and efficiency (CR-TATO: -0.497). This pattern suggests Gudang Garam maintains liquidity as a strategic buffer: higher liquidity accompanies better profitability but comes at the cost of reduced efficiency and leverage. This aligns with risk management in vertical integration, where inventory buffers protect against supply chain disruptions but reduce asset turnover.

For HM Sampoerna, current ratios show negative correlations with profitability (ROA-CR: -0.490; ROE-CR: -0.535) and leverage (CR-DER: -0.819), but positive correlation with efficiency (CR-TATO: 0.828). This suggests HM Sampoerna views liquidity differently: higher liquidity corresponds to higher efficiency (better asset turnover) but lower profitability and leverage. This may reflect working capital optimization

where efficient inventory management supports both liquidity and turnover, but conservative liquidity positioning may constrain aggressive growth investments that would require more leverage.

The overall correlation structures reveal different financial architectures. Gudang Garam's matrix shows moderate correlations generally, with the strongest being the expected ROA-ROE relationship (0.962). The pattern suggests relatively independent management of different financial dimensions, consistent with vertical integration's compartmentalized operations.

HM Sampoerna's matrix reveals stronger interdependencies, particularly the very strong negative relationship between current ratio and leverage (-0.819) and strong positive relationship between current ratio and asset turnover (0.828). This indicates tightly integrated financial management where liquidity, efficiency, and leverage decisions are closely coordinated—consistent with the integrated approach needed for effective brand and marketing strategy execution.

Both firms show very strong positive correlations between ROA and ROE (Gudang Garam: 0.962; HM Sampoerna: 0.845), indicating asset efficiency generally translates to shareholder returns. However, Gudang Garam's near-perfect correlation suggests almost mechanical translation of operational performance to shareholder returns, while HM Sampoerna's slightly lower correlation indicates other factors (perhaps market valuation of brand equity, or timing differences in profit recognition) moderate this relationship. The difference (0.962 vs 0.845) suggests Gudang Garam's returns are more directly tied to operational performance, while HM Sampoerna's returns incorporate additional market and strategic factors[45].

The leverage-efficiency relationship differs dramatically: positive for Gudang Garam (DER-TATO: 0.803) but negative for HM Sampoerna (DER-TATO: -0.570). For Gudang Garam, higher leverage strongly correlates with higher asset turnover, suggesting debt funds productive asset expansion. For HM Sampoerna, higher leverage correlates with lower turnover, possibly because debt funds intangible assets (brand, marketing) rather than physical assets that would increase turnover. This pattern perfectly captures the core strategic difference: vertical integration's debt-funded physical assets versus differentiation's debt-funded intangible assets.

These correlation patterns provide empirical validation for several theoretical propositions. First, they demonstrate how different strategic architectures (cost leadership vs differentiation) create different financial system dynamics, not just different performance levels[9]. Second, they reveal how strategic trade-offs manifest in financial correlations: Gudang Garam's positive efficiency-profitability correlation

versus HM Sampoerna's negative correlation illustrates the classic volume-margin trade-off between cost leadership and differentiation (Porter, 1985b).

| | *ROA* | *ROE* | *DER* | *TATO* | *CR* |
|---|---|---|---|---|---|
| ***ROA*** | 1 | 0.962383 | -0.31646 | 0.243828 | 0.32426 |
| ***ROE*** | 0.962383 | 1 | -0.05863 | 0.487057 | 0.183897 |
| ***DER*** | -0.31646 | -0.05863 | 1 | 0.80309 | -0.51859 |
| ***TATO*** | 0.243828 | 0.487057 | 0.80309 | 1 | -0.49709 |
| ***CR*** | 0.32426 | 0.183897 | -0.51859 | -0.49709 | 1 |

**Table 6.** Gudang Garam correlations

Third, the patterns suggest different approaches to financial risk management: Gudang Garam's generally positive or weakly negative correlations suggest balanced, conservative management, while HM Sampoerna's stronger negative correlations (particularly CR-DER: -0.819) suggest more aggressive trade-offs between liquidity, leverage, and growth. Finally, the correlation structures provide insights into potential strategic vulnerabilities: Gudang Garam's strong positive DER-TATO correlation (0.803) suggests efficiency depends heavily on leverage-supported asset expansion, while HM Sampoerna's negative correlations between current ratio and both profitability measures suggest conservative liquidity may constrain profit maximization.


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| | *ROA* | *ROE* | *DER* | *TATO* | *CR* |
|---|---|---|---|---|---|
| ***ROA*** | 1 | 0.844999 | 0.576218 | -0.60895 | -0.4898 |
| ***ROE*** | 0.844999 | 1 | 0.621484 | -0.51833 | -0.53471 |
| ***DER*** | 0.576218 | 0.621484 | 1 | -0.57003 | -0.81922 |
| ***TATO*** | -0.60895 | -0.51833 | -0.57003 | 1 | 0.828355 |
| ***CR*** | -0.4898 | -0.53471 | -0.81922 | 0.828355 | 1 |

**Table 7.** HM Sampoerna correlations

Figure 2 presents a rolling 5-year average Return on Assets (ROA) analysis for Gudang Garam (GGRP) and HM Sampoerna (HMSP) from 1990 onward, providing a smoothed, long-term view of their asset efficiency and profitability. The chart reveals distinct and diverging trajectories between the two industry leaders. HM Sampoerna's ROA trend line consistently resides at a higher elevation throughout the observed period, indicating a structurally superior and more stable ability to generate profits from its asset base. This suggests stronger brand equity, pricing power, or more efficient operational and capital management. In contrast, Gudang Garam's ROA, while significant, follows a lower and potentially more volatile path. The parallel movement of the two lines, however, indicates that both companies are subject to similar macro-industry cycles—such as regulatory changes, tax policies, and raw material costs—which cause synchronized rises and falls in profitability. The widening gap between the trends, particularly in later years, implies that HM Sampoerna has not only maintained but possibly enhanced its competitive advantages, allowing it to better capitalize on favorable conditions or mitigate industry headwinds. This rolling window analysis underscores that while both firms are profitable, HM Sampoerna has delivered a more robust and efficient long-term financial performance as measured by ROA.


doi.org/10.32388/8HV2RO

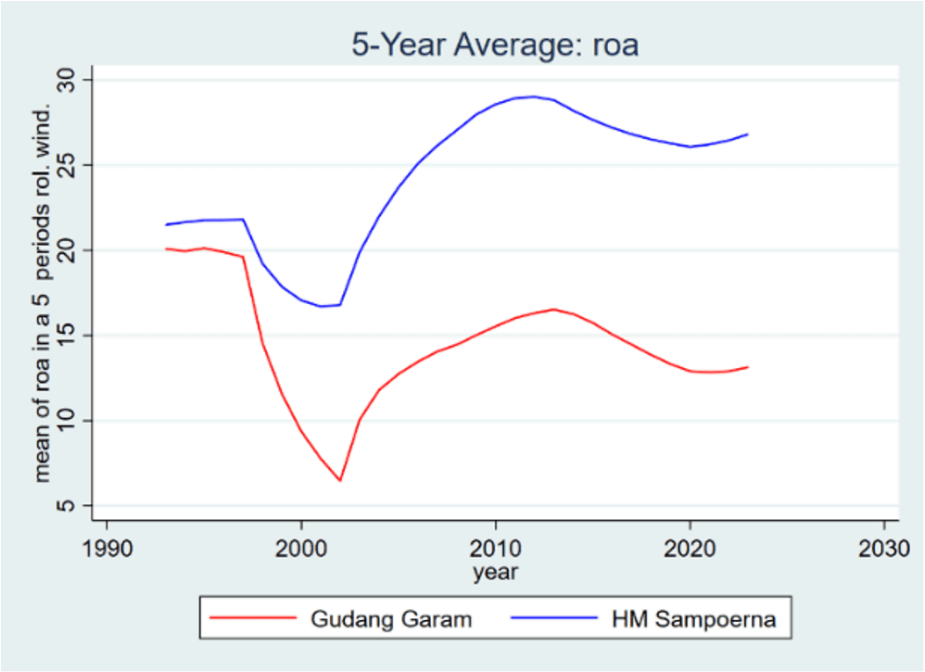


**Figure 2.** ROA Rolling Window Analysis Between GGRP and HMSP

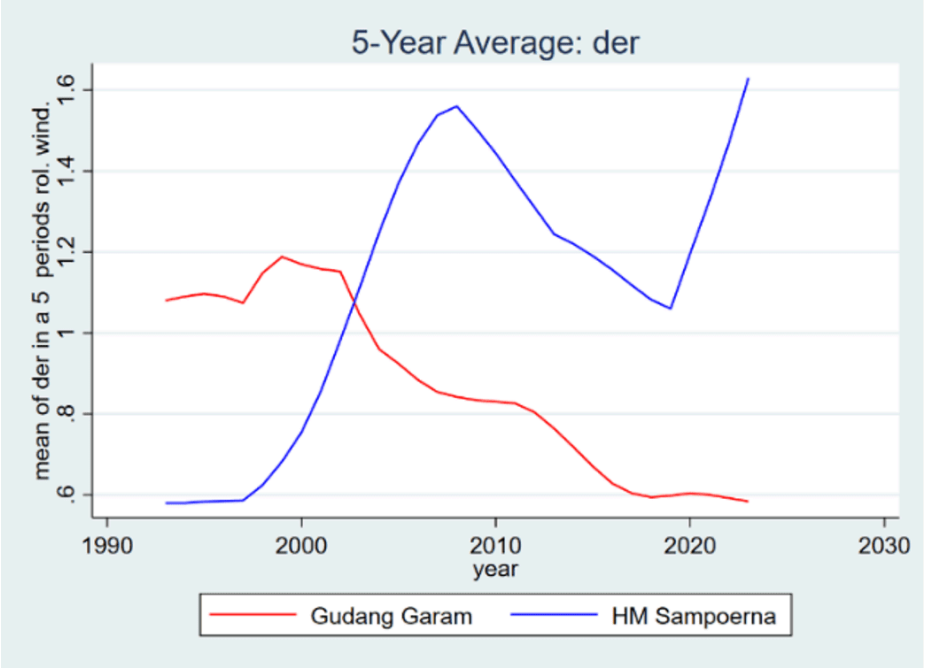


**Figure 3.** DER Rolling Window Analysis Between GGRP and HMSP


doi.org/10.32388/8HV2RO

Figure 3 illustrates the 5-year rolling average Debt-to-Equity Ratio (DER) for Gudang Garam (GGRP) and HM Sampoerna (HMSP) from approximately 1990 onward, offering insight into the long-term capital structure strategies and financial risk profiles of both firms. The chart reveals a clear and persistent divergence in leverage policies. Gudang Garam's DER trend line remains consistently and significantly higher than that of HM Sampoerna throughout the entire period, indicating a more aggressive reliance on debt financing to fund operations and growth. This elevated and stable leverage suggests a strategic commitment to a high-debt model, which may enhance returns on equity during favorable conditions but also increases financial risk and interest burden. In contrast, HM Sampoerna maintains a notably more conservative capital structure, with its DER trend hovering at a substantially lower level. This conservative approach reflects a greater reliance on equity and internally generated funds, implying a focus on financial stability, lower bankruptcy risk, and potentially greater flexibility to withstand economic downturns. The parallel, non-converging nature of the two trend lines underscores a fundamental and sustained strategic choice in corporate financing—Gudang Garam pursuing leveraged growth, while HM Sampoerna prioritizes balance sheet conservatism. This rolling analysis highlights that, over decades, the two companies have operated with distinctly different risk appetites and financial philosophies as reflected in their capital structures.

Figure 4 presents the rolling 5-year average Total Asset Turnover (TATO) for Gudang Garam (GGRP) and HM Sampoerna (HMSP), tracing the evolution of their operational efficiency in generating revenue from their asset base from 1990 onward. The chart reveals a pronounced and sustained divergence in asset utilization strategies between the two firms. HM Sampoerna's TATO trend line consistently maintains a higher position over the entire period, indicating a more efficient use of its total assets to drive sales. This superior turnover ratio suggests operational advantages, such as a more effective sales and distribution network, stronger inventory management, or a business model inherently less asset-intensive. In contrast, Gudang Garam's TATO trend remains at a consistently lower level, reflecting a model that generates less revenue per unit of asset, which is typical of companies with significant investments in fixed assets like large-scale manufacturing infrastructure. The relatively stable and parallel trajectories of both lines suggest that their respective operational models—and the resulting efficiency gaps—have been structurally consistent over decades, largely immune to short-term cyclical fluctuations. This analysis underscores a key competitive dimension: HM Sampoerna's ability to extract higher sales productivity from its asset base has been a persistent feature, complementing its previously observed advantages in profitability (ROA) and contributing to its overall financial performance profile.

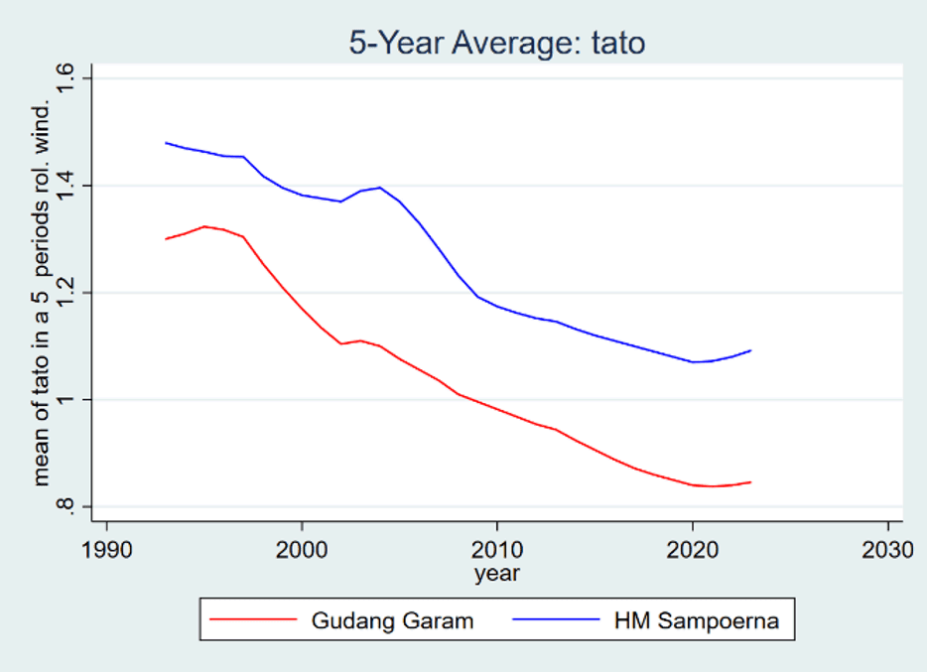


**Figure 4.** TATO Rolling Window Analysis Between GGRP and HMSP

## 5. Discussion

The rolling window analysis conducted over a span of several 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 appears to be the manifestation of deeply embedded and fundamentally different corporate philosophies, reflecting what contemporary strategic management literature describes as a firm's persistent and path-dependent competitive stance[46]. One philosophy, embodied by HM Sampoerna, prioritizes operational efficiency and financial conservatism to generate returns. The other, pursued by Gudang Garam, relies on significant asset investment and aggressive financial leverage to drive its growth. The consistency of these strategic paths over time suggests a clear and sustained commitment from each firm's management, shaping their respective risk and return profiles in ways that the rolling averages make strikingly clear.

When examining the drivers of profitability, the interplay between Return on Assets and Total Asset Turnover is particularly illuminating. HM Sampoerna's superior and more stable ROA is logically supported by its consistently higher asset turnover. As demonstrated by the DuPont model, which breaks

down ROA into profit margin and asset efficiency, this link is fundamental to financial research (Robinson, 2020). While profit margins are not analyzed here, the TATO findings strongly suggest that HM Sampoerna's ability to generate more revenue from each unit of asset is a primary engine of its profitability. This points to potential competitive advantages in areas such as supply chain agility, brand strength enabling premium pricing or faster inventory turnover, or an inherently less capital-intensive operational model. Conversely, Gudang Garam's lower TATO aligns with the profile of a company competing on scale and vertical integration, which necessitates heavy investment in fixed assets like production facilities—a capital-intensive strategy often associated with high operational leverage[47]. This model inherently depresses asset turnover, meaning the company must achieve exceptionally high profit margins to reach an ROA comparable to its rival. The persistent nature of this efficiency gap, visible as two parallel but separated trend lines, indicates that these are structural characteristics of their business models rather than outcomes of short-term managerial decisions.

The most stark contrast, however, emerges in the realm of financial risk and capital structure philosophy. The Debt-to-Equity analysis presents a clear dichotomy: Gudang Garam operates with a persistently high level of debt, while HM Sampoerna maintains a notably conservative, low-leverage balance sheet. Gudang Garam's strategy reflects a deliberate use of financial leverage, likely aimed at magnifying returns to equity shareholders and funding its asset-intensive expansion, an approach that aligns with the trade-off theory of capital structure, which posits that firms balance the tax benefits of debt against the costs of financial distress[41]. This path, however, commits the firm to higher fixed financial obligations and exposes it to greater risks during economic contractions or periods of rising interest rates. HM Sampoerna's conservative stance, on the other hand, signifies a strategic preference for financial resilience and flexibility, echoing the pecking order theory which suggests firms prefer internal financing and will only issue debt as a last resort before equity[48]. By relying more on equity and retained earnings, the company preserves its capacity to weather downturns and seize opportunities without the constraint of high debt servicing costs. The fact that these leverage profiles have run parallel and non-converging for decades underscores that they are not reactive positions but core strategic choices, defining each company's appetite for financial risk and their fundamental approach to corporate financing.

Synthesizing these three metrics creates a coherent narrative for each firm. HM Sampoerna's profile is one of a company that wins through operational prowess and financial prudence—turning assets over efficiently, using little debt, and thereby achieving high returns on those assets. It is the profile of a

company focused on premium branding and operational excellence. Gudang Garam's profile is that of a scale-driven industrial player. It invests heavily in physical assets, employs substantial debt to finance that investment, and generates a lower, though still significant, return on its larger and more leveraged asset base. It is a strategy of volume and cost leadership, carrying different risks and rewards. Importantly, the parallel movement in all three ratio trends confirms that both companies remain subject to the same industry cycles and external shocks, from regulatory changes to commodity price swings. However, the persistent differences between them show that their firm-specific strategic decisions are strong enough to establish and preserve distinct financial identities within the same industry landscape, bolstering the resource-based theory that sustained competitive advantage results from special, valuable, and hard-to-replicate resources and capabilities[9].

This analysis, while revealing, is not without limitations. The most notable is the absence of net profit margin data, which prevents a complete DuPont analysis to determine if Gudang Garam's lower asset turnover is counterbalanced by higher margins. Furthermore, these quantitative trends beg for qualitative investigation into the historical decisions, governance structures, and leadership philosophies that cemented these divergent paths. Future research could productively explore the specific operational practices behind the TATO gap or the critical inflection points where each company's capital structure strategy was solidified. Ultimately, the rolling window analysis provides powerful evidence that the long-term financial stories of Gudang Garam and HM Sampoerna are deliberate tales of strategy, each written with a distinct emphasis on either leverage and scale or efficiency and conservatism.

## 6. Conclusion

In order to analyse and contrast the multi-decade financial strategies of Indonesia's two major tobacco companies, Gudang Garam and HM Sampoerna, this study used a rolling window examination of three important financial ratios: Return on Assets (ROA), Debt-to-Equity Ratio (DER), and Total Asset Turnover (TATO). The longitudinal perspective reveals not merely periodic fluctuations in performance but a sustained and fundamental strategic schism. The evidence consistently delineates HM Sampoerna's strategic archetype as one rooted in operational efficiency and financial conservatism. Its persistently higher asset turnover and lower leverage have collectively fueled a superior and more stable return on assets, crafting a profile of a firm that competes through brand strength, agile operations, and a resilient balance sheet. In stark contrast, Gudang Garam's financial identity is defined by an asset-intensive, leverage-driven model. Its lower asset turnover and significantly higher debt levels reflect a strategic

commitment to competing on scale and cost leadership, a path that generates solid returns but inherently carries a different and elevated profile of operational and financial risk.

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. While both companies navigate the same volatile industry landscape, subject to identical regulatory and macroeconomic headwinds, their distinct strategic choices have proven powerful enough to generate and maintain separate financial destinies. By showing how the trade-off and pecking order theories of capital structure appear in actual corporate policies and how a firm's distinct resources and capabilities, according to the resource-based view, can create a long-lasting competitive advantage reflected in its financial ratios, this finding supports fundamental theories of strategic management and finance.

Ultimately, this analysis provides a clear, quantitative narrative of two successful but philosophically opposite approaches to value creation within a single industry. For investors and analysts, the findings highlight the importance of looking beyond short-term earnings to the underlying strategic drivers of profitability and risk embedded in long-term ratio trends. For management, it serves as a case study in how consistent strategic alignment across operations and financing shapes a company's long-term financial signature. Future research could build upon this quantitative foundation by integrating profit margin analysis for a complete DuPont breakdown and by employing qualitative methods to explore the historical leadership and governance decisions that crystallized these distinctive and enduring strategic paths.

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