

Value Analysis of Representative American Industrial Enterprises: Based on DuPont Analysis Method

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Abstract. Industrial analysis is a critical approach for evaluating corporate development potential, and DuPont analysis, as a core financial tool, can deeply uncover the driving factors behind corporate profitability. This study focuses on Caterpillar (CAT), Union Pacific Corporation (UNP), and Honeywell International Inc. (HON) in the U.S. industrial sector, selected for their distinct business models (capital-intensive vs. technology-driven) and systemic importance in the XLI ETF (18.7% aggregate weighting). By applying DuPont analysis to their financial data from 2022–2024, it decomposes Return on Equity (ROE) into profit margin, asset turnover, and financial leverage. The analysis reveals stark contrasts: CAT and UNP achieved ROE peaks of 54.08% and 57.53% in 2022, respectively, leveraging high financial leverage and economies of scale, whereas HON maintained stable but lower ROE (32.66%–34.70%) through technological advantages. The results demonstrate that CAT and UNP's performance was more susceptible to macroeconomic fluctuations, while HON's margins showed resilience but limited growth potential. Notably, CAT's asset turnover (0.72–0.79) outperformed UNP's (0.31–0.39), reflecting operational efficiency differences between heavy machinery and rail transport sectors. Additionally, the study highlights the limitations of DuPont analysis, such as its neglect of non-financial factors (e.g., technological innovation, industry competition) and long-term strategic impacts. Future research should incorporate these indicators with macroeconomic variables to enhance investment decision-making.

Keywords: DuPont analysis, industrial sector, Return on Equity, Financial performance, Investment.

1. Introduction

Industry analysis is a crucial method to gain insights into a company's development potential. Financial statements are information describing a company's condition and performance [1]. However, due to the lack of a unified standard, different institutions have diverse definitions of industries. To address this chaotic situation, in August 1999, Standard & Poor's and Morgan Stanley jointly introduced the Global Industry Classification Standard (GICS), which has revolutionized the global industry classification landscape and reshaped the models of industry analysis and investment research. A company is assigned to a single GICS classification in each of the four tiers according to its primary business activity as measured by the revenues derived from that activity, along with the earnings and market perception. The GICS structure consists of 11 sectors, and industrial is one of them. Industrial includes manufacturers and distributors of capital goods and companies that offer consumption & engineering services. It also includes providers of commercial & professional services and companies that provide transportation services. Industry is the engine of economic growth, enterprises in the Industrial sector create a lot of value through activities such as production and manufacturing and infrastructure construction, which directly contribute to GDP growth. Such as the mechanical manufacturing, aerospace, and other industries can promote the coordinated development of related industrial chains and promote economic prosperity. A strong industrial sector is also an important embodiment of a country's international competitiveness. Internationally competitive enterprises in high-end equipment manufacturing, electronic information, and other fields can gain share and profits in the global market, enhance the country's economic status, and promote International trade and investment.

The industrial sector's breadth under GICS necessitates a focused analysis to capture its multidimensional dynamics. Caterpillar (CAT), Union Pacific Corporation (UNP), and Honeywell International Inc. (HON) are selected as archetypal case studies based on their comprehensive

representation of the sector's core characteristics. These companies embody the complete industrial value chain, spanning capital goods production through logistics infrastructure to advanced technology solutions, while their differential market sensitivities—with beta coefficients of 1.2, 0.9, and 0.7 respectively—collectively mirror the sector's full risk spectrum.

As constituent stocks of major industrial indices with an aggregate 18.7% weighting in the XLI ETF, these three companies serve as systemically important benchmarks. Their selection enables cross-validation of findings across manufacturing, transportation, and high-tech industrial segments, providing unique insights into sub-industry-specific growth drivers. This comparative approach reveals distinct investment logics while controlling for sector-wide macroeconomic exposures, offering investors a framework to assess risk-return characteristics and long-term development trends across industrial subsectors.

In the value analysis of enterprises, the most commonly used method is the DuPont analysis. DuPont Analysis is a financial evaluation framework that breaks down return on equity (ROE) into multiple interconnected financial ratios. This approach enables comprehensive assessment of how a company's profitability, operational efficiency, and financial leverage collectively influence shareholder equity returns.

This study applies DuPont analysis to compare three industrial subsector leaders—Caterpillar (heavy machinery), Union Pacific (transport infrastructure), and Honeywell (diversified tech)—focusing on three core issues: First, ROE structure variations between capital-intensive (CAT/UNP) and technology-driven (HON) models. Second, optimal leverage thresholds considering their differing risk profiles ($\beta=1.2/0.9/0.7$ respectively). Third, subsector-specific efficiency benchmarks like asset turnover in rail (UNP) versus aerospace (HON). The analysis aims to establish industrial investment guidelines by revealing how profitability drivers shift across business models, with CAT/UNP typically prioritizing scale/leverage while HON emphasizes margin sustainability. Findings will help investors customize evaluation metrics for each industrial segment.

2. Representative Companies in the Industrial Sector

CAT was founded in 1925 and is headquartered in Deerfield, Illinois, the United States. It is a globally leading manufacturer of construction machinery. The company provides innovative solutions for industries such as construction, energy, and transportation, with products including excavators, bulldozers, power generators, and smart service systems. Renowned for reliability, durability, and efficiency, CAT operates in over 180 countries and regions, supported by cutting-edge technology and a worldwide service network. Committed to sustainability, the company drives digital and automation advancements to enhance customer productivity while reducing environmental impact.

UNP has its origin in 1862, its headquarters is located in Omaha, Nebraska. It is one of the largest railway transportation companies in the United States, and its business model is highly asset-intensive. UNP provides transportation services for a variety of goods such as grains, fertilizers, foodstuffs, coal, etc., and also transports construction products, industrial chemicals, plastics, etc., as well as finished automobiles, auto parts, and intermodal container goods. It is an important railway transportation enterprise in the United States and has a wide influence in the industrial field.

HON is an American multinational corporation headquartered in Morristown, New Jersey. It is a diversified high-tech enterprise, whose business covers fields such as aerospace and automatic control. HON has an enormous impact on the development of the global industry and economy.

3. Literature Review

3.1. Theoretical Foundation of DuPont Analysis

People usually analyze the quality of a company by looking at its financial statements. Moreover, examining financial ratios plays a vital role in understanding financial statements, spotting movements and developments, and gauging the overall financial state of the business, especially in pinpointing positive and negative financial trends [2]. Financial ratios are useful tools. They help companies and investors analyze and compare the relationships between different pieces of financial information over the company's history [2]. Besides, DuPont analysis is a deepening and expansion of financial analysis. The DuPont analysis is a classic and widely used financial analysis method, and it is an important part of the financial analysis system. Donaldson Brown created it in 1914, and the business he worked for at the time gave it its name. Since then, it has been a widely used technique for breaking down the company's performance into a limited set of financial ratios [3]. Investors can use the DuPont Model to compare the operational efficiency of two comparable enterprises, managers can use it to identify strengths and weaknesses that need to be addressed, and shareholders can use it to evaluate the components of a company's return on equity (ROE) and determine which financial activities contribute most to changes in ROE [4].

DuPont decomposition mainly includes two-factor decomposition, three-factor decomposition and five-factor decomposition.

Two-factor Decomposition breaks down a company's return on equity into two parts: the net profit margin and the return on total assets (how much money can the company earn by using the assets) and the equity multiplier. According to the equity multiplier, investors can know how much money the company has borrowed to help make profits. Using two-factor decomposition, people will understand whether a company's profitability relies on its own substantial assets or on the funds borrowed from outside to magnify returns. If the equity multiplier is too high, it may indicate that the debt of this company is high, and there is a risk in investing in this company.

Three-factor Decomposition further breaks down the net profit margin on total assets into the operating net profit margin and the total asset turnover ratio on the basis of two-factor decomposition. The operating net profit margin refers to the ratio of net profit to operating revenue, which reflects the enterprise's ability to obtain profits in its business activities. The total asset turnover ratio, which measures how well an organization uses its assets and how efficiently it operates them, is calculated by dividing its operating revenue by its average total assets. Three-factor decomposition enables a more profound comprehension of the profit-making process within a company. Investors can discern whether a company makes money by selling high-priced products, through high-volume, low-margin sales, or by borrowing money and using leverage.

Five-factor Decomposition is to conduct a more detailed analysis on the basis of three-factor decomposition. It decomposed the return on net assets into five parts: net profit margin in sales, total asset turnover, equity multiplier, operating profit margin, and net asset turnover. The five-factor decomposition can present the company's performance in aspects such as taxation, interest expenses, operational efficiency, asset utilization, and financial leverage in a more comprehensive manner. In addition to facilitating a thorough examination of the business's financial status, this analytical approach makes it possible to pinpoint the precise reasons behind the company's advantages and disadvantages.

3.2. Functions of Key Financial Indicators

Mean financial indicators serve as crucial instruments for assessing a company's financial standing and operational achievements. Here are the main functions:

The first and most important function is profitability indicators. This ratio evaluates a business's capacity to turn a profit. An excellent company's future is indicated by a high profitability ratio, which raises investor demand for the company's stock. From the investors' perspective, the better a company's profitability growth is, the more promising its future prospects seem [5]. The ratio of a

company's net earnings to its revenues is known as its net profit margin. This shows how much of the business can turn a profit at a given level of revenue [5]. The relationship between net income and shareholder equity is used to calculate ROE. It calculates a company's profit margin in relation to its total shareholder equity [5].

A company's ability to pay off debts or commitments that are about to mature is gauged by its liquidity ratio, which shows its ability to clear past-due debts within the allotted time frame. A company's current ratio indicates its ability to make on-time debt payments. The ability of the business to fulfill short-term obligations is indicated by a higher current ratio value. On the other hand, a larger quick ratio indicates that the business can pay short-term obligations more quickly since it can do so without inventory, maximizing earnings [6]. The current ratio evaluates a company's capacity to use its current assets to settle short-term debt (debts that are due within a year) [5].

Another significant metric is the asset turnover indicator, which includes the accounts receivable and inventory turnover ratios. The inventory turnover ratio measures how quickly a business sells its stock. A greater ratio suggests that the business is using more effective inventory management techniques. The accounts receivable turnover ratio reflects the speed at which the company collects its receivables, which helps evaluate the effectiveness of credit policies.

The application of these indicators varies across different industries. For example, in the high-tech industry, the net profit margin on sales is crucial as companies rely on innovative products for high-margin profits. Asset turnover ratio is also important as they need to quickly update equipment and technologies. In the retail industry, a high asset turnover ratio is vital as it reflects the efficiency of inventory management. The return on equity is closely watched in the financial industry to evaluate the performance of investment and financing. In the manufacturing industry, the return on total assets is significant as it reflects the efficiency of using production-related assets. Overall, the emphasis on these indicators depends on the characteristics and key success factors of each industry.

3.3. Application of DuPont Analysis in the Stock Market

DuPont System analysis not only provides an understanding of ROE, but also helps identify key factors that affect profitability and operational efficiency [7]. An individual or party (commercial entity)'s equity ownership in a corporation or limited liability company is represented by stock, which is a security. In addition to the equity, the party is entitled to the company's assets and income and is entitled to attend a general meeting of shareholders (GMS) [5].

In the stock market, DuPont analysis can be applied in the following ways: Use the net profit margin on sales to evaluate a company's cost - control and profit - making capabilities, as companies with a high net profit margin are often more appealing; compare the ROE and its components of different companies to screen stocks, identify those that perform well and uncover investment opportunities; observe the equity multiplier to measure risk, determining a company's degree of dependence on debt financing and evaluating its financial stability and risk; analyze the historical trends of ROE and its component indicators to predict trends, forecasting a company's future earnings and assisting in judging stock price trends; and use it to evaluate businesses in the same sector in order to find those that have a competitive advantage.

3.4. Summary of Literature Insights

DuPont analysis provide important insights into which areas business should focus on to increase their profitability [8]. Research demonstrates that this method, through decomposing ROE into profit margin, asset turnover, and financial leverage, not only diagnoses corporate financial performance but also reveals unique industry characteristics. Capital-intensive industrial enterprises (e.g., CAT and UNP) rely more on asset turnover and leverage effects, while technology-driven firms (e.g., HON) focus on profit margin improvement. However, it should be noted that the static nature of traditional DuPont analysis struggles to capture the dynamic interactions among components during economic cycles. These findings suggest that companies should optimize the DuPont model according to industry-specific characteristics while incorporating macroeconomic variables for more precise

financial decision-making. Future research should further explore the method's adaptability across different industrial subsectors.

4. Data and methods

The data used in this article are all from Yahoo Finance (<https://uk.finance.yahoo.com/>) and the official websites of the companies selected above: CAT (<https://www.caterpillar.com/>), UNP (<https://www.up.com/index.htm>) and HON (<https://www.honeywell.com/us/en>), from 2021-2024.

The following formula makes up the fundamental DuPont model:

$$ROE = (\text{Net Income}/\text{sales}) * (\text{Sale}/\text{Total Assets}) * (\text{Total Assets}/\text{Total Equity}) \quad (1)$$

$$ROE = \text{Net Profit Margin} * \text{Assets Turnover} * \text{Equity Multiplier} \quad (2)$$

In addition, it can be further extended: Return on assets (ROA) is a ratio used to measure the ability of bank management to generate overall profits. The greater the ROA is, the greater the level of profit achieved by the bank and the better the company's performance [9].

$$ROA = \text{Net Profit Margin} * \text{Total Asset Turnover} \quad (3)$$

Therefore, the DuPont formula can also be expressed as

$$ROE = ROA \times \text{Equity Multiplier}. \quad (4)$$

There are also some calculation methods and decomposition of financial indicators that investors need to know.

$$\text{Net profit margin} = \text{Net profit} / \text{Operating revenue} \quad (5)$$

$$\text{Asset turnover ratio} = \text{Operating revenue} / \text{Total assets} \quad (6)$$

$$\text{Equity multiplier} = \text{Total assets} / \text{Shareholders' equity} \quad (7)$$

5. Analysis and results

5.1. The Results of DuPont Analysis

The core of the DuPont analysis lies in decomposing the ROE into three components: the net profit margin, the total asset turnover, and the equity multiplier, so as to comprehensively evaluate a company's profitability, operational efficiency, and financial leverage level. Table 1 shows the data that DuPont analysis needs to use for the three companies.

Table 1. Financial Indicators of the Companies in the Past Three Years

Financial Indicators	Year	CAT	UNP	HON
Current Ratio	2022	1.39	0.72	1.25
Current Ratio	2023	1.35	0.81	1.27
Current Ratio	2024	1.42	0.77	1.31
Quick Ratio	2022	0.87	0.58	0.88
Quick Ratio	2023	0.87	0.67	0.84
Quick Ratio	2024	0.89	0.62	1.01
Cash Ratio	2022	0.22	0.18	0.51
Cash Ratio	2023	0.20	0.21	0.44
Cash Ratio	2024	0.21	0.19	0.50
Total Assets Turnover	2022	0.72	0.39	0.59
Total Assets Turnover	2023	0.79	0.31	0.63
Total Assets Turnover	2024	0.74	0.36	0.56
Fixed Assets Turnover	2022	4.93	0.47	6.70
Fixed Assets Turnover	2023	5.43	0.45	6.80
Fixed Assets Turnover	2024	4.98	0.41	6.50
Working Capital Turnover	2022	4.60	15.85	7.27
Working Capital Turnover	2023	5.48	17.21	7.76
Working Capital Turnover	2024	5.06	-22.10	6.63
Accounts Receivable Turnover	2022	3.32	13.15	4.93
Accounts Receivable Turnover	2023	3.56	11.63	5.11
Accounts Receivable Turnover	2024	3.44	1.22	5.02
Accounts Payable Turnover	2022	4.82	17.33	3.26
Accounts Payable Turnover	2023	5.53	15.88	3.09
Accounts Payable Turnover	2024	5.33	15.51	3.47
Total Debt Ratio	2022	80.60%	81.42%	72.00%
Total Debt Ratio	2023	77.70%	77.97%	73.00%
Total Debt Ratio	2024	77.80%	75.10%	74.52%
Financial Leverage Ratio	2022	5.16	5.38	3.59
Financial Leverage Ratio	2023	4.80	4.54	3.74
Financial Leverage Ratio	2024	4.50	4.01	4.04
Cash Coverage Ratio	2022	9.72	8.51	11.90
Cash Coverage Ratio	2023	13.80	9.55	9.08
Cash Coverage Ratio	2024	14.25	9.55	9.08
Profit Margin	2022	0.11	0.28	0.15
Profit Margin	2023	0.15	0.28	0.15
Profit Margin	2024	0.17	0.28	0.15
Gross Margin	2022	29.47%	45.04%	37.28%
Gross Margin	2023	34.69%	43.65%	38.09%
Gross Margin	2024	36.00%	45.50%	38.09%
Return on Assets	2022	10.1%	10.69%	9.09%
Return on Assets	2023	12.2%	10.05%	9.27%
Return on Assets	2024	12.30%	10.00%	8.30%
Return on Equity	2022	54.08%	57.53%	32.66%
Return on Equity	2023	41.67%	45.62%	34.70%
Return on Equity	2024	44.50%	42.60%	33.09%

Source: Yahoo Finance (<https://uk.finance.yahoo.com/>)

Through DuPont decomposition, it can be seen that CAT's high ROE is mainly driven by the following three factors: First, Profit Margin: It was 11% in 2022. Although lower than that of peers UNP (28%) and HON (15%), it has increased compared to its historical levels (rising to 15% in 2023 and reaching 17% in 2024), reflecting improvements in cost control or pricing power. Second, Total Assets Turnover: In 2022, it was 0.72, significantly higher than that of UNP (0.39), but lower than that of HON (0.59), indicating that its asset - use efficiency is above the medium level in the heavy - asset industry. Third, Financial Leverage Ratio: It was as high as 5.16 times in 2022, much higher than that of HON (3.59) and close to that of UNP (5.38), suggesting that CAT has amplified shareholder returns through high debt, but it also brings potential risks.

CAT's ROE (54.08%) in 2022 was slightly lower than that of UNP (57.53%), but much higher than that of HON (32.66%). The main differences stem from UNP's higher profit margin and HON's more conservative leverage strategy.

An assessment of the company's financial performance and revenue generation accuracy is given by Du Pont's study. This study is thorough since it examines the firm's profitability and incorporates efficiency in addition to calculating the earnings the company makes from its products [1].

5.2. Trend Observation

Draw Figure 1 based on the data in Table 1. It can be observed that over the past five years, CAT and UNP showed volatile ROE trends, peaking in 2022 (54.08% and 57.53%, respectively) before declining in 2023–2024, likely due to reduced financial leverage for CAT and operational pressures for UNP. HON remained stable around 30–35%, reflecting its resilient business model. CAT's sharp swings highlight its cyclical exposure, while UNP's historically high margins softened post-2022. By 2024, none regained their 2022 highs, with HON's slight dip suggesting margin challenges. Overall, CAT and UNP's performance mirrors macroeconomic shifts, whereas HON's steadiness stands out.

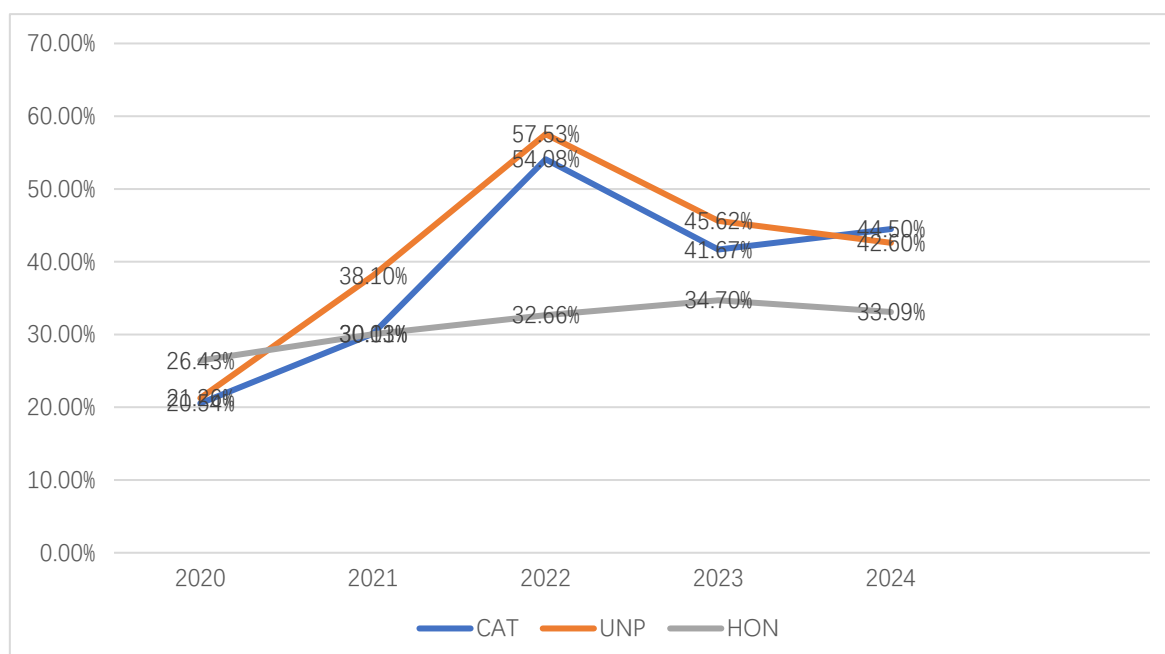


Fig. 1 ROE of three companies in the past five years

5.3. Investment Recommendations

Based on the data in Table 1 and Table 2, the historical ROE levels of CAT and UNP companies are relatively high. Even though they have declined, their foundations are still solid, indicating that they have a certain profit-making potential. If investors have a moderate risk appetite and are

optimistic about the industry's prospects, they can further conduct in-depth research on the business models and market strategies of these two companies. If there are no major adverse changes in the companies' fundamentals, CAT or UNP is relatively more investable. Comparatively, CAT has a slightly smaller decline, which may give it a slight edge.

The ROE of HON has been at a low level for a long time, and its profit performance is relatively poor. Among these three companies, if investors hold the stocks of the HON company, from the perspective of pursuing higher investment returns, they may consider selling and switching to investment targets with stronger profitability. However, the final decision still needs to comprehensively consider the industry development trend, potential positive factors of the company, etc.

5.4. Limitations of the Method

DuPont analysis overemphasizes short-term financial metrics, potentially leading industrial firms to prioritize immediate profits over long-term R&D and equipment upgrades, harming sustainability. Moreover, enterprise value is affected by industry competition (e.g., new energy vehicle impact on traditional ones) and macro factors (economic cycles, policies, interest/exchange rates; e.g., demand drops in downturns, higher costs with tightened environmental policies).

Although the DuPont analysis provides a powerful tool for evaluating a company's value, its limitations should not be overlooked: The financial structures of different industries vary greatly, and direct comparison may not be accurate enough. For example, UNP's high net profit margin is partly due to its monopolistic market position, while CAT and HON face more intense market competition. The DuPont analysis mainly focuses on financial indicators and ignores the influence of non-financial factors such as industry competition, technological innovation, and the macroeconomic environment. Regression analysis results support Lev & Thiagarajan's findings, which indicate that a firm's worth is significantly influenced by its earnings, and as a result, market investors value higher earnings [10]. This indicates that incorporating macroeconomic variables into the regression analysis may help to enhance the performance of the DuPont analysis model. Future research can incorporate more financial indicators (such as free cash flow, capital expenditure, etc.) and non-financial factors to evaluate a company's value more comprehensively. In addition, dynamic analysis (such as time series analysis) is also helpful in revealing the changing trends of a company's financial performance.

5.5. Discussion and Summary

The DuPont analysis reveals clear differences in how CAT, UNP, and HON generate shareholder returns, yet its reliance on financial ratios alone presents limitations. While CAT and UNP achieve higher ROE through leverage and asset efficiency, their performance fluctuates with economic cycles, whereas HON's stability stems from technological margins but lacks growth momentum. However, this method overlooks critical factors like innovation, competition, and macroeconomic shifts—UNP's rail dominance and CAT's sensitivity to infrastructure spending are examples. Future research should combine financial decomposition with non-financial metrics (e.g., R&D, market trends) to better assess long-term value. Investors using DuPont analysis should thus supplement it with industry-specific insights.

6. Conclusion

This study applied DuPont analysis to evaluate the financial performance of three industrial leaders, CAT, UNP, and HON, from 2022 to 2024. The decomposition of ROE revealed that CAT and UNP historically outperformed HON in profitability (ROE), though both experienced declining trends, likely due to reduced financial leverage (equity multiplier) and operational efficiency (asset turnover). In contrast, HON's ROE showed modest improvement, albeit from a lower base, suggesting stable but limited growth. For investors, CAT and UNP remain attractive due to their robust ROE foundations, despite recent declines, while HON's weaker profitability may warrant caution.

However, DuPont analysis has limitations, particularly in capturing intangible assets and long-term strategic investments critical to industrial firms. Future research could integrate non-financial metrics (e.g., R&D intensity) and extend the timeframe to enhance predictive power. In summary, CAT emerges as the most resilient investment option, balancing profitability and risk, whereas HON lags behind. Investors should complement DuPont insights with industry-specific factors (e.g., competition, macro trends) for holistic decision-making.

In addition to the limitations of DuPont analysis, future research could also explore the impact of emerging trends such as the circular economy and digital transformation on these companies' financial performance. The circular economy emphasizes resource efficiency and waste reduction, which could affect companies' cost structures and revenue streams. Digital transformation, on the other hand, can improve operational efficiency and create new business models. By incorporating these trends into financial analysis, a more comprehensive understanding of the long-term viability and competitiveness of industrial enterprises can be gained. This would provide more valuable insights for investors and decision-makers in an increasingly dynamic business environment.

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