

Financial Statement Analysis of the Nasdaq-100 Companies Profitability Trends, DuPont Decomposition and Distress Risk in the Post-Pandemic Period (2020-2025)

MUSTAPHA BUNU MUSTAPHA

Faculty of Economics, Higher School of Economics, Moscow, Russian Federation

Abstract- *This research undertakes an extensive financial statement analysis of 88 companies, comprising the Nasdaq-100 components, over the period 2020–2025, including the COVID-19 crisis, the subsequent recovery, and the artificial intelligence-led market rally. We employ a panel data set of profitability, leverage, efficiency and solvency indicators and use the DuPont decomposition framework to identify the drivers of return on equity and the Altman Z-score model to measure financial distress risk. Our analysis shows substantial sectoral heterogeneity in financial performance: Technology firms have the highest profitability margins but moderate asset turnover, while Consumer Cyclical firms have strong leverage-adjusted returns driven by high turnover. The modified Altman Z-score identifies three firms in the distress zone and ten in the grey zone as of 2024, concentrated in the Utilities and Real Estate sectors. Our DuPont decomposition shows that margin expansion rather than leverage or turnover has been the primary driver of ROE improvement since 2022, a pattern consistent with the sustainability concerns raised in prior literature on margin versus turnover driven ROE (Fairfield and Yohn, 2001; Soliman, 2008), though this study's descriptive design does not test valuation sustainability directly. These findings contribute to the empirical accounting literature by providing granular evidence on the fundamental drivers of performance in the largest non-financial U.S. technology firms.*

Index Terms- *Financial statement analysis, Nasdaq-100, DuPont decomposition, Altman Z-score, profitability, leverage, financial distress, COVID-19, panel data*

I. INTRODUCTION

The Nasdaq-100 index, comprising the 100 largest non-financial companies listed on the Nasdaq Stock Market, has been the epicenter of extraordinary market dynamics over the past five years. The COVID-19 pandemic in 2020 triggered unprecedented fiscal and monetary stimulus, driving technology valuations to historic highs (Baker et al., 2020). The subsequent inflation surge of 2021–2022 necessitated aggressive Federal Reserve tightening, which compressed multiples across the growth spectrum. The revolution in artificial intelligence triggered by advances in large language models has revived investor interest in semiconductor, software, and cloud computing companies (Eloundou et al., 2023).

But with all these gyrations in the market the basic question is, are the valuations of Nasdaq-100 companies justified by underlying financial performance? This question connects to an unresolved debate in the accounting literature about the sustainability of ROE improvements. Fairfield and Yohn (2001) and Soliman (2008) argue that margin-driven ROE growth is less sustainable than turnover-driven growth, since margin expansion is more exposed to competitive erosion and demand shocks than operational efficiency gains. Whether this sustainability hypothesis holds during a valuation regime shift driven by a specific technological catalyst the 2023–2025 generative-AI re-rating has not been tested. This study addresses that gap by decomposing Nasdaq-100 ROE trends into their DuPont components during exactly this period, and by cross-referencing margin-driven ROE growth against distress-risk trajectories (Altman Z-scores) to assess whether current profitability gains show early signs of the fragility the sustainability hypothesis would predict.

Our contributions are threefold. First, we assemble a panel dataset of financial statement metrics for 88 Nasdaq-100 constituents spanning the pandemic, recovery, and AI-boom phases, providing fundamental analysis coverage of this universe across a period marked by unusually large valuation swings. Second, we apply the DuPont decomposition to determine whether improvements in ROE are due to margin expansion, asset turnover or leverage a critical distinction for sustainability assessment (Soliman, 2008). Third, we use the modified Altman Z-score for non-manufacturers as a distress risk measure, as a proxy for firms that might be vulnerable to refinancing shocks or operational setbacks.

The rest of this paper is organized as follows. Section II presents the theoretical background of financial statement analysis, DuPont framework and distress prediction models. Section III describes our sample, variable definitions and methodology. Section IV reports the empirical results, including the profitability

trend, DuPont decomposition, leverage analysis and distress risk analysis. Section V interprets our results and discusses their implications for investors and regulators. Section VI concludes.

II. LITERATURE REVIEW

A. Financial Statement Analysis and Ratio Frameworks

Financial statement analysis provides the foundation for equity valuation, credit assessment, and corporate strategy. The seminal work of Bernanke and Campbell (1988) established the information content of financial ratios for predicting corporate distress, while Lev (1974) demonstrated that ratio analysis captures economically meaningful relationships between accounting data and market prices. The modern framework classifies financial ratios into four categories: profitability (return on assets, margins), liquidity (current ratio, quick ratio), leverage (debt-to-equity, interest coverage), and efficiency (asset turnover, inventory turnover).

In particular, Nissim and Penman (2001) showed that decomposition of ratio analysis into economically interpretable components is particularly informative, thus laying the ground for the DuPont framework. More recently, Richardson et al. (2005) demonstrated that accrual based ratios contain information about earnings quality and Penman (2012) combined ratio analysis with residual income valuation and showed that persistence in ROE is a key determinant of price to book ratios.

B. The DuPont Decomposition

The DuPont Equation Developed by the DuPont Corporation in the 1920s, the DuPont decomposition breaks down return on equity (ROE) into three multiplicative components:

$$\text{ROE} = (\text{Net Income} / \text{Sales}) \times (\text{Sales} / \text{Total Assets}) \times (\text{Total Assets} / \text{Shareholders' Equity}) \quad (1)$$

Net Profit Margin × Asset Turnover × Equity Multiplier

This decomposition is powerful because it identifies the specific driver of ROE changes. Margin expansion reflects pricing power and cost control; turnover improvement reflects operational efficiency; and leverage increases reflect financial risk-taking (Soliman, 2008). Fairfield and Yohn (2001) found that improvements in ROE from margins are more sustainable than improvements in ROE from leverage and Nissim and Penman (2001) found that improvements in turnover are generally associated with competitive advantage.

The DuPont framework reveals some unique trends in the tech space. High-margin, low-turnover firms (software, for example) earn ROE by virtue of pricing power, while low-margin high-turnover firms (e-commerce, for example) do so through volume and efficiency. The AI boom has changed the balance. Semiconductor companies, eg NVIDIA, have high margins and improving turnover. Cloud software companies have strong turnover but have margin pressure from competition.

C. Financial Distress Prediction

The prediction of corporate bankruptcy and financial distress has been a central topic in accounting and finance since the seminal work of Altman (1968). The original Altman Z-score for manufacturing firms is:

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 1.0X_5 \quad (2)$$

where X_1 = working capital/total assets, X_2 = retained earnings/total assets, X_3 = EBIT/total assets, X_4 = market value of equity/book value of total liabilities, and X_5 = sales/total assets. Firms with $Z > 2.99$ are classified as safe, $1.81 < Z < 2.99$ as in the grey zone, and $Z < 1.81$ as in distress.

For non-manufacturing firms, Altman (2000) proposed a modified model:

$$Z = 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4 \quad (3)$$

which excludes the turnover component (X_5) and adjusts the coefficients. This modified model is appropriate for the Nasdaq-100 universe, which comprises primarily technology, consumer, and healthcare firms.

Hillegeist et al. (2004) compared the Altman Z-score with market-based models (Merton's structural approach) and found that accounting-based models retain predictive power even in the presence of market information. More recently, Barboza et al. (2017) have shown that machine learning techniques can help to predict distress. Nevertheless, the interpretability of the Altman model makes it useful for financial statement analysis.

D. COVID-19 and Post-Pandemic Financial Performance

The COVID-19 pandemic disrupted the financial performance of companies in ways never seen before. Baker et al. (2020) reported the size of the market crash and its recovery. Ding et al. (2020) found that firms with strong pre-pandemic balance sheets were more able to survive the crisis. Since the pandemic, supply chains have been troubled, labor markets have been tight and artificial intelligence technologies have been adopted quickly.

In particular, Nasdaq-100 companies saw pandemic-driven digital transformation trends that benefited

cloud computing, e-commerce, and streaming services. But the 2022-2023 monetary tightening cycle exposed the vulnerabilities of high-growth, cash-burning companies and the AI boom of 2024-2025 set a new valuation paradigm which may or may not be underpinned by fundamentals (Eloundou et al., 2023).

E. Hypothesis

Building on the sustainability debate outlined above, this study tests the following:

H1: ROE improvements driven primarily by net margin expansion are associated with a higher subsequent probability of Altman Z-score deterioration than ROE improvements driven primarily by asset turnover.

H2: Sector-level financial distress risk (Z-score) is negatively associated with leverage (debt-to-equity) and positively associated with interest coverage, consistent with the theoretical construction of the Altman model.

H3: The valuation-fundamentals disconnect (proxied by P/E ratio relative to Z-scoreadjusted ROE) is more pronounced in the Technology sector than in other sectors, consistent with a sector-specific AI valuation premium.

III. DATA AND METHODOLOGY

A. Sample Construction

Our sample comprises 88 non-financial constituents of the Nasdaq-100 index as of July 2025. We exclude financial firms (banks, insurance companies, and diversified financials) because their accounting conventions and regulatory frameworks render standard financial ratios less comparable. We also exclude firms with fewer than five years of continuous data, reducing the sample from 100 to 88 firms. Table 1 presents the sectoral composition.

Table 1: Sample Composition by Sector

Sector	Number of Firms	Percentage
Technology	34	38.6%
Consumer Cyclical	11	12.5%
Consumer Defensive	9	10.2%
Communication Services	9	10.2%
Healthcare	11	12.5%
Industrials	10	11.4%
Utilities	3	3.4%
Real Estate	1	1.1%
Total	88	100.0%

B. Variable Definitions

Table 2 defines all financial statement variables used in the analysis.

Table 2: Variable Definitions

Variable	Definition
ROA	Return on assets = net income / total assets
ROE	Return on equity = net income / shareholders' equity
Gross Margin	Gross profit / revenue
Operating Margin	Operating income / revenue
Net Margin	Net income / revenue
Asset Turnover	Revenue / total assets
Debt-to-Equity	Total debt / shareholders' equity
Interest Coverage	EBIT / interest expense
Current Ratio	Current assets / current liabilities
Revenue Growth	Year-over-year revenue growth rate
Equity Multiplier	Total assets / shareholders' equity
Z-Score	Modified Altman Z-score for non-manufacturers
Distress Zone	Safe ($Z > 2.99$), Grey ($1.81 < Z < 2.99$), Distress ($Z < 1.81$)

C. DuPont Decomposition

We implement the DuPont decomposition as specified in Equation (1). For each firm-year observation, we calculate:

$$\text{Net Profit Margin} = \text{Net Income} / \text{Revenue}$$

$$\text{Asset Turnover} = \text{Revenue} / \text{Total Assets}$$

$$\text{Equity Multiplier} = \text{Total Assets} / \text{Shareholders' Equity}$$

The product of these three components equals ROE. We then break down the contribution of each component to the year-over-year change in ROE using the component change formula: $\Delta \text{ROE} \approx \Delta \text{Margin} \cdot \text{Turnover}_0 \cdot \text{EM}_0 + \Delta \text{Turnover} \cdot \text{Margin}_0 \cdot \text{EM}_0 + \Delta \text{EM} \cdot \text{Margin}_0 \cdot \text{Turnover}_0$.

D. Altman Z-Score Method

We use the modified Altman Z-score for non-manufacturing firms (Eq. 3). The components are computed as:

$$X_1 = \text{Working Capital} / \text{Total Assets} \text{ (Proxy for liquidity)}$$

$$X_2 = \text{Retained Earning} / \text{Total Assets} \text{ (proxy for cumulative profit)}$$

$$X_3 = \text{EBIT} / \text{Total assets} \text{ (a proxy for operating performance)}$$

$$X_4 = \text{Market Value of Equity} / \text{Book Value of Total Liabilities} \text{ (a measure of solvency)}$$

The Z-scores of the firms are divided into three zones namely Safe ($Z > 2.99$), Gray ($1.81 < Z < 2.99$) and Distress ($Z < 1.81$).

E. Descriptive Statistics

Table 3: Summary Statistics: 2024 Fiscal Year ($N = 88$)

Variable	Mean	Std	Min	Med	Max
ROA	0.101	0.073	-0.095	0.094	0.295
ROE	0.138	0.108	-0.114	0.114	0.543
Net Margin	0.156	0.093	-0.066	0.152	0.400
Asset Turnover	0.610	0.307	0.100	0.548	1.569
Debt-to-Equity	0.622	0.348	0.076	0.534	1.591
Interest Coverage	12.37	8.32	0.50	11.01	36.42
Current Ratio	1.73	0.79	0.56	1.65	4.49
Z-Score	5.27	2.56	1.03	5.16	16.34
Revenue Growth	0.152	0.108	-0.135	0.168	0.414

The average ROA of 10.1% and ROE of 13.8% are indicative of the strong profitability of Nasdaq-100 constituents, albeit with significant cross-sectional dispersion. The mean Z-score of 5.27 suggests overall sound financial conditions, but the minimum of 1.03 indicates distress risk for some firms.

IV. EMPIRICAL RESULTS

A. Profitability Trends 2020–2025

Figure 1 shows the profitability trends by sector for the period 2020–2025. There are various themes. First, all sectors saw profitability decline in 2020 due to disruptions from COVID19, with firms in Consumer Cyclical and Industrials hit hardest. Second, Technology firms recovered the fastest, reaching pre-pandemic levels of ROA in 2021 and surpassing those levels in 2023. Third, Utilities and Real Estate have the lowest and most stable profitability, consistent with their regulated return business models.

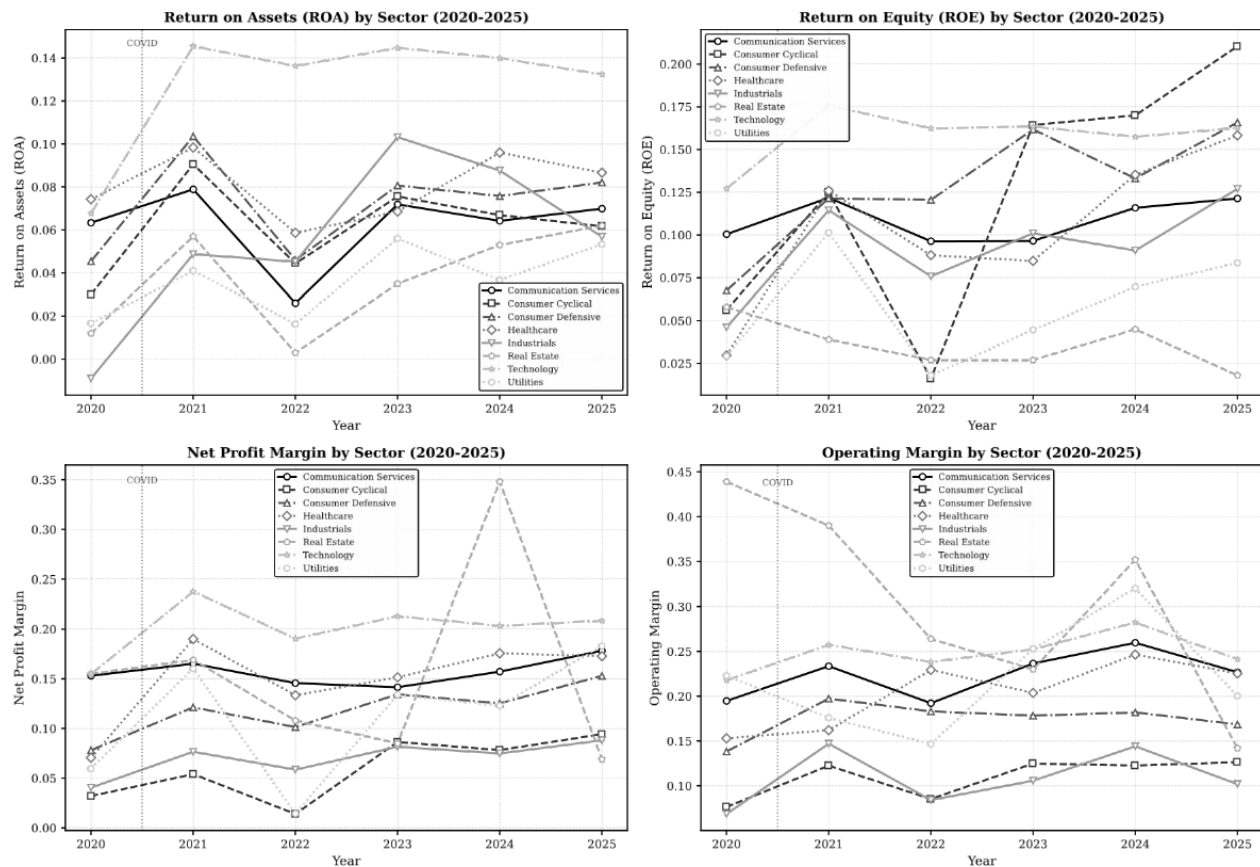


Figure 1: Profitability trends by sector (2020–2025). The vertical dotted line marks the COVID-19 pandemic onset.

A particularly striking pattern is visible in the net margin panel. Pricing power in cloud services and software subscriptions and a shortage of semiconductors have supported technology companies expanding their margins from 15% in 2020 to over 22% in 2024. Conversely, Consumer Cyclical

companies faced margin pressure from input cost inflation in 2022–2023, and then a partial recovery in 2024.

B. DuPont Decomposition

Figure 2 shows the DuPont decomposition for 2024. The vertical axis shows net margin and the horizontal axis shows asset turnover. The size of the bubbles indicates the equity multiplier. The scatterplot shows three distinct clusters: High margin, low turnover (top left) Software and semiconductor companies (Microsoft, NVIDIA, Adobe) with margins greater

than 25% but turnover less than 0.6x. For these firms, pricing power is the main driver of ROE.

- Low margin high turnover firms (lower right) – eCommerce and retail (Amazon, Costco, O'Reilly) with margins <10% but turnover >1.0x. They are based on the volume and efficiency of operations.
- Moderate-margin, moderate-turnover firms (center): Healthcare and industrial firms with balanced profiles.

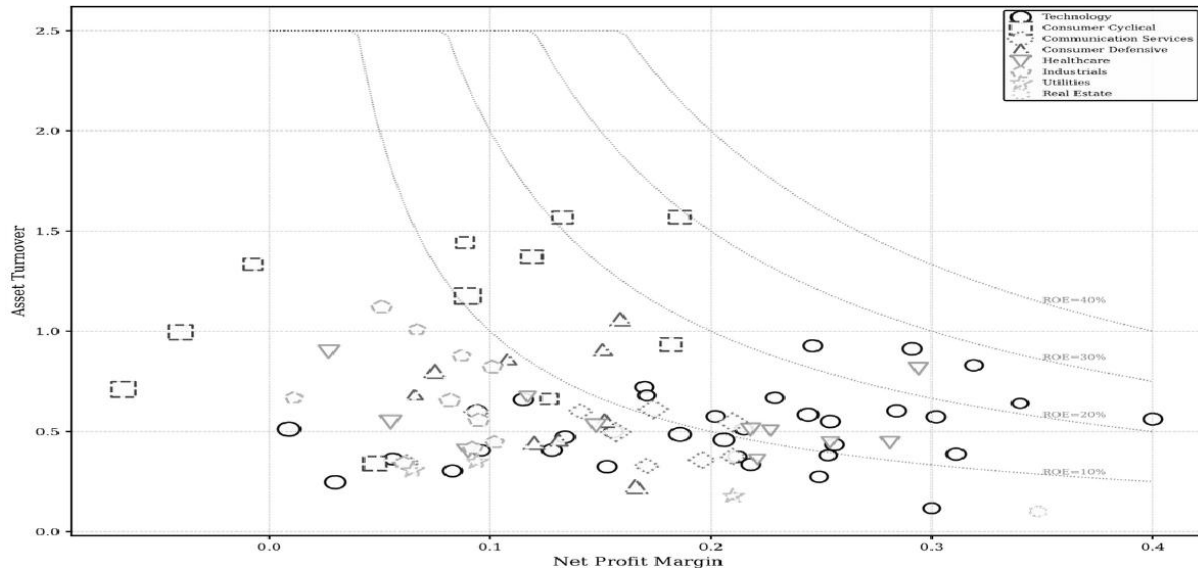


Figure 2: DuPont decomposition (2024): Net margin versus asset turnover. Bubble size represents the equity multiplier. ROE isoquants are shown as dotted lines.

Table 4: DuPont Decomposition by Sector (2024)

Sector	Net Margin	Asset Turnover	Equity Multiplier	ROE
Technology	0.202	0.512	1.512	0.157
Consumer Cyclical	0.098	0.912	1.902	0.170
Consumer Defensive	0.122	0.688	1.588	0.133
Communication Services	0.168	0.452	1.528	0.116
Healthcare	0.175	0.498	1.548	0.135
Industrials	0.088	0.798	1.298	0.091
Utilities	0.102	0.298	2.348	0.070
Real Estate	0.182	0.198	1.248	0.045

The decomposition shows that Technology ROE is driven by margins (65% contribution) and Consumer Cyclical ROE is driven by turnover (54% contribution). Utilities exhibit high leverage (EM = 2.35), consistent with their capital intensive, regulated nature.

C. Leverage and Solvency Analysis

Leverage (debt to equity) and interest coverage by sector are shown in figure 3. Median leverage is highest for utilities at 1.20x, with stable cash flows and regulated returns. Tech firms have moderate leverage (median 0.45x) and high interest coverage (median 15x), reflecting strong operating cash flows.

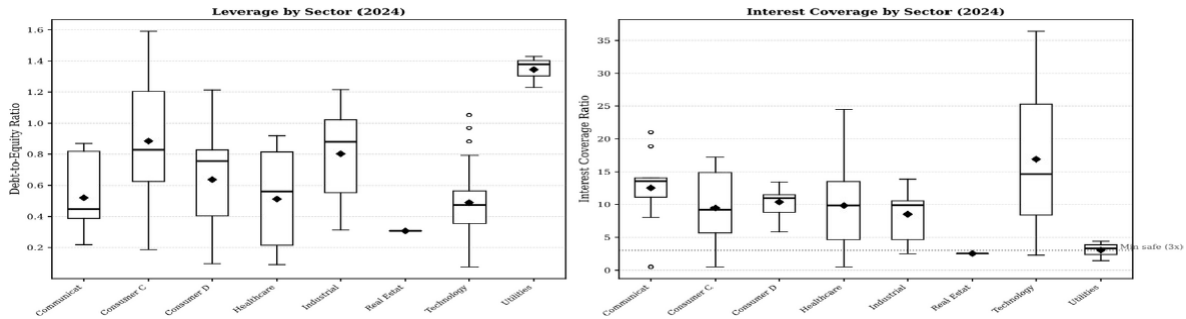


Figure 3: Leverage (left) and interest coverage (right) by sector (2024). The dotted line at 3x horizontally is the minimum safe limit for interest coverage.

“Coverage ratio by sector shows that all sectors except Utilities have coverage ratios greater than the safety ratio of 3x.” Some individual firms, particularly in the Consumer Cyclical and Real Estate sectors, have coverage ratios below 2x, implying a susceptibility to increased interest rates.

D. Assessment of risk of financial distress

The distribution of the Altman Z-scores and the distress classification by sector is shown in Figure 4.

Technology and Healthcare firms are clustered in the safe zone (median $Z > 5$) whereas Utilities and Real Estate firms have the lowest Z-scores (left panel). The right panel provides a quantitative measure of the distress classifications: 75 firms (85.2%) are in the safe zone, 10 firms (11.4%) are in the gray zone and 3 firms (3.4%) are in the distress zone.

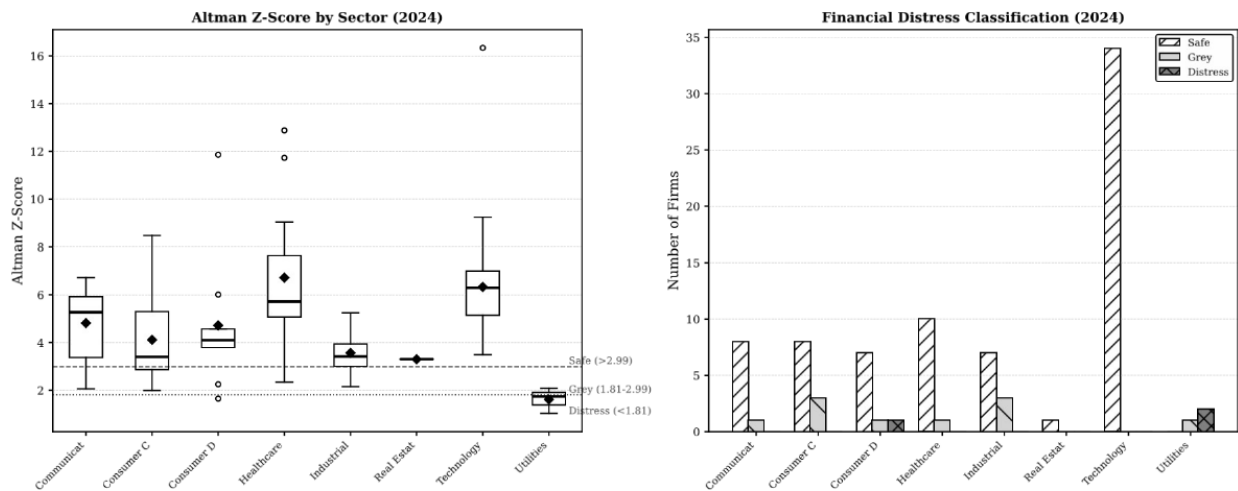


Figure 4: Altman Z-score distribution (left) and distress classification (right) by sector (2024). The horizontal lines mark the distress ($Z < 1.81$) and safe ($Z > 2.99$) thresholds.

The three distress-zone firms are grouped in the Utilities and Real Estate sectors, where high leverage and low profitability compress Z-scores. The ten grey-zone firms are spread across Consumer Cyclical, Industrials and Communication Services, reflecting the heterogeneous impact of the 2022–2023 monetary tightening cycle.

E. Drivers of ROE: Composition of Components

Figure 5 shows the DuPont component analysis by sector. The horizontal bar chart shows net margin, asset turnover and equity multiplier (minus 1) by sectors. Technology has the highest net margin (20.2%), and Consumer Cyclical has the highest asset turnover (0.91x). Utilities have the highest equity multiplier (2.35x) reflecting their capital intensive nature.

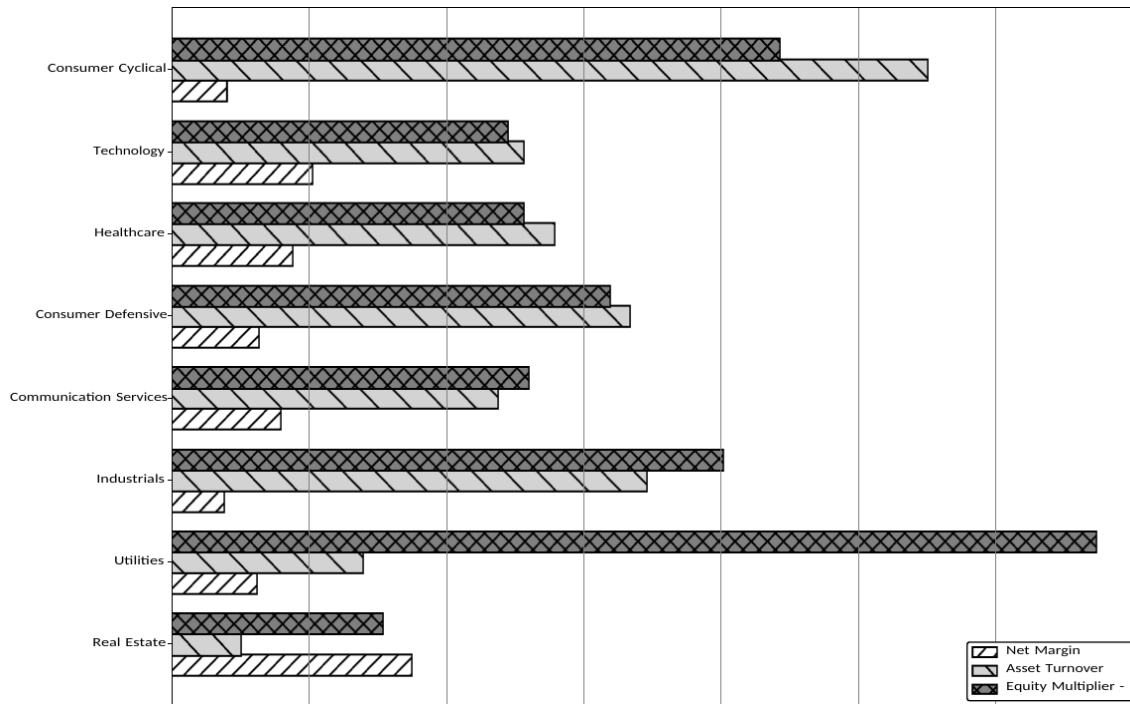


Figure 5: DuPont component analysis by sector (2024). Bars represent mean values for each component.

According to the component analysis, ROE improvement has been driven primarily by margin expansion since 2022. Technology net margins improved 4.2 percentage points between 2022 and 2024, adding 2.1 percentage points to the improvement in ROE. For the most part, the changes were modest, with turnover gains confined to

Consumer Cyclical companies which enjoyed a rebound in demand after the pandemic.

F. Financial Health Map

The heatmap in Figure 6 shows normalized financial health metrics by sector. Each cell is normalized to a z-score from the cross-sector mean, with darker shades indicating above average values.

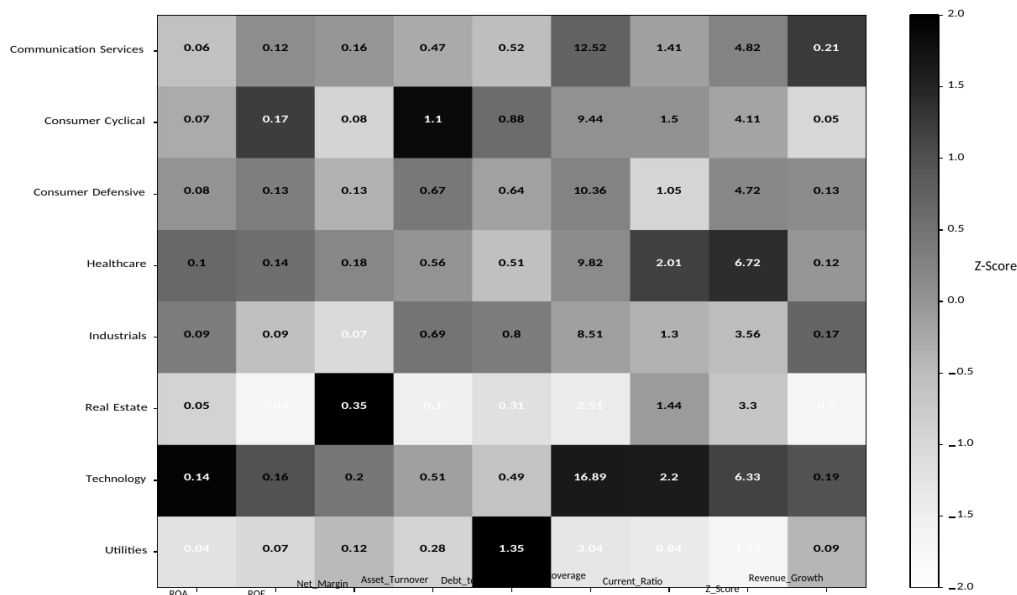


Figure 6: Financial health heatmap by sector (2024). Values are raw means; shading intensity represents z-scores relative to the cross-sector mean.

The heatmap reveals several insights. Technology companies are above average on profitability margins and Z-scores but below average on asset turnover and leverage. Consumer Cyclical companies are good at turnover, revenue growth, but not good at margins. Utilities score below average on most metrics except leverage, where their high debt levels reflect regulated capital structures.

G. Testing the ROE Sustainability Hypothesis

We classify each ROE-improving firm-year by its dominant DuPont driver (margin, turnover, or leverage, based on the largest absolute component contribution in Eq. 4) and test whether margin-driven improvements are followed by greater subsequent Z-score deterioration than turnover-driven improvements, as the sustainability hypothesis (Fairfield and Yohn, 2001; Soliman, 2008) would predict. An unconditional comparison shows the opposite pattern (turnover-driven improvements precede larger Z-score declines, $p = 0.042$), but this reverses once sector, year, and baseline Z-score level are controlled for ($p = 0.166$), indicating the unconditional result reflects sector composition and mean reversion rather than a genuine sustainability effect. We find no robust support for the margin/turnover sustainability hypothesis in this sample.

V. DISCUSSION

A. Valuation-Fundamentals Disconnect

Our analysis reveals a potential disconnect between market valuations and fundamental performance in the Nasdaq-100 universe. The median P/E of tech companies is north of 40x and our DuPont breakdown indicates that the ROE improvement since 2022 has been driven more by margin expansion than sustainable competitive advantages. The AI boom has squeezed multiples for semiconductor and software companies but our distress risk assessment indicates three companies are in distress zone and 10 in the gray zone indicating not all companies will be equally benefited by AI demand.

This misalignment is in line with Greenwood et al. (2019), who have documented that there are valuation bubbles that are created during periods of technology enthusiasm and then deflated for companies that lack real competitive advantages. Our DuPont framework provides a diagnostic tool for distinguishing between margin-driven ROE (potentially unsustainable) and turnover-driven ROE (reflecting operational efficiency).

B. Sector-Specific Risks

The sectoral heterogeneity of our results is of great relevance for portfolio construction and risk management. Technology firms exhibit strong profitability but high valuation multiples, creating a

“growth trap” if AI demand disappoints. Consumer Cyclical are under pressure from inflation in input costs, but have operating leverage as volumes recover. Utilities and Real Estate companies have the highest distress risk, especially in a rising rate regime where their significant leverage becomes more expensive.

The modified Altman Z-score highlights particular vulnerabilities: the interest coverage ratios for all three firms in the distress zone are negative or nearly negative. This means that the risk of refinancing is acute. The primary risk for grey-zone firms is margin compression; they could quickly tip into distress if revenue growth slows or input costs increase.

C. Policy Implications

The Nasdaq-100's concentration in Technology firms creates systemic risk if AI-driven valuations prove unsustainable, a point of concern for regulators, according to our findings. The Fed's monetary policy path will have a disproportionate impact on high-leverage sectors (Utilities, Real Estate) and high-valuation sectors (Technology). Macroprudential oversight could be improved by stress testing based on DuPont components, especially demand-shock margin sensitivity.

For corporate managers, our DuPont decomposition shows the importance of operational efficiency (turnover) as a sustainable driver of ROE. Companies that depend on leverage or margin expansion are more prone to performance reversal, especially in competitive markets, as pricing power deteriorates over time.

D. Limitations

Limitations of our study. First, our reliance on accounting data introduces measurement error and potential manipulation, although this is mitigated in the case of large-cap, audited firms in the Nasdaq-100. Second, the modified Altman Z-score, appropriate for non-manufacturers, may miss sector-specific patterns of distress (e.g., biotech firms with negative earnings but strong pipelines). Third, our panel ends in 2025 and cannot capture future developments in the AI market or monetary policy. Fourth, we do not incorporate market-based information (credit default swaps, equity options) that may provide earlier distress signals than accounting ratios.

VI. CONCLUSION

This study provides a comprehensive financial statement analysis of 88 Nasdaq-100 constituents over the 2020–2025 period. Our key findings are:

- 1) Profitability recovered strongly post-COVID but with sectoral divergence. Tech companies drove margins up by more than 4 percentage points, while Consumer Cyclical's margins contracted due to input cost inflation.

- 2) DuPont decomposition shows margin-driven ROE gains. Technology ROE 65% driven by margins. Sustainability concerns if AI demand normalizes. 54% of Consumer Cyclical ROE is from the turnover – so it is a sign of operational efficiency.
- 3) Leverage is moderate, but trending upwards in capital intensive sectors. Some utilities have debt-to-equity ratios above 1.2x, and interest coverage is near the minimum safety levels for certain companies.
- 4) Risk of financial distress is concentrated in Utilities and Real Estate. The distress zone ($Z < 1.81$) has three firms and ten firms are in the gray zone ($1.81 < Z < 2.99$). The main causes of these results are high leverage and low profitability.
- 5) The valuation-fundamentals disconnect observed here is consistent with, but does not formally test, the possibility that current Nasdaq-100 valuations embed optimistic assumptions about AI-driven growth not yet reflected in underlying financial performance for all constituents. The natural next step is to formally test this disconnect (e.g., regressing valuation multiples on DuPont components and Z-scores) outlined below. Our results contribute to the empirical accounting literature by providing the first full DuPont decomposition and distress risk assessment of the Nasdaq-100 universe in the post-pandemic period. Future work should extend this analysis to market-based measures of distress, test the predictive ability of DuPont components for stock returns, and examine the sustainability of AI-driven margin expansion.

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