



**Department of Business and Management**

**Master's Degree in Strategic Management**

Chair of Financial Analysis

**Identifying Financial Factors Behind Stock Returns  
During Early-2025 Market Instability: Construction  
of a Company Resilience Index**

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## 1. Introduction

Financial markets periodically experience shifts between periods of optimism and expansion over periods of turbulence and decline. The impact of these fluctuations on publicly traded companies depends on several aspects, mainly condensable in factors depending on their financial statements, operational decisions, and broader macroeconomic conditions. This thesis examines the transmission during the stock drawdown between early December 2024 and mid-April 2025. More precisely, it assesses whether firms' financial measures are useful to explain why some companies overperformed compared to others. The answer is important for portfolio construction, risk management, and corporate policy, because the signals that “work” in stress aren't always those that dominate in expansions.

The research question the thesis is trying to answer states as follows: *“Is there a statistically significant relationship between firms' relative stock performance during the December 2024–April 2025 downturn and financial-statement-based indicators, and to what extent do these fundamentals explain observed outperformance?”*

Thereby, the objective is to assess whether cross-sectional differences in accounting-based measures, such as profitability, liquidity, cash buffers, leverage, debt maturity, cash-flow quality, and working-capital discipline (including inventory intensity and the cash conversion cycle) are statistically related to firm-level equity outcomes during a shock period. The final objective is to create a “Company Resilience index” that could be used in periods of market stress to gather additional insight from the company's financials. Everything is done after benchmarking each firm against its GICS<sup>1</sup> and country context, and after controlling for direct macroeconomic effects.

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<sup>1</sup> The Global Industry Classification Standard (GICS) is an industry analysis framework that helps investors understand the key business activities for companies around the world. MSCI and S&P Dow Jones Indices developed this classification standard to provide investors with consistent and exhaustive industry definitions.

This event is a good real-world test. Markets changed their view on interest rates, global tensions tackle supply chains, and trade rules looked uncertain. When combined, these factors triggered a big but uneven market drop. That's exactly the kind of dispersion where firm-level indicators are expected to have explanatory power.

However, for this window, there is no single academic work that links accounting-based measures to excess stock returns, even without controlling for sector and country effects. That's why this thesis has been developed, to target this gap. The database includes 110 large, listed companies, ten for each of the eleven GICS. The first analysis is aimed at computing a specific company's time-trend slope for the daily closing price of titles in the stock market, during the period December 2024 - April 2025. Each slope is relative to the sector benchmark and normalised on a one-hundred-base, to be comparable and of the same scale as all the other companies in the sample.

To deepen the interpretation of the relation between financials and slopes, a single dependent variable was not enough, that's why the analysis has been extended to include a "Recovery Phase" that followed the initial downturn. Specifically, the previously mentioned adjusted slope was estimated also for the April–July window, when broader equity conditions began to improve. By normalizing these firm-level slopes to sector and market benchmarks, the analysis assesses whether the same determinants identified in the downturn also explain cross-sectional differences in the strength of the rebound. This additional window tests the stability of the proposed indicators across different regimes and, simultaneously, sharpens inference on the drivers of relative performance.

Lastly, an additional metric, the variance, is also included to check firms' performance stability over the chosen period. Even if variance doesn't have the same explanatory power of the adjusted slope, it is still noteworthy in

assessing the stability of a title in the stock market over a pre-determined period.

Moving on to the second database, it is constituted by accounting data from 2021 to 2024 financial statements, taken from online sources, and serves to delve deeper into the relation between financial indicators and market performance. Ratios adhere to the indicator taxonomy and are combined with a weighted average, skewed to the most recent year, i.e., 40% for 2024, 30% for 2023, 20% for 2022, and 10% for 2021. Variables that are inherently cross-sectional and comparable across the sectors (e.g. ROE, ROA, the interest coverage, EPS, valuation multiples) are included in raw form, while other measures are modeled relative to sector dynamics to help in the comparison.

A pivotal step in the analysis was to remove biases by specifically addressing distortion problems. Here, the methodology has been bifurcated, beginning with a theoretical exploration of the topic, then followed by an empirical investigation of the data, which seeks to identify any inherent biases or skewed representations within the database

The overall structure is organized as follows, following the introduction, Chapter 2 overviews the previous literature concerning profitability, liquidity, leverage, working-capital effectiveness, and cash-flow quality and their impact on corporate outcomes and equity performance, considering crisis dynamics. Chapter 3 introduces the macro-financial background and the GICS setting, which makes heterogeneity comparisons possible. Chapter 4 develops the cross-firm performance measures and presents preliminary evidence. The financial-indicator panel is put together in Chapter 5, measurement options are discussed (including GAAP/IFRS treatments), and the weight scheme is reported. Indicators are connected to performance in Chapter 6 via correlations and regressions. Chapter 7, subsequently, is the

where the resilience index is composed and computed. Chapter 8 contains the conclusions, comments on the findings, and their implications.

## **2. Literature Review**

The relationship between financial statement indicators and stock market performance has been studied extensively in corporate finance and asset pricing. As a result, evidence shows that these indicators carry important predictive power. However, their role changes considerably across different market conditions, especially during crises, when the relevance of specific measures is amplified or reversed. The following literature review aims to examine the contributions of previous research to build a foundation for the empirical analysis of the December 2024 - April 2025 market downturn.

Hence, the focus is on understanding which indicators are systematically associated with over or underperformance, and how they transmit shocks through balance sheets and operations. Obviously, the final aim is to find where literature leaves gaps lately filled by the contribution of the present study.

One of the most consistently studied signals in stock evaluations is profitability. Ratios such as return on assets, return on equity, and operating margins provide information about the ability of firms to transform sales into economic gains. Novy-Marx (2013) provided a fundamental contribution by showing that gross profitability delivers a robust return premium that rivals the value effect. Using U.S. equity data, they decomposed the book-to-market ratio into profitability and investment components and found that gross profits alone can be directly related to the premium value. This study is relevant because it demonstrates that profitability is priced in markets independently of value and size, and that it can predict cross-sectional equity returns. Following, Fama and French (2015), embedded profitability into their five-

factor model, introducing the so called “Robust-Minus-Weak<sup>2</sup>” factor and demonstrating that profitability, together with investment intensity, improves the explanatory power of their asset pricing framework.

This confirms that profitability not only can be used as metric of corporate performance, but also as an indicator of riskiness.

Ball, Gerakos, Linnainmaa, and Nikolaev (2015) added related discovers by showing that profitability is often underweighted by markets, leading to predictable returns when investors fail to incorporate accounting information fully.

However, profitability is not a perfect or sufficient predictor. In effect, one of its major limitations is that profitability can just be based on past measures and moreover, it is subject to mean reversion.

Sloan (1996) addressed this issue by decomposing earnings into accrual and cash-flow components. His academic contribution documented that investors systematically overprice earnings driven by accruals, even if are more likely to reverse, while earnings based on cash flow are more persistent but less considered. This finding, known as the accrual anomaly, highlights the need to distinguish between the composition of profitability rather than treating it as a single isolated element.

Dechow and Dichev (2002) expanded this line of work by modeling working-capital accruals as a function of three distinct types of cash flow: past, present, and future. They showed that residuals from this model measure estimation error in accruals, and that higher error correlates negatively with earnings persistence.

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<sup>2</sup> Robust minus weak" (RMW) is a financial factor from the Fama-French five-factor model that represents the difference in returns between companies with high operating profitability and those with low operating profitability.

This measure of accrual quality has since been used to predict future returns and to identify firms with sustainable or fragile profitability.

Asness, Frazzini, and Pedersen (2019) detailed this evidence developing the Quality Minus Junk<sup>3</sup> factor, which combines profitability, growth, safety, and payout into a composite indicator.

Their research showed how quality stocks earn consistent excess returns across global markets and are particularly resilient during downturns. This body of work suggests that profitability alone matters, but it gets even more predictive when supported by cash flows and high earnings quality.

To connect the dots, thinking at the purpose of this thesis, the just-mentioned discover indicates that profitability alone is unlikely to explain resilience in the December 2024–April 2025 downturn, unless considered in conjunction with cash-flow measures.

Liquidity is another dimension that has been widely studied. In calm markets, liquidity is generally associated with lower downside risk and reduced cost of capital.

Opler, Pinkowitz, Stulz, and Williamson (1999) conducted a comprehensive study of firms' liquidity, specifically corporate cash holdings, and found that firms mainly hold cash for transaction purposes and as a guarantee against financial constraints. Their work showed that larger firms or those with better access to capital markets hold less cash, while constrained firms tend to hold more, supporting the precautionary motive for liquidity.

However, other studies suggest that during period of crises, liquidity takes on a far more critical role. Ivashina and Scharfstein (2010), using loan-level data from Dealscan, documented that syndicated loan origination collapsed by

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<sup>3</sup> "Quality minus Junk" (QMJ) is an investment strategy that buys high-quality stocks and sells (shorts) low-quality stocks, aiming to capture excess risk-adjusted returns.

almost the half during the 2008 financial crisis, however, drawdowns on existing credit lines surged by more than 70 percent. This dual dynamic illustrates why cash balances alone are not enough to assess liquidity, especially if undrawn lines of credit are excluded from the equation.

Campello, Graham, and Harvey (2010) tried to investigate the details of the latter study by surveying over a thousand Chief Financial Officers across the United States, Europe, and Asia during the 2009 financial crisis.

They found that 86 percent of financially constrained firms cut investment and employment plans, quite a large number, considering that only 43 percent of unconstrained firms acted in the same way. This huge difference demonstrates how liquidity shortages translate directly into real operating outcomes.

On the same line, Lins, Servaes, and Tufano (2010), in an international survey of CFOs, showed that firms consider committed credit lines as a substitute for cash only when they believe these lines can be credibly drawn. These studies together demonstrate that the structure, accessibility, and denomination of liquidity matter at least as much as its level.

Building a link to the present work, this means that liquidity indicators such as the analyzed cash-to-debt ratio or interest coverage should be considered together with measures of operating cash flow to grant a broader understanding; in addition, their explanatory power may increase dramatically in downturns.

Leverage and debt maturity introduce another layer of risk. The trade-off theory, formulated by Kraus and Litzenberger (1973), states that leverage increases firm value because of the consequently tax shields, however raising the risk of financial distress.

Going on with the literature findings, Opler and Titman (1994) provided empirical support by analyzing manufacturing firms during periods of market crisis and showing that highly leveraged firms share a higher likelihood to lose significant market share over competitors.

Their interpretation was that financial fragility prevented firms from investing both time and resources in operations, leading to real declines in competitiveness. The maturity structure of debt has also been shown to be critical. Almeida, Campello, Laranjeira, and Weisbenner (2011) exploited exogenous variation in debt maturity profiles to examine the effects of the 2009 credit crash on firms.

They showed that firms with larger shares of debt maturing during the crisis were forced to reduce investment by nine percentage points more than comparable firms. This quasi-natural experiment provides strong evidence that maturity cliffs, not just leverage levels, amplify corporate vulnerability.

He and Xiong (2012) formalized rollover risk in a theoretical model, showing how short-term debt structures create multiple equilibria where creditors' refusal to refinance can trigger distress even for solvent firms. Brunnermeier and Oehmke (2013) also provided additional evidence around this by introducing the "maturity rat race," where firms shorten maturities to signal financial stability and strength to the external environment, but collectively increase systemic fragility. Together, these studies highlight that leverage and maturity interact to determine resilience, and that short-term debt structures make firms particularly vulnerable in periods of credit tightening.

The main takeaway for the analysis of the 2024–2025 downturn is that leverage should be decomposed into net leverage and maturity buckets to fully capture refinancing risk.

Following, working capital and inventory management link financial indicators to operational outcomes. Kesavan, Gaur, and Raman (2010)

examined U.S. retailers and measured inventory productivity as sales per unit of inventory. They found that abnormal inventory productivity can be used to measure stock returns in the following year, even after controlling for size, value, and momentum factors. This result demonstrates that inventory metrics are not merely related to the past but also forward-looking signals of market expectations. Alan, Gaur, and Ketzenberg (2014) studied manufacturing industries and confirmed that efficient inventory management are pivotal in upgrading operating performance and achieving higher equity returns.

However, during market stress, working capital dynamics can create significant challenges. Sales often fall at a faster pace than the one at which production can be reduced, leading to involuntary inventory accumulation. Rapid liquidation depresses margins through markdowns and under-absorption of fixed costs, but firms that normalize inventories are quickly rewarded with stronger free cash flow and, as a consequence, investor confidence in subsequent recovery phases. Hofmann (2022) added further evidence by examining how financially constrained firms managed working capital during crises. His findings showed that constrained firms faced more difficulties in adjusting working capital, exacerbating liquidity shortages and weakening recovery prospects. This line of evidence highlights that working capital indicators such as days of inventory on hand and abnormal inventory growth carry horizon-dependent predictive power: predominantly negative in the short-term downturn, but positive in the recovery when adjustment is complete.

Crisis-era research has also emphasized recurring balance-sheet mismatches that act as amplification mechanisms. Four stand out across studies. First, maturity-related issues arise when short-term debt finances long-term assets, creating rollover risk when liquidity gets lower. Second, currency mismatches occur when foreign-currency liabilities are paired with domestic-currency

revenues, exposing firms to valuation losses when exchange rates move unfavorably.

Bleakley and Cowan (2008), studying Latin American firms, found that firms with larger slices of debt in dollars experienced significant equity volatility during currency depreciations. Third, capital-structure fragility occurs when thin equity cushions and weak interest coverage create a rigid structure, and consequently limit the ability to absorb shocks. Fourth, insolvency gaps appear when operating cash flows are insufficient to cover liabilities, even if book assets remain positive. The upcited issues turn temporary liquidity issues into solvency crises, leading to direct consequences for equity valuations. Their relevance for the 2024–2025 period is clear: firms exposed to refinancing cliffs, foreign-currency debt, or weak cash coverage would have been particularly vulnerable during the simultaneous demand and credit shocks.

Sectoral heterogeneity further influences the relevance of these indicators. In manufacturing and other capital-intensive industries, leverage and maturity structure are particularly important because fixed costs limit operational flexibility. Retail and consumer goods sectors highlight the importance of working capital and inventory discipline, since demand shocks translate quickly into inventory overhangs. Technology and asset-light firms rely less on physical capital but more on liquidity and access to external financing, increasing the predictive power of liquidity indicators. Energy and natural resources firms, given their geographical dispersion, are more exposed to commodity cycles and foreign-currency mismatches. On the other hand, healthcare and pharmaceuticals often display resilience due to inelastic demand and strong profitability margins. Emerging market firms face additional vulnerabilities due to institutional fragility and exposure to currency crises, making liquidity buffers and foreign-denominated debt especially relevant. These differences underscore the importance of

controlling for sectoral and country effects in empirical studies, since identical ratios can carry different meanings depending on industry and context.

Despite the richness of this literature, three methodological challenges remain recurrent. The first is horizon sensitivity. Different studies analyze drawdowns, recoveries, or full-cycle outcomes, and the sign of relationships can differ across the different stages of the market. For example, as been said, inventory liquidation may depress returns during the downturn but improve performance during recovery. The second is survivorship and selection bias. Distressed firms often exit samples because considered inappropriate, overstating resilience among those that remain. The third is reverse causality: falling stock prices can themselves tackle financial ratios by tightening financing constraints, making it difficult to extract reliable outcomes. Measurement inconsistencies also complicate comparisons across studies. Current versus quick ratios, gross versus net leverage, and accounting methods (IFRS / GAAP) can bring different inferences.

To sum up, the convergence of these findings suggests several cross-cutting lessons. Firms with lower leverage, longer maturities, stronger liquidity, and robust cash flows are the likely to outperform in crises. Firms with operational agility, reflected in calibrated inventory and working capital adjustments, are more effectively rewarded during the recovery phase of the market. Profitability remains a positive predictor of returns, but its explanatory power is highest when supported by cash flows and high earnings quality. Sectoral and country contexts shape which indicators matter most, with capital-intensive and currency-exposed firms facing distinctive risks.

At the same time, a clear research gap remains. Despite extensive research on past crises, there is still no comprehensive, multi-indicator, factor-robust, cross-sectional study of the December 2024–April 2025 downturn. Existing

work focuses on previous crises, narrower sets of indicators, or corporate outcomes rather than equity returns. That's why this thesis could be developed to fill the gap by testing a harmonized set of profitability, liquidity, leverage, working-capital, and earnings-quality indicators against both abnormal returns in the downturn and recovery slopes thereafter. The contribution is twofold: firstly, substantively, by identifying which financial statement measures translate into equity resilience or underperformance during a modern crisis, and secondly, methodologically, by proposing a replicable Company Resilience Index that incorporates factor controls, sector and country effects, and horizon-specific tests.

### **3. Set the location**

#### **3.1. Market Conditions**

This chapter aims to contextualize the analysis by describing in broad terms the macro-financial environment where the observed market dynamics took place. The article focuses on the equity market downturn, which started in the first days of December 2024 and ended around the second week of April 2025. The period mentioned was characterized by volatility and the quick snap of securities trading at thin volumes. The crises tackle every segment of the market, in some cases just scratching the surface, in others going deeper. Behind it, there was a perfect storm generated by powerful macroeconomic, geopolitical, and sectoral forces.

Generally speaking, in the long term, equity markets have a history of resilience and adaptation. As evidence of that, if considering the S&P 500<sup>4</sup> a proxy for the equity market, it reached a cumulative 10% growth at an annual level over a ten-year period. However, its performance has been anything but straight, indeed, there has been an alternance of periods of exuberance and

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<sup>4</sup> The S&P 500® is widely regarded as the best single gauge of large-cap U.S. equities. The index includes 500 leading companies and covers approximately 80% of available market capitalization.

crisis. In the past decades, significant falls, such as the Global Financial Crisis of 2009 or more recently the pandemic implosion in early 2020, brought sessions where stock markets lost more than 20% of their value in just a few days. In the second example, after the initial shock of COVID-19, the market was able to rebound and deliver a five-year cumulative return of more than 100%, with a brief soft patch in between, due to successive geopolitical tensions and conflicts, i.e., the Russia-Ukraine conflict that flared up in early 2022.

However, financial markets are naturally pro-cyclical and responsive to external shocks. A proof in days of yore was the new phase of turbulence that started in December 2024, caused by a perfect mix of mutually intertwined occurrences. The upshift started with inflation, which had looked to be stabilizing, but then accelerated once again. In the United States, inflation rate, which rose from 2.4% in the last part of 2024 to around 3.0% at the beginning of 2025. This surprising upshift reawakened concerns over a more sustained period of monetary retrenchment, spooking investors and, in turn, sparking fresh market volatility.

Adding to these inflationary fears was a very meaningful repricing of monetary policy expectations. The Federal Reserve and the European Central Bank maintained a cautious stance, pushing back against market expectations of monetary easing as early as Q1 2025. The broad selloff in equities came after a reassessment of monetary policy led to investors funneling away from what has been a key driver of the global stock rally and into lower-risk assets.

The global geopolitical landscape also deteriorated. Tension between the US and its allies with Iran pushed up transport costs through the Middle East, by disrupting Red Sea shipping routes also damaged because of military attacks on commercial vessels. Meanwhile, U.S.–China relations wobbled, with political uncertainty in the United States (combined with the unstable

consequences of 2024 presidential election) making investors more bearish and leading to an exodus of capital from risk and into safe-haven assets such as Treasuries and the dollar.

Concomitantly, the macro-financial environment was influenced by a fresh wave of protectionism pursued by the US in trade policy. The new “Liberation Day Tariffs” set duty rates as high as 60% on Chinese imports, with the policy later expanded to include other major trading partners like Mexico, Canada and the European Union. These policies in turn renewed global trade tensions, followed by negative responses and the rise of economic uncertainties. In addition, it led to lower global trade volumes, increased import costs, and scared off investors in export-dependent economies.

The impact was especially severe in emerging economies and trade-dependent regions. Both supply chains and external demand came under increasing pressure in countries like China, Mexico and a plethora of different EU member states. At the same time, geopolitical risks intensified, with further violence in Ukraine and the Middle East, especially in the Red Sea where military attacks targeted commercial shipping routes. These developments drove up transportation and energy costs even more, which in turn helped to entrench pre-existing inflationary phenomena.

Central banks were cautious in response to this complex environment. The Federal Reserve and the European Central Bank also delivered a double dose of the medicine this month, postponing already-awaited interest rate cuts at upcoming meetings, grounding the move in the resurgence of inflation threats as well as geopolitical instability.

In terms of fiscal policy, numerous unpaid support measures were introduced to contain the devastating effects of the outbreak, with a particular focus on safeguarding sovereign stability. More to the point, Canada and the European Union used financial relief packages and subsidies to assist sectors that were

most afflicted by tariffs and supply chain disturbances. These actions, however, didn't help that much in rebalancing confidence, indeed financial markets continued to experience extreme volatility during the first quarter of 2025, resulting in an overall downward trend.

Although a period of uncertainty, it was evident how inconsistent trade policy, geopolitical tensions, and persistent inflationary pressures can unsettle equity markets. The collapse in investor sentiment, the shift back towards risk aversion, and redeployment of funds into safe-haven assets, namely U.S. Treasuries and the U.S. dollar, illustrated clearly how global forces brought on by external shocks could easily shake up markets previously thought to be complacent.

On this topic, it is also crucial to reflect on how these dynamics affected the industry sectors and the degree of impact in each sector. Not surprisingly, the most impacted industries were those most reliant on global trade and a complex supply chain.

The economic fallout was more severe for technology hardware and semiconductors, characterized by international supply chains that rely on cross-border flows of vital parts, merely sustained by the U.S.-China trade. Market valuations of sector frontrunners fell drastically as trade barriers and tariffs intensified, signifying a growing concern among investors.

Automotive and manufacturing industries faced similar vulnerabilities. These sectors, facing supply chains that were already at just-in-time limits, were shaken up by newly circumnavigated shipping routes in the aftermath of attacks on the Red Sea and following tariffs imposed by the U.S. or counter-tariffs from trading partners. Those delays and rising transportation costs not only hindered production but also ate margins, especially for firms with business overseas.

The consumer goods sector was also seen to be most at risk from the external environment. Household spending was burdened by inflation, and businesses which were already managing tight profitability margins, encountered supply-side problems- from slow-moving deliveries to increasing import expenses. At the same time, many emerging market economies, most of them relying on exports for growth, were caught between these negative dynamics and capital outflows as investors turned risk-averse while opting for U.S. safe-haven assets.

Meanwhile, some areas fared better by comparison. For example, utilities remained relatively stable thanks to their domestic focus and non-discretionary nature. Healthcare and pharmaceuticals are benefiting from stable demand as well as insulation from trade conflict beyond direct exposure to supply chain frictions. Moreover, some subsectors of the financials, such as insurance, were quite well positioned for this environment as rising interest rates propelled investment income and helps in offsetting broad market volatility. Also, software and digital services exhibited greater resilience given their global footprint, lower dependence on physical goods and limited exposure to geopolitical bottlenecks.

The divergence across sectors further underscored the asymmetric nature of market dislocations, with businesses more tethered to global logistics or manufacturing value chains as well as more consumer-sensitive industries seeing the brunt of change first hit them harder, while asset-light sub-sectors and those with domestic orientation found themselves better insulated from being material victims. Not only do these differences allow for examining prior performance, but they constitute also future susceptibilities in comparable turbulent scenarios.

### **3.2. GICS**

The present chapter constitutes the foundation of the database on which the analysis is based. For a holistic and methodologically appropriate analysis of sectors' performance, the study uses the Global Industry Classification Standard (GICS) as the main standard for sector classification. Introduced in 1999 by MSCI and Standard & Poor's, GICS was developed in response to the global financial community's need for a complete, consistent set of sector and industry definitions. It has become a global industry standard since it was first founded and utilized by asset managers, institutional investors, index providers, and financial analysts around the world.

The structured and hierarchical nature of GICS is a particular strength, as it results in four levels of classification: sectors, industry groups, industries, and sub-industries. The next highest level is the most aggregated by confining eleven broad sectors, a few examples of them are: Information Technology, Consumer Staples, Financials, Energy etc.. This structure facilitates a flexible, multi-dimensional analysis that enables researchers to examine the main trends in depth as well as to dissect more detailed sectoral phenomena. GICS are functional in the sense that, with respect to how companies actually make money, firms are clearly delineated, as revenues generate corresponding profits; thus, a company is classified data-wise into precise sectors based on its ultimate source of revenue.

The research covers the whole database, including companies from each of the eleven GICS. Ten companies from each sector were sampled, for a total of 110 firms. The companies are selected according to the magnitude of revenues, meaning that the sample is restricted to the largest players in each sector. It makes a plausible assumption that large-cap companies are less likely to show financial turmoil than smaller ones; therefore, are likely closer to the industry as a whole in reacting to market-wide shocks.

With that being said, there were still some adjustments to be made, as the necessity to eliminate some of the potential bias remained.

Any company, for which idiosyncratic events or extraordinary performance patterns would be observed in that observation period, was taken out from the dataset. In fact, some stocks' prices made a very sharp turn in both directions compared to the overall sectoral trends, because significantly influenced by external news, such as some regulatory developments, geopolitical tensions, and CEO-related move occurrences. The analysis is, therefore, made in two separate ways to address this issue on a systemic level. More qualitatively, those companies that were manually deleted from the main dataset are, in fact, discussed in the capacity of separate mini-case studies to present an example of how any of the individual firms have made significant deviations from the general patterns on account of exceptional external determinants. For example, Tesla was taken out of this first dataset for this reason, even though it is obviously one of the biggest companies in the Consumer Discretionary sector.

More quantitatively, strict statistical measures were present to identify the anomalies. For example, the companies for which the daily stock performance changes were within 15-20% were all taken to determine whether this dynamic could be explained by the acceptable drivers that could be attributed to the sectoral level. If this explanation was absent, those companies were all eliminated from the dataset for the sake of consistency.

Moreover, the analysis was restricted to only those companies with financial statement data as well as daily stock price data over the sample period. The sample was restricted to publicly listed companies with a recognizable GICS classification, and small capitalization firms were excluded from the population to minimize statistical noise. Such a construct enables the thesis to investigate the relationship between market fundamentals and stock

valuation in a sector-specific manner rather than in an aggregated-market type fashion.

This is a significant advantage because it allows to follow professional and common academic standards within the financial analysis field as well. However, the analysis still has a few issues to be assessed: many firms either have operations spanning multiple sectors or simply adapt their business models over time in ways that do not quickly reveal themselves as GICS categories. In some instances, this could lead to a certain level of dissonance between economic reality and category identity (especially in rapidly changing markets like renewable energy or platform-based technology services).

Still, being one of the most comprehensive and established frameworks for sectoral analysis means that, despite the shortcomings, GICS will continue to be used in analysis. Leaving aside arbitrary significance thresholds makes the results clearer, showing how market segments behaved in the Dec 2024–Apr 2025 downturn despite financial, geopolitical, and monetary shocks. In effect, methodological clarity supports a better understanding of market behavior under systemic stress. Finally, then, through GICS-based analysis, this thesis would access wider structures that clarify how industry features drove firm-level outcomes under pressure.

Nonetheless, it is important to know that GICS classification, while useful for structuring the analysis, is inherently broad. Each sector includes companies operating in diverse industries and business models, which may introduce a degree of bias when normalizing results by sector averages. This aggregation can somewhat flatten the analysis, reducing its precision; anyway, as anticipated, it allows for a more balanced representation of the market as a whole.

The choice to group firms by GICS was therefore aimed at maximizing sectoral coverage and ensuring a wide variety of perspectives, still being aware that intra-sector heterogeneity may occasionally generate opposite market drivers within the same category. At the same time, adopting such a wide scope was essential for the ultimate objective of this thesis: building an index that can be applied consistently across different sectors and markets. A narrower, more precise segmentation might have provided higher accuracy within specific industries, but it would have made the index less generalizable and thus less effective as a broad market tool.

#### **4. Cross-Company Stock Performance Analysis**

This chapter marks the transition from sector-level context to firm-level empirical analysis. Building on the macro-financial and sectoral framework introduced earlier, we now assess how individual companies performed during the December 2024 – April 2025 downturn.

##### **4.1. Analysis**

This section was based on the sector grouping considered in the earlier chapters, while the next one goes into the heart of all empirical analysis.

A quantitative assessment comparing this stock performance with that of other companies was necessary to meet the research objective that some corporations did better or worse compared to others during the recently witnessed equity market downturn. However, what is intended to be understood here is whether a company's financial fundamentals (which will be covered in the later chapters) correlate with its relative stock behavior during high market volatility.

The analysis is summarized for the period December 1, 2024 — mid-April 2025, which encapsulate the changing dynamics within the equity market. Over this period, closing prices were recorded daily for each of the 110

companies selected, and a coefficient was created to encapsulate how each company performed in terms of price over time.

Nevertheless, it is difficult to gain much from directly comparing the slope values across firms, because sectors are inherently structured differently. Many horizontal dynamics can be generalized across verticals, but different industries display distinct baseline behaviors and may respond differently to external shocks. This issue is solved through a normalization process to have consistent analytics. This made the results interpretable across all sectors and enabled them to be placed on a common scale.

Furthermore, companies with an outlier market behavior, often driven by exceptional, non-replicable circumstances, were also excluded from the sample to keep the rigor of our analysis and reduce bias.

In general, it was essential to normalize data for increased comparability and reduced distortions due to broad cross-sector heterogeneity and occasionally a few statistical outliers. Thus, we obtained a cleaner and fairer dataset, which will allow to make a better judgment about firm-level stock performance during the selected market downturn.

## **4.2. Methodology**

The data used for this analysis were gathered using Excel, particularly the Google Finance function, which enabled the automatic extraction of historical daily closing prices for each of the 110 companies included in the sample. The selected time window ranges from December 3rd, 2024, to mid-April 2025, resulting in approximately 90 trading-day observations per company, accounting for holidays and market closures in the various regions.

Before proceeding with the core analysis, the raw data were processed to detect potential anomalies or outliers. Daily returns were computed as percentage changes in closing prices compared to the previous trading day.

This preliminary step allowed for the identification of extreme movements that could distort the results. Companies exhibiting persistent irregular behavior due to idiosyncratic events were excluded or flagged accordingly, in line with minimizing bias and ensuring consistency across the dataset.

Once the dataset was cleaned, a simple linear regression model was applied to each company's time series of stock prices to estimate the general trend of performance during the selected period. The resulting slope coefficient represents the average daily change in the stock's value, indicating whether the asset experienced an upward or downward trajectory over time.

To enable meaningful comparisons, each company's slope was then benchmarked against its sector. An Industry Average Slope was calculated for each of the eleven sectors by averaging the individual slope values of the ten companies within the same industry. This served as a baseline for identifying relative overperformance or underperformance.

Finally, a normalization procedure was applied to express these results on a common base-100 scale. The normalized score for each company was computed using the following formula:

$$\text{Normalized Slope} = 100 + \frac{(\text{Slope}_{\text{company}} - \text{Slope}_{\text{industry\_avg}})}{\text{ABS}(\text{Slope}_{\text{industry\_avg}})} \times 100$$

As shown in the formula, the normalized slope is obtained by starting from a base value of 100, then the ratio between the difference of the individual company's slope and its sector average slope is added, moving on the number is divided by the absolute value of the sector average slope. This result is then multiplied by 100 to complete the normalization process.

The formula was specifically designed to handle both positive and negative slope values, eliminating distortions. In fact, using a simple proportional

scaling would not be effective in case there are negative values, as it could reverse the interpretation of outperformance and underperformance, causing to misjudgments. With this method, although the resulting scores can be either above or below 100 depending on the relative trend, the baseline remains consistent across all companies, enabling a more robust and unbiased comparison.

Therefore, this allowed for direct and unbiased comparisons across firms regardless of the sector in which they operate. Values above 100 indicate that a company outperformed its sector average, while scores below 100 reflect underperformance. This transformation ensured that the final dataset would be suitable for interpreting cross-company differences in stock behavior, laying the groundwork for the subsequent analysis of financial fundamentals.

### **4.3. Results**

The results of the analysis show several relevant patterns at sector and company levels. Unsurprisingly, given the market volatility observed between December 2024 and April 2025, most Industry Average Slopes were either negative or slightly positive. This result has a wider context in which equity markets generally fall; overall, just a few sectors enjoyed sustained upward trends.

Among the eleven sectors analyzed, Consumer Discretionary (e.g., Amazon, Toyota, Nike, McDonald's, Starbucks) exhibited the weakest average performance. This aligns with expectations, given that consumer spending tends to be one of the earliest and most visible casualties during periods of economic insecurity. However, Consumer Staples and Health Care really stood out as the leading two sectors, respectively. Within Consumer Staples, Phillip Morris and Coca-Cola were the two companies that clearly outperformed compared to the others, with Costco falling on the softer side.

The Materials sector is another interesting case, finishing near the top of the list in terms of average slope; To be fair, this is a little misleading given that much of this outperformance was down to Anglo American PLC. Therefore, without this outlier, the contribution of this sector would have been less noteworthy.

Real Estate and Communication Services were flat, without swinging strongly to one extreme of outperformance or underperformance. It is important to underline that this is not a comprehensive sector analysis. Rather, the assessment is based on the ten largest firms by revenue within each GICS category. This methodological choice inevitably introduces a certain degree of bias, as the selected companies may not fully capture the heterogeneity of the entire sector. Nevertheless, again, this approach was necessary in order to construct an index applicable across a wide range of sectors and markets, even if this came at the cost of some granularity.

The ultimate goal was not to precisely rank the relative strength of each sector, but to ensure a broad and balanced market representation suitable for this thesis.

## **5. Balance Sheet Analysis**

Continuing the equity market performance analysis carried out in the previous chapter, this section exhibits a different kind of investigation, concerned with identifying the companies' internal financial structures. We just need to break them down into elements so we can determine, consequently, if market action correlates or not with company financials.

This analysis uses the same dataset previously mentioned. To balance coverage with accuracy, financial statement data was gathered from multiple

sources: primarily Orbis<sup>5</sup>, with top-ups from Yahoo Finance, and in some instances, the value is hand-picked from official company reports. The financial data provided includes figures from the Balance Sheet, Income Statement, and Cashflow Statement for the past four years - FY2021, FY2022, FY2023, and FY2024.

It includes data on a set of financial indicators that allows for the review over time before and after each application, for every company's financial standing. These ratios relate to solvency, liquidity, profitability, as well as other strategic financial metrics. This stage is far from drawing direct conclusions; instead, we lay down a solid base of financial health and rank its performance alongside what is seen in capital markets.

### **5.1. Accounting Standard Differences: GAAP and IFRS Bias**

In terms of financial statement analysis, a primary methodological issue arose that divided the dataset into two classes based on separate accounting standards – Generally Accepted Accounting Principles (GAAP)<sup>6</sup> for U.S.-based firms and International Financial Reporting Standards (IFRS)<sup>7</sup> for companies in most other jurisdictions. Because of the diverse composition and spread of sections, there are 110 companies in the sample; inconsistency in accounting overlays might offer structural bias to financial indicators' comparability.

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<sup>5</sup> The Orbis database is a global business intelligence platform from Moody's Analytics (formerly Bureau van Dijk) that provides detailed information on public and private companies worldwide, focusing on company financials, ownership structures, management, M&A activity, and industry data.

<sup>6</sup> GAAP, or Generally Accepted Accounting Principles, is a standardized set of rules and guidelines that guide how businesses create financial statements, ensuring consistency, transparency, and comparability for investors and stakeholders. Originating from the need for reliable financial reporting after the 1929 stock market crash, GAAP standards are established by bodies like the Financial Accounting Standards Board (FASB) in the U.S. and are crucial for public companies and government agencies to maintain trust and enable informed decision-making.

<sup>7</sup> IFRS are globally recognized accounting standards set by the IASB to ensure consistent and comparable financial reporting, replacing earlier International Accounting Standards (IAS) in 2001 to enhance global financial clarity and investor confidence. Footnotes under IFRS are essential explanatory notes accompanying financial statements, providing crucial details on accounting policies, unique transactions, and potential risks to offer a comprehensive view of a company's financial health to users like investors and regulators.

GAAP and IFRS share some common traits as well as differences. The GAAP is rule-based, highly prescriptive, and comes with granular guidance on essentially every accounting scenario imaginable. IFRS, in contrast, is principles-based and permits more flexibility and professional judgment in financial reporting. Therefore, some components of the balance sheet and income statement may be measured, classified, or recognized differently compared to a standard. If these differences are ignored or not accounted for, they can materially impact the cross-sectional comparability of financial ratios.

For instance, under GAAP, Last-In-First-Out (LIFO)<sup>8</sup> is allowed as a method of inventory valuation; however, under IFRS, LIFO is prohibited and only First-In-First-Out (FIFO)<sup>9</sup> or weighted average cost is permitted to be utilized. While these differences are applicable, this analysis judged them to have little concrete effect on the results, as inventory values were not singled out in critical ratio calibrations, and took data across four fiscal years per company, which should average out any short-term valuation influences.

Another conflict of interest has been in the field of depreciation and amortization practices. IFRS classifies asset components and lives offering choice, rather than rules leading to changes in estimates under GAAP. These differences could impact profitability measures like EBIT or the operating margin, which were either ignored in this work or were addressed with conservative assumptions.

Similarly, distinctions were made in the classification of receivables and payables. IFRS will tend to require a more sensitive review of these items for

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<sup>8</sup> LIFO (Last-In, First-Out) is an inventory accounting method that assumes the most recently acquired or produced goods are sold first, matching current, higher costs against revenue and leaving older, lower-cost inventory on the

<sup>9</sup> FIFO (First-In, First-Out) is an accounting method that assumes the oldest inventory items are sold first, thereby assigning their original cost to the cost of goods sold (COGS). This valuation method is applied to determine the remaining value of inventory on the balance sheet, with newer purchases being matched to the ending inventory.

classification and can involve fair value<sup>10</sup> adjustments under financial instrument rules. Though GAAP includes much of the same logic, it typically applies the logic in a more rules-based fashion. However, receivables and payables were treated the same in both standards on a short- and long-term basis for constructing high-level liquidity/solvency ratios, as for this type of analysis, it is assumed that classification differences are immaterial.

In this analysis, however, the treatments denoted above were navigated by applying a few simplifications. Most notably, EBITDA was directly excluded as it is not defined by GAAP or IFRS, and it is known that firms compute differently this very last figure.

Financial metrics based on dividends and retained earnings were excluded from the analysis, as they are affected by substantial comparability issues. Recognition timing and payout policies differ markedly: under IFRS, dividends are recorded only once formally declared by the board, whereas GAAP permits recognition at alternative stages. Moreover, such measures are further influenced by past accounting decisions, which vary across jurisdictions and internal company policies, thereby limiting their reliability as cross-sectional indicators.

Again, financial investments, which are a part of IFRS and are usually presented at fair value (which may not require such classification under GAAP), were omitted to avoid skewing results.

It is important to underline that these omissions were not for the sake of simplicity, but rather for making certain the reliability, consistency, and analytical clarity of results. The common denominators for constructing these financial ratios were therefore total assets, total liabilities, revenue, and cash

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<sup>10</sup> Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date” (IFRS 13). This measurement reflects an exit-price notion under prevailing market conditions, based entirely on assumptions that market participants would use in pricing the asset, and deliberately excludes entity-specific intentions or constraints.

flow from operations, all of which represent aggregates reported in a similar nature according to both accounting frameworks.

Finally, although the presence of GAAP and IFRS firms allowed to introduce a theoretical layer of complexity, its practical impact on the validity was not significant as we were very cautious in the manual input of our main variable initial condition and the exclusion from our analysis of those items highly varying across firms. Moreover, the research, lately, was able to achieve a high level of comparability across firms despite their accounting origin and this provided a reliable platform on which performance based upon ratios could be assessed.

## **5.2. Choosing Financial Ratios and Classification**

The data taken from the financial statements of these companies were used to develop a set of financial ratios and indicators, which were employed to assess the internal structure of the finances for examination.

These measures were chosen to provide a broad snapshot of the financial health of each company across the four fiscal years reviewed. The data were categorized into four main groups for ease of analytical clarity: solvency indicators, liquidity indicators, profitability indicators and other accessory indicators. The latter consists of ratios that are not included in the three traditional classes but are strategically valuable to this study and have been chosen because they may capture firm-specific characteristics at periods of financial distress.

The calculation used raw figures from the Balance Sheet, Income Statement and Statement of Cash Flow from FY2021 to FY2024. Rather than picking just one fiscal year, the analysis set out to generate a picture of each company's historical performance versus its current likely direction to create a composite financial snapshot. Using a weighted average to reflect the

importance of short-term financial conditions in the context of the history of their market decline allowed for this process.

Therefore, to aggregate all the indicators to a final value they were weighted with 40% for 2024, 30% for 2023, 20% for 2022 and 10% for 2021. Therefore, this weighting scheme allows for historical weights to persist while providing more relevance of dives in most recent year with the overall safety metrics, all having a better probability of reflecting how current financial performance drives into previous quarters.

The next group of indicators are the solvency measures which will be explored in detail throughout the following sections along with all the other categories of financial ratios.

### 5.2.1. Solvency

A solvency ratio reveals the capacity of a company to meet its long-run obligations and never turn into insolvent with time. They are invaluable in determining the sustainability of a firm's capital structure and the extent to which it uses debt from external parties over internal financing. A solvency profile in balance is consistent with a decent amount of equity to fund long-term investment, low reliance on fixed costs and good cash flow obscuration and debt-serviceability. The following metrics were chosen to assess these dimensions for each of the companies in our sample.

Indicators	Formula
<b>Primary Structure Ratio</b>	Fixed Assets / Equity
<b>Secondary Structure Ratio</b>	Fixed Assets / (Equity + Long-Term Debt)
<b>Degree of Rigidity of Assets</b>	Non-Current Assets / Total Assets
<b>Degree of Flexibility of Assets</b>	Current Assets / Total Assets
<b>Inventory Indicator</b>	Inventory / Current Assets
<b>Total Liquidity Indicator</b>	Deferred + Immediate Liquidity / Invested Capital

<b>Financial Autonomy Indicator</b>	Equity / Total Assets
<b>Total Debt Ratio</b>	Total Liabilities / Total Assets
<b>Financial Debt Ratio</b>	Financial Debt / Total Assets
<b>Equity Ratio</b>	Equity / Total Liabilities
<b>Cash Flow to Debt Ratio</b>	Operating Cash Flow / Total Debt

The Primary Structure Ratio is equal to the fixed assets / equity. This ratio considers the extent to which long-term investments are financed with shareholders' equity, a margin of financing capital that is normally seen as more stable and less subject to risks. A ratio less than 1 or close to is considered safe and this means that the fixed assets are sufficiently covered by internal capital, which denotes a conservative position. Similarly, larger values may indicate that a company increases its dependence on external financing to finance its asset base.

On the same page, the Secondary Structure Ratio contrasts fixed assets with equity and long-term debt on a consolidated basis. The concept of capital is far broader than debt and includes all resources a company has available: equity, stock, etc. An elevated value of the ratio (above 1) might signal an inappropriate funding mix between long-term assets and short-term liabilities, which tends to destabilize financial security.

Degree of Rigidity of assets is for measuring rigidity in using liquid asset, it is the percentage of non-current assets over total assets. A high ratio indicates that the majority of companies' capital is invested in fixed and illiquid investments. Although it is probably true in most capital-intensive industries, this scenario limits flexibility and might make the firm more financially vulnerable when faced with sizeable variability.

On the other hand, The Degree of Flexibility works equally but in the opposite direction. A highly flexible asset component indicated that the company retains a significant amount of its assets in liquid, or near-liquid, resources which can be utilized to support operations and satisfy short-term liabilities during downtimes. Collectively these two rates are an indication of how well the company can strike a balance between long-term investments and short-term responsiveness.

Inventory Indicator computed as inventory as percentage of total current assets; even though inventory is part of current assets, they are often less liquid than cash or receivables and may be obsolete, as well as subject to valuation.

A high inventory ratio may indicate that a business is overstocking or does not manage their working capital efficiently, this can vary depending on the industry.

The Total Liquidity Indicator shows the percentage of liquidity, meaning both the immediate and deferred cash that a company owns in contrast with the total invested capital, formed by the sum of current and non-current assets. The higher the percentage is, the higher the company can face short-term obligations thanks to its own resources.

The Financial Autonomy Indicator, a figure that expresses equity as a proportion of total assets. This ratio is a measure of how much the firm depends on internal financing and what its long-term solvency and independence from creditors. This value is typically better when higher, as this means the company should be able to withstand financial shocks and get ready access capital on favorable terms.

This is mutually exclusive of the Total Debt Ratio, which refers to total liabilities (both short-term and long-term) over total assets. In fact, this measure has an overall indication of the level of financial leverage. Greater

values reflect an increased use of outside funding, which can enhance returns while simultaneously raising financial risk especially if interest rates are escalating or access to credit is tightened.

Financial Debt Ratio: isolate the financial debt positions (both short-term and long-term borrowings) in relation to total assets. As current liabilities do not include any operational debt, this measure is primarily confined to borrowings undertaken as a source of funding. It suggests an honest look at how much exposure the business has on the debt markets and in most overleveraged companies it acts as an early warning sign.

This indicator measures what fraction of liabilities are covered by equity. This is the measure of leverage, or the relationship between equity capital and borrowed flow. Strong equity ratios indicate a safe and protective structure contributing to a possible higher investor trust, as well as demonstrating lower risk of insolvency, while low equity ratios can mean the company is relying too much in debt or may have solvency issues.

Lastly, the Cash Flow to Debt Ratio measures operating cash flow against total debt. This is a contrast to balance sheet-based metrics but rather an indicator which reflects the ability of firms to generate real internal resources for repaying debts. A low ratio might indicate upcoming problems in servicing debt, whereas a higher value is safer from the point of view of liquidity.

### **5.2.2. Liquidity**

The analysis of liquidity is designed to assess a company's ability to survive in the short term, how fast it can come up with cash and pay out its current liabilities using converting Current Assets into Cash portfolios. This becomes especially important in financial distress situations, in which external financing could be an impermissible or extremely expensive alternative and good internal liquidity management is instrumental to the corporate survival.

Indicators	Formula
<b>Current Ratio</b>	Current Assets / Current Liabilities
<b>Quick Ratio</b>	(Current Assets - Inventories) / Current Liabilities
<b>Cash Ratio</b>	Cash and Cash Equivalents / Current Liabilities
<b>Reliance on Inventory</b>	Inventories / Current Assets
<b>Days of Inventory on End (DIO)</b>	Inventories / (COGS / 365)
<b>Days Sales Outstanding (DSO)</b>	Receivables / (Revenue / 365)
<b>Days Payables Outstanding (DPO)</b>	Payables / (COGS / 365)
<b>Average Cash Conversion Cycle (CCC)</b>	DIO + DSO - DPO

A combination of financial ratios has been used to determine liquidity, each depicting a distinct aspect of a firm's ability, operationally or structurally, to meet short-term necessities. This group includes the Current Ratio, the Quick Ratio, and the Cash ratio which show decreasing tolerability for an asset being less liquid. Inventory is therefore deducted out of the numerator to represent a more conservative view on liquidity risk as some categories of inventory may take a longer time to liquidate or carry different risks. The Cash Ratio being the higher one of the three, also include only cash and cash equivalents thus providing a purer stance of any company short-term liquidity position.

Analogously, a supplementary indicator, called Reliance on Inventory, was constructed to measure the proportion of inventory within current assets. It is especially good to distinguish firms that are more susceptible to liquidity risks when the company focuses too much on stock which is not easy to change into cash in times of recession.

In addition to the structural factors, this analysis is complemented with operational metrics which measure how effectively companies manage their working capital. Using the Days of Inventory on hand (DOH), Days Sales

Outstanding (DSO) and Day Payable Outstanding (DPO). DOH quantifies the average number of days that inventory remains on hand, DSO records the average time a company takes to collect payments from customers, and DPO assesses how long it takes a firm to pay suppliers its invoices.

The combination of these three ratios makes the Cash Conversion Cycle (CCC) =  $DOH + DSO - DPO$ . The CCC is a composite measure of how easily a business converts its investments in working capital into cash flow. A lower or negative CCC overall demonstrates good working capital management, inversely a higher CCC shows weaknesses and more reliance on external sources of liquidity.

To compare jurisdictions with different tax systems, particularly as regards the inclusion of Value-Added Tax in reported accounting values, VAT elements were extracted from inventory, receivables / payables. Such an adjustment is crucial for calculating DOH, DSO and DPO correctly. The respective standard VAT rate was allocated to each company as function of its first operational country using OECD and national tax authorities.

For U.S. incorporated firms, a specific approach was used because the U.S. has no national VAT (the developed version of a sales tax), but instead depends on state and local sales taxes. Applying a 0% VAT rate to such companies would create distortions in cross-border discussions; thus, U.S. domestic market firms were assigned a proxy VAT equal to the U.S. weighted average sales tax rate of about 10.4%, calculated from state-level population and tax data (source: Tax Foundation and OECD). This approach provides a more real value accounting values and maintains analyzable consistency across the entire dataset.

### 5.2.3. Profitability

Profitability ratios are an essential tool to determine the earnings capabilities of a company against its sales, assets, and equity. This analysis includes several profitability indicators and scope was specially selected to measure the pros and cons of performance. Those metrics are calculated from standardized financial statement items from both the Income Statement and Balance Sheet. While some intermediary variables such as GIC and NIC were used in deriving other ratios, these had not been considered on their own to apply it for evaluation.

Indicators	Formula
Return on Sales (ROS)	Net Profit / Revenue
Return on Investment (ROI)	EBIT / (Gross Investment Capital)
Capital Turnover	Revenue / Net Investment Capital
Return on Equity (ROE)	Net Profit / Shareholder's Equity
Return on Net Assets (RONAN)	EBIT / Net Assets
Return on Net Assets Integral (RONAI)	EBIT / (Net Assets + Non-Operating Assets)
Financial Leverage	Assets / Equity
Gross ROE	EBIT / Equity

For assessing the operating efficiency, Return on Sales has been deployed which shows how much profit a company can extract from its revenue, after taking out all operation costs. Higher ROS means either being better at pricing or having more control over costs. In contrast, the Capital Turnover Ratio was used to measure how efficiently a firm utilizes its capital base to produce revenue. High turnover suggests high sales in relation to capital invested, but it needs to be considered along with profit margins which could lead you to draw the wrong conclusion.

We calculate the Return on Investment which is operating profit divided by total capital invested. It offers a full view of value creation from the capital used in the business and is especially valuable if you are comparing companies that vary in size. The Return on Equity (both gross and net of taxes) similarly calculates the return earned on shareholders equity, hence is one of the most popular metrics with analysts and investors.

In addition, to have a broader understanding of companies' investing results, the analysis includes Return on Net Asset; moreover, to delve even deeper in this topic, the latter figure has also been divided in: RONAn, more focused on the profitability of core operational assets, and RONAi adds in some non-operating components as well to give a little broader perspective. These ratios are specifically relevant in a competitive financial sector, to facilitate comparison of asset-intensive entities from various sectors.

As a complementary analysis tool, these ratios are very useful, however, this is not the case for Financial Leverage Ratio: because its inclusion here does nothing more than amplify profitability. While this is usually lumped under solvency, it helps to answer the question how much debt drives equity returns. Increasing the financial leverage ratio will amplify ROE; however, it is a greater risk liability.

While each offers an alternate vantage point, these profitability ratios allow for a more complete perspective into the efficacy in which all three businesses create value at different points of operation and finance.

#### **4.2.4. Other indicators**

Some of the following ratios could traditionally be considered part of profitability analysis, anyway, they are excluded from the previous category because their utility increase when assessing different aspects of companies' performance. For this reason, they are separated from the core profitability ratios and presented in a distinct category. This separation reflects their

broader relevance: although not always fitting neatly into the standard categories, they remain crucial for the analysis carried out in this thesis and contribute significantly to the overall evaluation of corporate performance.

Indicators	Formula
<b>Risk Indicator</b>	Interest Expense / Revenue
<b>Interest Coverage Ratio (ICR)</b>	Operating Income / Interest Expense
<b>Earnings Per Share (EPS)</b>	Net Income / N° of Shares Outstanding
<b>Debt on Equity (D/E)</b>	Debt / Equity
<b>Price on Earnings (P/E)</b>	Stock Price (Avg Dec24 - Apr25) / Net Profit
<b>Enterprise Value (EV) on Revenue</b>	Enterprise Value / Revenue
<b>Gross Profit Margin</b>	(Revenue - COGS) / Revenue
<b>Operating Profit Margin</b>	Operating Income / Revenue
<b>Net Profit Margin</b>	Net Income / Revenue
<b>Return On Capital Employed</b>	EBIT / Average Capital Employed
<b>FCF Yield</b>	Free Cash Flow / Market Capitalization
<b>Asset Turnover</b>	Revenue / Average Total Assets
<b>PEG Ratio</b>	(P/E) / EPS Growth Rate

The metrics presented in the table broaden the analytical scope by linking accounting-based measures with market-based indicators, thereby offering a larger understanding of firm dynamics.

One of the most widely recognized is Earnings per Share, a simple yet powerful measure of profitability that shows how much net income is generated for each share issued. EPS is crucial in equity valuation, firstly because it gives an immediate value for comparisons and secondly as it feeds directly into the price-to-earnings ratio. It not only captures earnings power but also reflects capital structure dynamics, being affected by dilution or share

repurchases. Closely connected is the P/E ratio itself, which indicates how much investors are willing to pay for one unit of current earnings. It is often treated as a proxy of market sentiment and growth expectations for the company; however, it can be misleading in the presence of earnings volatility or accounting distortions. To refine its interpretation, analysts often employ the PEG ratio, which adjusts the P/E ratio for expected growth in earnings. By accounting for growth prospects, this metric helps in assessing whether a company is over or undervalued relative to its future potential, although its reliability depends heavily on the accuracy of forecasts. As just mentioned, all these indicators can be distorted by peculiar situations, therefore it is always best practice to consider the indicators as a whole, to avoid discrepancies.

Moving in terms of leverage, the Debt-to-Equity ratio (D/E) remains one of the most common measures of financial risk. It expresses the relationship between debt and shareholders' equity, signaling the degree of leverage employed by a company. A high ratio suggests aggressive financing policies and higher risk exposure, whereas a low ratio reflects a more conservative approach. This measure is often interpreted not only as a risk indicator but also in the context of financial strategy, since optimizing, as well as exploiting, leverage may enhance returns to shareholders under certain conditions.

Profitability ratios remain central in financial analysis, with gross, operating, and net profit margins each providing complementary insights. The gross profit margin reflects a company's ability to generate earnings after covering direct production costs and is therefore a signal of pricing power and efficiency in managing inputs. The operating margin extends this view by incorporating overhead and administrative expenses, showing whether the firm can translate revenue into sustainable operating performance. The net margin, finally, captures the bottom line, considering interest, taxes, and

extraordinary items. Together, these margins trace the journey from revenue generation to distributable earnings, offering a layered perspective on profitability.

Another important measure belonging to this group is Return on Capital Employed, which assesses the efficiency of using capital to generate operating profits. It is particularly useful in capital-intensive businesses, as it combines elements of profitability with financial resources. Higher values are generally associated with better strategic positioning and stronger long-term value creation. Closely related to shareholder returns is the Free Cash Flow Yield, which connects cash generation to market valuation. By comparing free cash flow to market capitalization, it indicates the cash-based return available to equity investors, thus providing a measure that is less affected by accounting choices and more directly tied to investment capacity, dividends, or share repurchases.

Efficiency can also be measured by the Asset Turnover, which calculates how much a company uses its assets to generate sales. More turnover indicates more opportunities for resource utilization and is frequently applied to distinguish asset-heavy and asset-light business models. It becomes especially useful when you compare this ratio with profit margins, as the two together can give a quick and thorough overview of how well a company is running.

The last indicators are more linked to market relations. Market capitalization is the most immediate measure of equity value, reflecting investor attention to company size and risk profile. Enterprise Value, formed by the book value of equity plus the debt minus the cash, provides a more complete view of a company's overall valuation from the perspective of all capital providers. Related to this, the EV/Revenue multiple links the value of the business to its capacity to generate revenue, this ratio offers insight into the scalability and

market potential of the firm, but it must be interpreted with caution since it does not account for cost structures or profitability.

Taken together, these ratios contribute to a multidimensional perspective of financial performance. Each has its limitations when viewed in isolation, but when analyzed collectively they enrich the narrative of corporate evaluation. By integrating profitability, leverage, efficiency, and valuation measures, financial analysis can move beyond a partial reading of financial statements to a more holistic view of corporate health and market positioning.

## **6. Indicators and stock performance statistical analysis**

Before conducting the statistical analysis, the first step consisted in the precautionary preparation and harmonization of the dataset. The data collection process was initially organized by sector, with separate files for each GICS containing all the selected companies. To enable a comprehensive cross-sectional analysis, all these sectoral datasets were merged into a single consolidated database. This procedure allowed to build a unique structure, where the financial indicators of each company could be easily compared across industries.

Once the dataset was ready, it was the moment for an essential normalization of financial indicators. Given the structural differences between industries, certain ratios cannot be directly compared across sectors on a one-to-one basis. For instance, some industries are heavily reliant on inventory management, and typically displaying different primary structure ratios compared to firms operating in more capital-light businesses; similar cases happen in every sector, another example is the debt-to-equity structure, which is strongly conditioned by sectoral peculiarities. To reduce these biases and to allow for comparability, the indicators were normalized on a base 100 scale,

following the very same procedure already used in Chapter 3. This transformation does not eliminate the relative differences between companies, but it ranks them within a comparable scale, reflecting mainly individual performance against general sectors' trend.

It must be noted, however, that not all indicators were normalized. Certain measures were intentionally left in their raw form, since their interpretation is inherently independent from the sector and more directly linked to the specific performance of the company. To the previous belongs ratios like Return on Sales, Capital Turnover, Return on Equity, Return on Assets, the Interest Coverage Ratio, Earnings per Share, Price-to-Earnings, Market Capitalization, and Enterprise Value. These variables are strongly reliant on firm dynamics and capital market perceptions, therefore, normalization by sector would have reduced their explanatory power.

A further step was the adjustment of the database to reduce the distortive effect of extreme values. Financial indicators often contain outliers, which, if not treated, can heavily bias the results of statistical analysis. To address this issue, a "Winsorization<sup>11</sup>" procedure was applied as follows: values above the 95th percentile were replaced by the 95th percentile, while values below the 5th percentile were replaced by the 5th percentile itself. This method allows to smooth extreme observations without eliminating them entirely, producing a dataset that remains representative of the underlying variability while simultaneously reducing the risk of distortion due to aberrant cases.

In addition to normalization and Winsorization, further consistency checks were performed to detect anomalous or inconsistent value, also definable outliers. Adjustments were made, when necessary, to ensure the reliability of the analysis. The result of this process is a balanced and more homogeneous

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<sup>11</sup> Winsorization is a statistical procedure that reduces the influence of outliers by replacing extreme observations with the nearest values within a chosen percentile range, thereby preserving sample size. The term originates from Charles P. Winsor (1895–1951)

dataset, suitable for statistical testing while still preserving the key heterogeneity across firms and sectors.

This preparatory work was crucial to ensure that the following statistical analysis could be based on a solid and conform dataset. By combining normalization, selective raw treatment of certain variables, and Winsorization of outliers, the data preparation aimed to create a balance between preserving the originality of the dataset, while, at the same time, adjusting misleading variables and enabling statistical inference. The following sections build upon this foundation to explore the relationships between financial indicators and stock market performance.

Initially the analysis followed a two-fold approach: regressions and correlations. Linear, multivariate, and logarithmic regressions were performed. Unfortunately, strong multicollinearity emerged, unsurprising given that several indicators are correlated or share components, additionally, the models showed very low R-squared. Considering also the limited cross-section (slightly more than one hundred), this prevented reliable inference from the regression coefficients. For these reasons, the study in a second moment focused primarily on bivariate correlation results between the financial indicators (X) and the dependent variables (Y), which serve to indicate whether statistically relevant relationships are present in each market phase.

Once the database was established and adjusted, the first step of the statistical analysis consisted in computing the correlations between the dependent variables and the set of financial indicators under review.

### **6.1. Analysis of the Market “Downward Phase”**

In the initial phase, two dependent variables were considered: the Adjusted Slope and the Adjusted Variance, during the downward phase of the market. The Adjusted Slope has already been introduced earlier in the thesis and can

be understood as a stock-specific beta, not computed against a broad market portfolio but rather against the sectoral performance represented by the corresponding GICS index. It therefore provides a measure of the sensitivity of a company's stock performance relative to its own sector. The Adjusted Variance, on the other hand, measures the dispersion of stock returns around their mean during the first reference period of four months (December 2024 to March 2025). Variance, in statistical terms, represents the average squared deviation from the mean and, in this context, indicates the degree of volatility of the stock over the chosen time horizon.

These two variables were separately correlated with the set of 36 financial indicators that had been selected in the previous steps of the research. Nevertheless, some adjustments were made to avoid redundancies or conceptual overlaps. For example, in the case of the structural ratios, only the Degree of Rigidity of Assets was included, as the Degree of Flexibility is by definition complementary. Similarly, instead of considering each component of the working capital cycle separately, such as Days of Inventory Outstanding, Days of Sales Outstanding, or Days of Payables Outstanding, the analysis focused on the consolidated measure of the Cash Conversion Cycle, which provides a more holistic representation of working capital management, or, better said, the sum of the first two minus the third. Furthermore, purely dimensional measures such as Market Capitalization and Enterprise Value were excluded from this stage, since they do not provide a meaningful direct correlation with stock performance in the sample and are more likely to be used in combination with other metrics rather than as standalone variables.

The correlation analysis revealed that some variables lived up to expectations, showing an acceptable correlation with the Adjusted Slope of stock performance in the predicted direction, while others exhibited an anomalous behavior.

Going deeper, in some cases, variables that would intuitively be expected to show a positive link with stock slope displayed a negative coefficient in the sample. This does not necessarily imply a flaw in the analysis, but rather reflects the empirical nature of the study. Correlation captures statistical associations within the dataset under examination, which may diverge from theoretical priors due to several reasons, including the influence of exogenous factors, the effect of macroeconomic shocks during the observation window, or sector-specific dynamics not fully captured by the selected indicators.

Accordingly, these unexpected results should not be dismissed, but instead they suggest that the relationship between financial indicators and market performance is multifaceted and context dependent.

The following table summarizes the correlation outcomes, using as dependent variable the adjusted slope in the first downward phase of the market. These findings provide the first empirical evidence of the relationship between accounting-based financial measures and market-based stock behavior in the defined period of market stress.

Indicators (Downward Phase)	Correlation Coefficient <sup>12</sup>	P-value
Primary structure Ratio	-0.20	0.04
Secondary structure Ratio	-0.07	0.49
Degree of rigidity of assets	0.05	0.64
Inventory indicator	-0.11	0.27
Total Liquidity Indicator	0.06	0.53
Financial Autonomy	-0.16	0.10
Total debt ratio	-0.17	0.07
Financial debt ratio	-0.02	0.87
Equity Ratio	0.00	0.97
Cash Flow to Debt Ratio	-0.19	0.04
Current ratio	-0.26	0.01
Quick ratio	-0.10	0.28

<sup>12</sup> Pearson's  $r$  correlation between  $Y$  (adjusted stock-price slope during the market's downward phase) and  $X$  (financial indicators listed in the first column)

Cash ratio	-0.05	0.57
Reliance on inventory	-0.13	0.18
Average cash conversion cycle (CCC)	0.05	0.63
Return On Sales (ROS)	0.22	0.02
Return On Investment (ROI)	0.01	0.95
Capital Turnover (CT)	-0.11	0.27
Return On Equity (ROE)	0.16	0.10
Return On Net Asset net (RONAn)	-0.09	0.33
Return On Net Asset Integral (RONAi)	0.22	0.02
Financial Leverage	0.15	0.12
Return On Equity gross (ROEg)	-0.01	0.90
Risk Indicators	0.09	0.33
Interest Coverage Ratio (ICR)	0.02	0.80
Earnings Per Share (EPS)	-0.12	0.22
Debt on Equity (D/E)	-0.13	0.19
Price on Earnings (P/E)	0.12	0.23
Enterprise Value on Revenue (EV/Revenue)	-0.29	0.00
Gross Profit Margin	-0.24	0.01
Operating Profit Margin	0.00	0.97
Net Profit Margin	0.05	0.57
Return On Capital Employed	-0.02	0.84
Free Cash Flow Yield	0.01	0.96
Asset Turnover	0.05	0.58
Price on Earnings to growth (PEG Ratio)	0.04	0.72

The left-hand column lists the financial indicators, the middle column shows the Pearson correlation coefficient ( $r$ ), and the right-hand column provides the p-value, indicating the level of statistical significance.

For clarity, coefficients with p-values lower than 0.15 are highlighted in green and considered highly satisfactory since corresponding to an 85% confidence level; while those between 0.15 and 0.20 are displayed in yellow but still considered acceptable. In effect, even if less robust, they can still be considered informative given the complexity of the exercise. It is important to emphasize that in a study of this nature, it is common to observe results

that don't fully align with theoretical expectations, firstly because is part of the game and secondly because of the high volatility and turbulence of the period under examination (December 2024 - April 2025).

Looking first at the results that are consistent with expectations, several profitability measures show a positive and significant correlation with stock performance. At first glance, Return on Sales and Return on Net Assets Integral both present positive coefficients (0.22) with p-values of 0.02; even if the correlation coefficient does not imply a strong relation, it is still quite a high value, moreover, the p-value is one of the lowest in its category, reinforcing the meaning. In addition, it is consistent with financial theory, as firms capable of maintaining higher margins or generating stronger returns on invested assets tend to be more attractive in stock markets.

Return on Equity also shows a positive relationship (0.16) and good p-value (0.10). These results collectively indicate that profitability remains a crucial signal for investors, even in turbulent periods.

On the other hand, several liquidity and solvency indicators present negative significant relationships. The Current Ratio ( $r = -0.26$ ,  $p = 0.01$ ) and the Cash Flow to Debt Ratio ( $r = -0.19$ ,  $p = 0.04$ ) both show unexpected negative correlations, because theory normally suggests that higher liquidity and stronger cash flow coverage of debt could help in improving financial resilience.

A similar pattern emerges with Financial Autonomy ( $r = -0.16$ ,  $p = 0.10$ ) and the Total Debt Ratio ( $r = -0.17$ ,  $p = 0.07$ ), both of which appear with negative coefficients. Counterintuitive, these findings may reflect that during the crisis window, markets were more attracted to firms deploying resources actively rather than holding conservative balance sheet structures. Perhaps, in such cases, excessive liquidity or too rigid capital structures may have been interpreted as inefficiency and excessive rigidity.

For valuation measures, the Enterprise Value to Revenue ratio shows a strong negative correlation ( $r = -0.29$ ,  $p < 0.01$ ). This suggests that firms with higher market-implied valuations relative to their revenue base underperformed during the downturn, a result that is coherent with the idea that highly priced companies can be more affected by market shifts. Similarly, the Gross Profit Margin has a significant negative coefficient ( $r = -0.24$ ,  $p = 0.01$ ), which may indicate that higher-margin firms were more exposed to cost shocks or revenue contractions in the specific environment. A possible explanation to the previous could be that stock price adapts to companies' performance, so higher margin can lead to an overprice of stock price, therefore, whenever a crisis hit the market, the overpriced titles normally are the one that suffer the most. For this reason, perhaps, it could be realistically possible that firms with higher margins can be dangerous during instable periods.

The Price to Earnings ratio ( $r = 0.12$ ,  $p = 0.23$ ) was positive but the p-value is relatively significant, reducing its interpretative power, while Earnings per Share ( $r = -0.12$ ,  $p = 0.22$ ) again showed an unexpected negative sign, maybe confirming its limited explanatory value in this sample.

Other indicators, such as Inventory reliance ( $r = -0.13$ ,  $p = 0.18$ ), the Debt-to-Equity ratio ( $r = -0.13$ ,  $p = 0.19$ ), and Risk Indicators ( $r = -0.09$ ,  $p = 0.17$ ), present negative coefficients with borderline significance. While not fully robust, they suggest that higher reliance on inventory or more debt-weighted structures were penalized by investors, though the weak p-values mean that is better not to extract insights from these last observations.

Meanwhile, many other ratios, including Return on Investments, Capital Turnover, Operating Profit Margin, Net Profit Margin, and Free Cash Flow Yield have coefficients close to zero with very high p-values, meaning they have no explanatory power at all.

Overall, the picture that emerges is mixed compared to what has been found in the literature review. More precisely, profitability and effective leverage appear as the clearest drivers of relative stock performance, while liquidity and valuation ratios produced several confusing results. These discrepancies do not undermine the analysis but confirm how difficult is capturing market dynamics through accounting ratios alone, especially in a highly volatile window. They also reinforce the idea that financial markets often reward strategic resource allocation and investor sentiment over static measures of solvency or liquidity. The results therefore need to be interpreted with caution, but still, provide valuable insights into the relationships between accounting-based indicators and market performance.

Next, to enrich the analysis and make the results more robust, further investigations will also be conducted, in the following the dependent variable is no more the adjusted slope of stock performance, but its variance. The aim is to evaluate how strongly individual financial ratios are associated with fluctuations in stock prices, thereby offering insights on which factors contribute most to volatility, or better said instability. This additional step will not only help assess the extent to which certain ratios drive returns but also provide a parallel view of which firms may be relatively safer, less volatile, and therefore potentially more resilient investments during adverse market conditions.

Indicators (Downward Phase)	Correlation Coefficient <sup>13</sup>	P-value
Primary structure Ratio	0.01	0.88
Secondary structure Ratio	0.08	0.38
Degree of rigidity of assets	-0.10	0.31
Inventory indicator	0.24	0.01
Total Liquidity Indicator	-0.07	0.50
Financial Autonomy	0.26	0.01
Total debt ratio	-0.04	0.64

<sup>13</sup> Pearson's r correlation between Y (companies' stock-closing price variance during the market's downward phase) and X (financial indicators listed in the first column)

Financial debt ratio	-0.09	0.35
Equity Ratio	-0.15	0.12
Cash Flow to Debt Ratio	-0.07	0.48
Current ratio	0.05	0.59
Quick ratio	0.17	0.07
Cash ratio	0.09	0.38
Reliance on inventory	0.27	0.00
Average cash conversion cycle	-0.11	0.24
ROS	-0.19	0.05
ROI	-0.01	0.95
CT	-0.03	0.79
ROE	0.00	0.97
RONAn	0.03	0.73
RONAi	0.02	0.80
Financial Leverage	0.06	0.54
ROEg	0.01	0.88
Risk Indicators	-0.24	0.01
ICR	-0.21	0.03
EPS	-0.24	0.01
D/E	-0.21	0.03
P/E	-0.04	0.64
EV/Revenue	0.12	0.20
Gross Profit Margin	0.35	0.00
Operating Profit Margin	-0.15	0.12
Net Profit Margin	0.21	0.03
Return On Capital Employed	0.07	0.47
FCF Yield	0.02	0.86
Asset Turnover	0.24	0.01
PEG Ratio	-0.05	0.64

As in the previous table, the arrangement of the variables across the columns remains unchanged, the only difference stands in the format that for this analysis is inverted for the second column of correlation values; in fact, the lower the correlation factor is the higher is supposed to be the stability of a company in the stock market.

Looking first at the variables that align with theoretical expectations, several structural and profitability ratios present clear and significant correlations. Inventory indicators present solid results, indeed, both the Inventory Indicator ( $r = 0.24, p = 0.01$ ) and Reliance on Inventory ( $r = 0.27, p < 0.01$ ) are strongly and positively correlated with price variance. This is coherent with the notion that firms heavily reliant on inventory are by consequence more exposed to shocks in demand, supply, or costs. Similarly, Financial Autonomy ( $r = 0.26, p = 0.01$ ) is positively correlated with variance, which can be interpreted as firms with higher equity financing being perceived as less flexible during downturns, resulting in more volatile stock adjustments. Quick Ratio ( $r = 0.17, p = 0.07$ ) also shows a positive coefficient, suggesting that highly liquid firms did not necessarily reflect their liquidity into market stability, possibly because liquidity was not sufficient to offset exogenous uncertainty.

Profitability ratios provide broader picture. Gross Profit Margin shows the strongest positive correlation ( $0.35, p < 0.01$ ), suggesting that firms with higher margins experienced greater volatility. This, at first glance looks counterintuitive, but as seen in the first correlation table it may reflect the fact that high-margin companies were priced for growth and thus faced sharper corrections in a stressed environment. Net Profit Margin also appears positively correlated ( $r = 0.21, p = 0.03$ ), reinforcing this idea that profitability could expose them to stronger investor reactions. By contrast, Return on Sales ( $r = - 0.19, p = 0.05$ ) shows a negative correlation, in line with the idea that sales efficiency provides a stabilizing effect.

Several risk and solvency indicators also behave as expected. The general Risk Indicator ( $r = - 0.24, p = 0.01$ ), Interest Coverage Ratio ( $r = - 0.21, p = 0.03$ ), and Debt-to-Equity ratio ( $r = - 0.21, p = 0.03$ ) are all significantly and negatively correlated with variance. This is consistent with financial logic, thus balanced leverage, and lower risk profiles tend to experience smoother performance consequently reducing exposition to price. Moreover, Earnings

per Share ( $r = -0.24$ ,  $p = 0.01$ ) also shows a significant negative correlation, indicating, as can be asserted, that firms delivering consistent earnings per share provided greater stability in stock prices. Asset Turnover ( $r = 0.24$ ,  $p = 0.01$ ) presents a significant positive correlation, meaning that firms with higher efficiency in utilizing assets can be more volatile, possibly due to their hypothetical reaction to demands fluctuations.

Other ratios either show weak or no explanatory power, with coefficients close to zero and very high p-values.

Taken together, these results suggest that stock price volatility during December 2024–April 2025 was more strongly associated with structural balance sheet factors and reliance on inventories than with pure profitability ratios. High gross and net margins, appear linked with greater volatility, likely because such firms were priced more aggressively by the market and therefore subject to sharper corrections. At the same time, robust solvency measures and earnings-based indicators such as EPS or ICR provided stability and acted as volatility dampeners. This duality highlights the different nature of variance compared to slope: while slope correlations pointed more clearly toward profitability and leverage as drivers of relative returns, variance correlations emphasize risk exposure, investor sentiment, and the amplifying role of certain structural characteristics.

Overall, this second analysis reinforces the value of looking merely beyond returns. Understanding which financial indicators are most associated with volatility helps in providing a complementary dimension to stock performance analysis. Firms characterized by high reliance on inventory, high margins, or elevated asset turnover appear to suffer more fluctuations, whereas firms with stronger debt coverage, balanced equity-to-debt structures, and consistent earnings per share are more likely to offer relative stability. Together, these insights help identify not only which firms

outperform in downturns, but also which ones maintain steadier performance, an important consideration for investors seeking resilience in volatile market conditions.

## **6.2. Analysis of the Post-Divide “Recovery Phase”**

Same thing has been done for the recovery phase of the market, to have deeper understanding of the financial drivers, using as dependent variable the adjusted slope belonging to the second phase of the market. This phase, called the “Recovery Phase”, took place between April and July 2025. It was the moment when the market began to recover and continued to grow until July when it reached approximately the same capitalization as before the crisis.

It is important to also include in the analysis both the recession and recovery period to gain a wider understanding of corporate resilience. If the down cycle indicates how well firms can protect value in a downturn, the upswing demonstrates their ability to refresh valuation and take advantage of the market's new optimism. Understanding which financial indicators play a more pronounced role in this recovery is of key importance when building a robust resilience index, since it helps to separate businesses that were merely hanging on during the crisis from those that actually took advantage of improved conditions. Moreover, if the index is used during a period of market crises, no one knows when the “recovery phase” precisely starts, therefore having in the final index insight from both the periods can be useful to reduce uncertainty in such dynamic situations. Therefore, it makes the index more credible and feasible for practical use.

Below is the table presenting the first analysis of the Recovery Phase, showing the correlation between financial indicators and the adjusted slope during the recovery period.

Indicators (Recovery Phase)	Correlation Coefficient <sup>14</sup>	P-value
Primary structure Ratio	-0.05	0.58
Secondary structure Ratio	-0.09	0.36
Degree of rigidity of assets	0.05	0.60
Inventory indicator	-0.01	0.95
Total Liquidity Indicator	0.11	0.27
Financial Autonomy	-0.07	0.48
Total debt ratio	-0.04	0.71
Financial debt ratio	-0.08	0.38
Equity Ratio	-0.15	0.12
Cash Flow to Debt Ratio	-0.04	0.68
Current ratio	0.01	0.93
Quick ratio	-0.07	0.47
Cash ratio	-0.09	0.34
Reliance on inventory	-0.15	0.11
Average cash conversion cycle	0.22	0.02
ROS	0.11	0.23
ROI	-0.03	0.73
CT	0.08	0.41
ROE	0.04	0.72
RONAn	-0.13	0.16
RONAi	-0.03	0.73
Financial Leverage	-0.02	0.87
ROEg	-0.21	0.02
Risk Indicators	-0.10	0.32
ICR	0.08	0.42
EPS	0.03	0.73
D/E	-0.12	0.21
P/E	-0.04	0.67
EV/Revenue	-0.13	0.19
Gross Profit Margin	-0.13	0.17
Operating Profit Margin	-0.15	0.12
Net Profit Margin	-0.14	0.15
Return On Capital Employed	-0.19	0.05
FCF Yield	-0.14	0.13
Asset Turnover	-0.21	0.03
PEG Ratio	-0.09	0.36

<sup>14</sup> Pearson's r correlation between Y (adjusted stock-price slope during the market's Recovery Phase) and X (financial indicators listed in the first column)

Contrary to the downturn period, over the market recovery period (April - July 2025), the cross-sectional relationship between the adjusted slopes of firms and the accounting characteristics follows an economically rational pattern for an early recovery, although different from the downturn window. The most reliable positive signal is the average cash conversion cycle ( $r = 0.22$ ,  $p = 0.02$ ): firms that increased their working capital (due to restocking, growth in receivables or longer operational cycle periods) demonstrated stronger bounces. Possibly because when demand returns to a normal level, a longer CCC<sup>15</sup>, as we argue here, is less likely to be a sign of inefficiency and more as a sign of a conscious redirection of liquidity to secure order inflow and to ramp up production.

In contrast, proxies for high efficiency and profitability seems negative in recovery. This is at least true for the following indicators, Asset turnover loads negatively ( $r = -0.21$ ,  $p = 0.03$ ), already-efficient firms having less operating leverage to recover when volumes snapped back. Return On Capital Employed is indeed negatively ( $r = -0.19$ ,  $p = 0.05$ ), together with a negative coefficient on Return on Equity gross ( $r = -0.21$ ,  $p = 0.02$ ); these outcomes hint that the beginning of the recovery was not focused in high-margin, high-return names that were already known, but rather in firms with significantly more cyclical earnings exposure.

The capital-structure indicators are still poor discriminators in simple correlations. For instance, the equity ratio is weakly negatively associated ( $r = -0.15$ ,  $p = 0.12$ ), even Debt on Equity is weakly negatively related ( $r = -0.12$ ,  $p = 0.21$ ). Taken in conjunction with the positive CCC result, the main take-away is that the balance sheet strength per se was not the key to leadership in the bounce, but investors rather seemed to prefer the firms that

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<sup>15</sup> Cash Conversion Cycle

wanted to tap balance-sheet capacity to fund the restart. Production-mix variables are directionally consistent with this interpretation: inventory dependence ( $r = -0.15$ ,  $p = 0.11$ ) kept to being negative.

Valuation metrics give a more nuanced message. EV/Revenue is inversely related with the recovery slope ( $r = -0.13$ ,  $p = 0.19$ ), following, Free Cash Flow yield also has a negative correlation ( $r = -0.14$ ,  $p = 0.13$ ), suggesting that the cash rich companies not always are granted better performance in recovery. ROS has a weak only suggestive positive association ( $r = 0.11$ ,  $p = 0.23$ ), further weakens the fact the strong profitability signals seen in the downturn were also detected in the run-up.

Comparison with the reduced downturn results elucidates the regime change. Overall, during this phase, measures like ROS and RONAi were related positively to the performance, and financial leverage seemed to align with that dynamic given the cost of debt was less than the internal returns; conservative liquidity was penalizing, as it was for high valuation multiples.

Moving on the following table exposes the correlation with the slopes' variance in the recovery phase.

Indicators (Recovery Phase)	Correlation Coefficient <sup>16</sup>	P-value
Primary structure Ratio	0.00	0.98
Secondary structure Ratio	0.05	0.57
Degree of rigidity of assets	-0.11	0.24
Inventory indicator	0.23	0.02
Total Liquidity Indicator	-0.09	0.36
Financial Autonomy	0.24	0.01
Total debt ratio	-0.08	0.44
Financial debt ratio	-0.06	0.50
Equity Ratio	-0.13	0.18
Cash Flow to Debt Ratio	-0.10	0.32
Current ratio	0.08	0.43

<sup>16</sup> Pearson's r correlation between Y (companies' stock-closing price variance during the market's Recovery Phase) and X (financial indicators listed in the first column)

Quick ratio	0.14	0.16
Cash ratio	0.06	0.51
Reliance on inventory	0.27	0.00
Average cash conversion cycle	-0.03	0.74
ROS	-0.20	0.03
ROI	-0.04	0.64
CT	-0.02	0.81
ROE	-0.05	0.57
RONAn	-0.01	0.94
RONAi	-0.06	0.54
Financial Leverage	0.02	0.82
ROEg	-0.05	0.59
Risk Indicators	-0.22	0.02
ICR	-0.21	0.02
EPS	-0.32	0.00
D/E	-0.21	0.03
P/E	-0.01	0.89
EV/Revenue	0.04	0.66
Gross Profit Margin	0.32	0.00
Operating Profit Margin	-0.13	0.18
Net Profit Margin	0.14	0.14
Return On Capital Employed	0.09	0.36
FCF Yield	0.04	0.69
Asset Turnover	0.21	0.03
PEG Ratio	-0.13	0.17

The recovery windows produce a relationship structure that is broadly congruent with the one of the downturn phases. Both the Inventory Indicator ( $r = 0.23$ ,  $p = 0.02$ ) and Reliance on Inventory ( $r = 0.27$ ,  $p < 0.01$ ) are strongly, positively linked to variance, indicating the same dynamic that was operational during contraction: firms structurally vulnerable to input-cost movements and distortions in supply chains persist in transmitting operating shocks into equity volatility even after demand recovers. Along the same lines, Asset Turnover loads positively ( $r = 0.21$ ,  $p = 0.03$ ), indicating that operationally intensive firms, those that must scale assets hard as activity

returns, still exhibit greater sensitivity to incremental news and order-flow surprises during the early recovery phase.

Profitability statistics reveal a divide that makes economic sense. Gross Profit Margin is again positively related to the variance and continues to be one of the stronger signals ( $r = 0.32$ ,  $p < 0.01$ ), suggesting that high-margin names that are often priced for durability or growth saw larger swings when expectations reset in the recovery. Net Profit Margin is also positive ( $r = 0.14$ ,  $p = 0.14$ , suggestive), conversely Operating Profit Margin shifts to modestly negative ( $r = -0.13$ ,  $p = 0.18$ ), a subtlety consistent with a stage where operating leverage improves but the cross-section still penalizes margins as had been priced at higher multiples previously. In contrast, Return on Sales is still a stabilizer ( $r = -0.20$ ,  $p = 0.03$ ), meaning that strong sales performance hedges losses as volume returns. This concordance with the downturn outcome reinforces the conclusion that topline quality is indeed a real volatility reducer across regimes.

The Risk Indicators ( $r = -0.22$ ,  $p = 0.02$ ) and Interest Coverage Ratio ( $r = -0.21$ ,  $p = 0.02$ ) are both negatively related to variance, which means that improved debt-servicing capacity and lower fundamental risk amplify titles' stability in the market. Earnings per Share also has a negative loading ( $r = -0.32$ ,  $p < 0.01$ ), further supporting the idea that predictable and stable earnings flow tackles uncertainty in the equity channel. Here leverage signals are slightly more mixed: Debt on Equity is negatively associated with variance ( $r = -0.21$ ,  $p = 0.03$ ) and the Equity Ratio is somewhat so too ( $r = -0.13$ ,  $p = 0.18$ ); both signifying lower volatilities. At the same time, Financial Autonomy appears positively related to variance ( $r = 0.24$ ,  $p = 0.01$ ). Such divergence between the ratios is not surprising in view of the definitional overlap among them and can be inferred of multicollinearity and compositional inconsistency of the indicators rather than an actual paradox; it will be crucial to adjudicate their net impact too in multivariate settings.

Liquidity measures offer limited guidance. The Quick Ratio is slightly positive ( $\rho = 0.14$ ,  $p = 0.16$ ), suggesting that higher short-term liquidity was not associated with lower volatility, while the Average Cash Conversion Cycle is close to orthogonal with variance ( $r = -0.03$ ,  $p = 0.74$ ). This latter result is revealing when compared to the slope evidence: while CCC is of importance for relative upside capture, it appears to be less so for volatility containment, again supporting previous theories on what drives return leadership versus what drives risk stabilization during early expansion. But most of the information in the valuation multiple is basically uninformative for variance, apart from the PEG Ratio, which is slightly negatively related ( $r = -0.13$ ,  $p = 0.17$ ), and at best suggested, and likely picked up by the profitability and growth controls in the richer medaled models.

In sum, the recovery-phase variance picture supports the downturn evidence: volatility concentrates in inventory-rich and operationally intensive profiles and is mitigated by risk-capacity and earnings stability.

## **7. Company Resilience Index**

Once understood the relationship among dependent and independent variables, it's the time to delve deeper in the final objective of the present thesis, which obviously is the creation of the Company Residence Index. The index construction is mainly based on the indicators that have a strong correlation and a low p-value in the downward phase; however, to enhance the strength the reliability of the index the recovery phase is also considered. More precisely, an indicator with strong values in the first phase and in the second is considered more valuable, and consequently its slice in the weighted average will be heavier.

As a result, the index could also be useful in period when market is unstable and it's difficult to assess future trends or the beginning of the recovery phase; for these reasons, it contains evidence from both the analysis. For clarity the

chapter is divided in two sub-sections, containing respectively the composition and the computation of the index.

## 7.1. Index Composition

Delving a bit more deeply into the construction, the starting “candidates” were thirteen:

Phases	Downward Phase		Recovery Phase	
	Corr.	P-value	Corr.	P-value
<b>Index Composition Candidates</b>				
Primary structure Ratio	-0.20	0.04	-0.05	0.58
Financial Autonomy	-0.16	0.10	-0.07	0.48
Total debt ratio	-0.17	0.07	-0.04	0.71
Cash Flow to Debt Ratio	-0.19	0.04	-0.04	0.68
Current ratio	-0.26	0.01	0.01	0.93
Reliance on inventory	-0.13	0.18	-0.15	0.11
Return On Sales (ROS)	0.22	0.02	0.11	0.23
Return On Equity (ROE)	0.16	0.10	0.04	0.72
Return On Net Asset Integral (RONAi)	0.22	0.02	-0.03	0.73
Financial Leverage	0.15	0.12	-0.02	0.87
Debt on Equity (D/E)	-0.13	0.19	-0.12	0.21
Enterprise Value on Revenue (EV/Revenue)	-0.29	0.00	-0.13	0.19
Gross Profit Margin	-0.24	0.01	-0.13	0.17

The table shows the correlation of independent variables against the adjusted slope in the two phases. Undoubtedly, as exposed in the headers, the third and fourth columns contain values for the first descending phase, and conversely, the fifth and sixth belong to the second ascending phase.

Four indicators in particular share the same behavior in the two stages. In effect, Reliance on inventory, Debt on Equity, Enterprise value on Revenue and Gross profit margin are negatively correlated in the second and fourth columns; moreover, they share a solid or acceptable p-value. On the other hand, Return on Sales exhibits a positive correlation for both the stages.

Said that, the focus shifts on picking the right indicators for the index composition. Even if the database has already been cleaned and adjusted to avoid bias in the analysis, there is still the possibility to have some biases or multicollinearities, especially since the correlations are computed singularly.

This problem is addressed in both a theoretical and empirical way. Theoretical pass eliminates near-duplicates to prevent double counting. Firstly, theory suggests eliminating similar indicators to avoid further bias. Therefore, Financial Autonomy was used but Debt on Equity was removed, since they share the very same variable “Shareholders Equity” in their formula. Similarly, Reliance on inventory was chosen over Primary Structure to target the working capital without stacking the same measures.

Secondly, the empirical pass performs correlations over the x-variables, and if the resulting factors are high, it means a high likelihood of having multicollinearity, therefore forcing the elimination of one of the variables involved. For this very reason, the Gross Profit Margin was excluded because it has a correlation of 0.31 with Enterprise Value on Revenue. Lastly, for a sharper index, the variable Enterprise Value on Revenue was removed from the analysis because there is the chance that its low p-value with the dependent variable is more related to the fact that bigger companies can more likely be overpriced in the markets and therefore they could suffer more macroeconomics factors and market shifts. Hence, it could be more useful to exclude the variable from the output but considering the variable separately from the index.

## **7.2. Index Computation**

Shifting the focus on the index computation, the first assumption that needs to be reiterated is that weighting was only based on evidence from the down phase. The seven remaining measures were initially classified into two categories, based on the direction of their correlation with the dependent

variable: indicators that have negative aggregate feedback effect, and indicators that have positive aggregate feedback. Regressors within the same group with larger correlation of absolute value and a lower p-value are more important. The weights were subsequently normalized to sum to 1 within each group.

Sets	Variables	Weights
Negative Set	Financial Autonomy	24%
	Total debt ratio	26%
	Cash Flow to Debt Ratio	30%
	Reliance on inventory	20%
	<b>TOTAL</b>	<b>100%</b>
Positive Set	Return on Sales	37%
	Return on Net Asset Integral	27%
	Financial Leverage	37%
	<b>TOTAL</b>	<b>100%</b>

As reported in the table, in the "negative" set, the highest weight is placed on cash-flow-to-debt sensitivity, which reflects both its direct significance in our sample and, as reported in previous literature, cash flow strength is a crucial buffer under market stress. Reliance on inventory has the lowest weight but still in the literature has been found out that is a good indication for the recovery phase. In the "positive" portfolio, distribution is more balanced: return on sales and financial leverage take 37% each of the top slot, with return on net assets (integral) accounting for 27%.

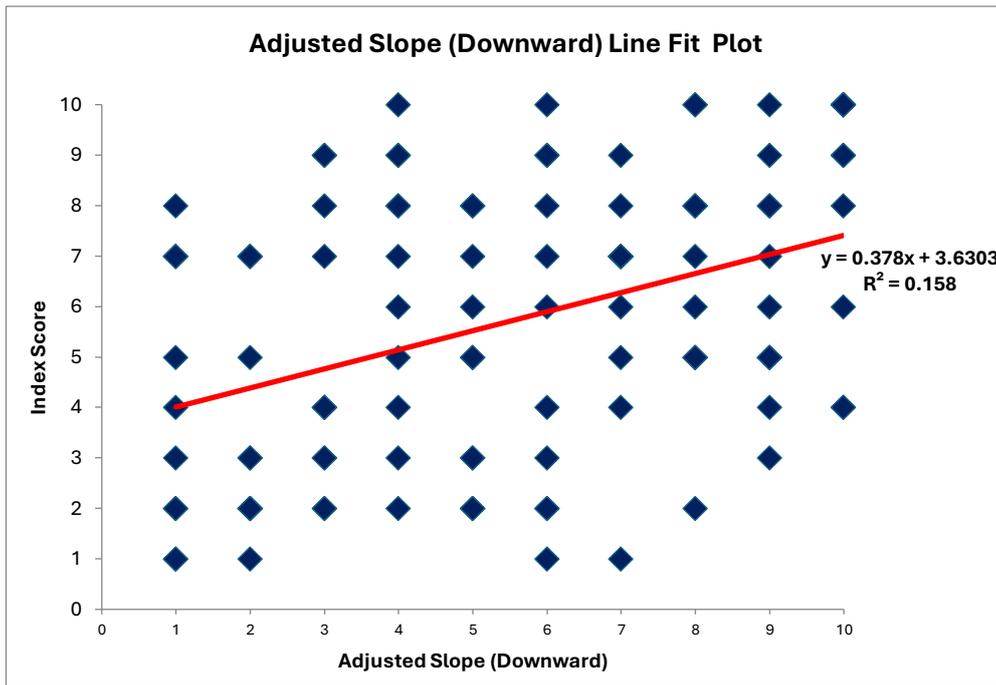
These 4-year averages were weighted and summed by group to give two composite scores: Positive Score and Negative Score. To categorize the companies in a comparable fashion, both composites were centered on their means for the sample and then plotted on a standard 5×5 grid with thresholds at  $\pm 1$  and  $\pm 2$  standard deviations along each axis. The precise weights and the cross-tabulation of firms over 25 cells are presented in following table.

Resilience Index		Negative Set				
		$\mu + 2\sigma$	$\mu + \sigma$	$\mu$	$\mu - \sigma$	$\mu - 2\sigma$
Positive Set	$\mu - 2\sigma$	Underperforming				
	$\mu - \sigma$					
	$\mu$			Balanced		
	$\mu + \sigma$					
	$\mu + 2\sigma$					Overperforming

In the columns there is the negative set and is intentionally reversed, because as said, the lower is the value the better is for the index. On the other way round, in rows the Positive Score, and it is organized to have higher values in the overperforming cells. In this convention, the bottom right region belongs to firms expected to overperform relative to sector peers while the top left region comprises of firms more likely to underperform. Areas between the two map thresholds represent the ranges of higher to lower relative strength, and these color shadings track with this hierarchy to allow for visual examination. All the measures are calculated within a sector; hence the index is formulated for intra-peers comparison. The above discussion can be similarly extended to pair wise comparison.

To validate the index ex post, a backward check was performed on the full sample of 110 firms. More in details, for each firm has been computed an overall ranking statistic that places his observations from most likely to overperform to most likely to underperform expected by the framework. The score was given by the sum of the “Positive Score” and the reciprocal of the “Negative Score”, to finally obtain a ranking based on the index.

The empirical validity of this ordering was assessed by a simple cross-sectional regression of realized performance in the on the index score. It used the same as in the analysis previously. The estimated slope is positive, and the R-squared<sup>17</sup> explains 15.8% of the cross-sectional by. This magnitude is not large but reasonable given the horizon, the noisy nature of single-period equity returns, and the presence of unavoidable and sample biases about.



<sup>17</sup> R-squared is the proportion of the variation in the dependent variable that is predictable from the independent variable(s). It is a statistic used in the context of statistical models whose main purpose is either the prediction of future outcomes or the testing of hypotheses, on the basis of other related information. It provides a measure of how well observed outcomes are replicated by the model, based on the proportion of total variation of outcomes explained by the model.

## **8. Conclusions**

Taken together, the evidence gathered during the developing of this thesis provides insights on which financial indicators, taken from firms' financial statements, are most important to estimate titles performance when markets experience chaotic periods.

The first thing done in the work was mapping the academic terrain. Literature review reveals a gap in the studies; in effect, there is still no evidence on the relationship between financial indicators and market performance in the analyzed period between December 2024 and April 2025. The previous findings related to profitability, leverage, liquidity, and working capital frictions provided theory and history but had not been tested in this specific context.

Once found the gap, the first dataset was then built for 110 companies belonging to eleven different GICS. The first in the analysis is database about performance of market: daily close prices have been used on the period to calculate for each firm its adjusted slope, which conveys information about its relative and not absolute performance. A second database was constructed on firm fundamentals: balance sheet and income statement variables were collected over the most recent four years for each company in the sample, which were then adjusted at the firm level using weighted averages to have a single overall score for each independent variable.

A pivotal step in the developing was the data-quality and bias control, that was two tiered. On the macro level, a retrospective background on the period's policy and geopolitical backdrop was revisited to establish confounders that may spill into cross-sectional returns, to lead to the exclusion of biased companies. On the numerical level, extreme event-induced price moves were tracked to exclude single day changes greater than

20%. Outliers were ruled out to prevent further biases, together with single variables analysis aimed at reducing the likelihood of multicollinearity.

The analysis was made in several steps. Starting with regression analysis and models that unfortunately, due to many reasons linked to the macro-economic landscape and the internal characteristics of the analyzed sample, hindered the possibility of gathering deeper insights.

Anyway, results were possible thanks to pairwise associations of each accounting variable with the sector-adjusted slope were estimated for the downturn and, as an additional lens to robustness, for the recovery.

After a bias removing phase, the best candidates were cross-checked with previous research for their theoretical rationale in crisis situations. This step resulted in a reduced set of seven variables, lately reduced at six. Remarkably, some of these factors were also evidenced to have positive relationships during recovery, indicating that the material and operational structures conducive to resilience are transferable to those benefiting from rebound.

Based on this, a transparent composite company resilience index was formed. Once done that, a reverse validation found that about 15 percent of companies justify the index strength, an acceptable result considering all the external factors that couldn't be excluded.

These implications can be used for some practical interpretation. The index is not a deterministic forecast and should not completely form the basis of an investment decision. Instead, together with other evidence it can be used to assess companies' stability in market downturns.

Limitations suggest areas for improvement. External validity could be enhanced by enlarging the sample beyond the 110 firms, extending the horizon, examining alternative four-year weighting schemes and sector specific calibrations, and performing more stringent out-of-sample tests. The

incorporation of explicit macro controls and event dummies could help further disentangle firm effects from policy shocks, whereas carefully constructed machine-learning specifications might capture non-linearities without sacrificing interpretability.

Overall, this study shows that a small and carefully chosen sample of accounting indicators has a quite solid link to relative stock performance during the 2024-2025 market turmoil. The Company Resilience Index turns these indicators into a consistent, repeatable measure. It does not replace judgment, but it gives an insightful signal when markets are hardest to read.

## 9. Bibliography

- ◆ Alan, Y., Gao, G. P., & Gaur, V. (2014). Does inventory productivity predict future stock returns? A retailing industry perspective. *Management Science*, 60(10), 2416–2434. <https://doi.org/10.1287/mnsc.2014.1897>
  
- ◆ Almeida, H., Campello, M., Laranjeira, B., & Weisbenner, S. (2012). Corporate debt maturity and the real effects of the 2007 credit crisis. *Critical Finance Review*, 1(1), 3–58. <https://doi.org/10.1561/104.00000001>
  
- ◆ Asness, C. S., Frazzini, A., & Pedersen, L. H. (2019). Quality minus junk. *Review of Accounting Studies*, 24(1), 34–112. <https://doi.org/10.1007/s11142-018-9470-2>
  
- ◆ Ball, R., Gerakos, J., Linnainmaa, J. T., & Nikolaev, V. V. (2016). Accruals, cash flows, and operating profitability in the cross section of stock returns. *Journal of Financial Economics*, 121(1), 28–45. <https://doi.org/10.1016/j.jfineco.2016.03.002>
  
- ◆ BlackRock Investment Institute. (n.d.). *Investment perspective*. BlackRock, Inc. Retrieved from <https://www.blackrock.com/corporate/insights/blackrock-investment-institute/publications/investment-perspective>

- ◆ Bleakley, H., & Cowan, K. (2008). Corporate dollar debt and depreciations: Much ado about nothing? *Review of Economics and Statistics*, 90(4), 612–626. <https://doi.org/10.1162/rest.90.4.612>
  
- ◆ Bloomberg News. (2025, April 3). *Global markets hit by sweeping selloff on Trump's tariffs*. Bloomberg L.P. Retrieved from <https://www.bloomberg.com/news/newsletters/2025-04-03/global-markets-hit-by-sweeping-selloff-on-trump-s-tariffs>
  
- ◆ Bloomberg News. (2025, June 24). *Trump's chip tariff threat sparks pushback from U.S. auto, tech companies*. Bloomberg L.P. Retrieved from <https://www.bloomberg.com/news/articles/2025-06-24/trump-s-chip-tariff-threat-sparks-pushback-from-us-auto-tech-companies>
  
- ◆ Brunnermeier, M. K., & Oehmke, M. (2013). The maturity rat race. *Journal of Finance*, 68(2), 483–521. <https://doi.org/10.1111/jofi.12005>
  
- ◆ Campello, M., Graham, J. R., & Harvey, C. R. (2010). The real effects of financial constraints: Evidence from a financial crisis. *Journal of Financial Economics*, 97(3), 470–487.
  
- ◆ Corporate Finance Institute. (n.d.). *Cash conversion cycle – Overview, example, formula*. Corporate Finance Institute. Retrieved from <https://corporatefinanceinstitute.com/resources/accounting/cash-conversion-cycle/>

- ◆ Dechow, P. M., & Dichev, I. D. (2002). The quality of accruals and earnings: The role of accrual estimation errors. *The Accounting Review*, 77(s-1), 35–59. <https://doi.org/10.2308/accr.2002.77.s-1.35>
- ◆ Ernst & Young (EY). (n.d.). *GAAP vs IFRS overview*. Ernst & Young Global Limited. Retrieved from <https://www.ey.com>
- ◆ Fama, E. F., & French, K. R. (2015). A five-factor asset pricing model. *Journal of Financial Economics*, 116(1), 1–22. <https://doi.org/10.1016/j.jfineco.2014.10.010>
- ◆ Financial Times Limited. (2025). [*Article on global trade and tariffs*]. Financial Times. Retrieved from <https://www.ft.com/content/a763eb56-c61b-495e-9daa-5d2dcf59394b>
- ◆ Financial Times Limited. (2025). [*Article on shipping and logistics trends*]. Financial Times. Retrieved from <https://www.ft.com/content/97dd4654-995f-4bfa-aa45-2f6f4736cdef>
- ◆ Financial Times Limited. (2025). [*Global finance analysis*]. Financial Times. Retrieved from <https://www.ft.com/content/12f7082e-8bfa-4390-a86f-ac37e22b9483>

- ◆ Financial Times Limited. (2025). *[Market downturn coverage]*.  
Financial Times. Retrieved from  
<https://www.ft.com/content/cc1b3b5b-2aa0-42cf-b17e-2146e995234b>
  
- ◆ Goldman Sachs. (2025). *Software market to expand as AI agents boost productivity*. Goldman Sachs Group, Inc. Retrieved from  
<https://www.goldmansachs.com/insights/articles/software-market-to-expand-as-ai-agents-boost-productivity>
  
- ◆ Goldman Sachs. (2025). *Statement on Stress Capital Buffer*. Goldman Sachs Group, Inc. Retrieved from  
<https://www.goldmansachs.com/pressroom/press-releases/2025/goldman-sachs-statement-on-stress-capital-buffer>
  
- ◆ Goldman Sachs Asset Management. (n.d.). *Market know-how*. Goldman Sachs Group, Inc. Retrieved from <https://am.gs.com/en-lu/advisors/insights/article/market-know-how>
  
- ◆ Harvard Business School Publishing. (n.d.). *Business insights on strategy and profitability*. Harvard Business Review. Retrieved from  
<https://hbr.org>
  
- ◆ He, Z., & Xiong, W. (2012). Rollover risk and credit risk. *Journal of Finance*, 67(2), 391–430. <https://doi.org/10.1111/j.1540-6261.2012.01721.x>

- ◆ Hofmann, E., Töyli, J., & Solakivi, T. (2022). Working capital behavior of firms during an economic downturn—An empirical analysis. *International Journal of Financial Studies*, 10(3), 55. <https://doi.org/10.3390/ijfs10030055>
  
- ◆ Investopedia. (2015, March 25). *What is a good price-to-sales (P/S) ratio?* Dotdash Meredith. Retrieved from <https://www.investopedia.com/ask/answers/032515/what-considered-favorable-price-sales-ratio.asp>
  
- ◆ Investopedia. (n.d.). *Profitability ratios*. Dotdash Meredith. Retrieved from <https://www.investopedia.com/terms/p/profitabilityratios.asp>
  
- ◆ Investopedia. (n.d.). *Return on Equity (ROE) – Calculation and meaning*. Dotdash Meredith. Retrieved from <https://www.investopedia.com/terms/r/returnonequity.asp>
  
- ◆ Investopedia. (n.d.). *Return on Investment (ROI): What it is and how to calculate it*. Dotdash Meredith. Retrieved from <https://www.investopedia.com/terms/r/returnoninvestment.asp>
  
- ◆ Investopedia. (n.d.). *Return on Sales (ROS): What it is and the formula to calculate it*. Dotdash Meredith. Retrieved from <https://www.investopedia.com/terms/r/ros.asp>

- ◆ Investopedia. (n.d.). *Return on Sales vs. Operating Margin: What's the difference?* Dotdash Meredith. Retrieved from <https://www.investopedia.com/ask/answers/030315/whats-difference-between-return-sales-ros-and-operating-margin.asp>
- ◆ Ivashina, V., & Scharfstein, D. (2010). Bank lending during the financial crisis of 2008. *Journal of Financial Economics*, 97(3), 319–338. <https://doi.org/10.1016/j.jfineco.2009.12.001>
- ◆ Kesavan, S., Gaur, V., & Raman, A. (2010). Do inventory and gross margin data improve sales forecasts for U.S. public retailers? *Management Science*, 56(9), 1519–1533. <https://doi.org/10.1287/mnsc.1100.1209>
- ◆ Kesavan, S., Gaur, V., & Raman, A. (2013). The relationship between abnormal inventory growth and future earnings for U.S. public retailers. *Manufacturing & Service Operations Management*, 15(1), 6–23. <https://doi.org/10.1287/msom.1120.0389>
- ◆ KPMG International. (n.d.). *Global insights on finance*. KPMG International Cooperative. Retrieved from <https://home.kpmg>
- ◆ Kraus, A., & Litzenberger, R. H. (1973). A state-preference model of optimal financial leverage. *Journal of Finance*, 28(4), 911–922. <https://doi.org/10.1111/j.1540-6261.1973.tb01415.x>

- ◆ Lins, K. V., Servaes, H., & Tufano, P. (2010). What drives corporate liquidity? An international survey of cash holdings and lines of credit. *Journal of Financial Economics*, 98(1), 160–176.
  
- ◆ McKinsey & Company. (2002). *The right role for multiples in valuation*. McKinsey & Company. Retrieved from <https://www.mckinsey.com/capabilities/strategy-and-corporate-finance/our-insights/the-right-role-for-multiples-in-valuation>
  
- ◆ McKinsey & Company. (2023, May 4). *The times for multiples: Five situations when multiples need more than a second look*. McKinsey & Company. Retrieved from <https://www.mckinsey.com/capabilities/strategy-and-corporate-finance/our-insights/the-times-for-multiples-five-situations-when-multiples-need-more-than-a-second-look>
  
- ◆ Morningstar, Inc. (2021). *Global equity data definitions: Margins and profitability ratios*. Morningstar. Retrieved from <https://www.morningstar.com>
  
- ◆ MSCI Inc. (n.d.). *GICS methodology*. MSCI. Retrieved from <https://www.msci.com/indexes/index-resources/gics>
  
- ◆ MSCI Inc. (n.d.). *GICS – Global Industry Classification Standard (overview)*. MSCI. Retrieved from

<https://www.msci.com/documents/10199/5973a128-47f0-4317-b083-716a10207b50>

- ◆ Novy-Marx, R. (2013). The other side of value: The gross profitability premium. *Journal of Financial Economics*, 108(1), 1–28. <https://doi.org/10.1016/j.jfineco.2012.11.006>
  
- ◆ Opler, T., Pinkowitz, L., Stulz, R., & Williamson, R. (1999). The determinants and implications of corporate cash holdings. *Journal of Financial Economics*, 52(1), 3–46. [https://doi.org/10.1016/S0304-405X\(99\)00003-3](https://doi.org/10.1016/S0304-405X(99)00003-3)
  
- ◆ Opler, T. C., & Titman, S. (1994). Financial distress and corporate performance. *Journal of Finance*, 49(3), 1015–1040. <https://doi.org/10.1111/j.1540-6261.1994.tb00086.x>
  
- ◆ Organization for Economic Co-operation and Development (OECD). (n.d.). *Consumption tax trends*. OECD. Retrieved from [https://stats.oecd.org/Index.aspx?DataSetCode=TABLE\\_III](https://stats.oecd.org/Index.aspx?DataSetCode=TABLE_III)
  
- ◆ Organization for Economic Co-operation and Development (OECD). (n.d.). *Corporate governance and performance resources*. OECD. Retrieved from <https://www.oecd.org/corporate/>

- ◆ PricewaterhouseCoopers (PwC). (n.d.). *Value-added tax (VAT) rates*. PwC International Limited. Retrieved from <https://taxsummaries.pwc.com/quick-charts/value-added-tax-vat-rates>
  
- ◆ PricewaterhouseCoopers (PwC). (n.d.). *Viewpoint – GAAP vs IFRS*. PwC International Limited. Retrieved from <https://viewpoint.pwc.com>
  
- ◆ PricewaterhouseCoopers (PwC). (n.d.). *Corporate finance insights*. PwC International Limited. Retrieved from <https://www.pwc.com>
  
- ◆ Sloan, R. G. (1996). Do stock prices fully reflect information in accruals and cash flows about future earnings? *The Accounting Review*, 71(3), 289–315.
  
- ◆ Tax Foundation. (2025). *Value-added tax (VAT) rates in Europe*. Tax Foundation. Retrieved from <https://taxfoundation.org/data/all/eu/value-added-tax-vat-rates-europe>
  
- ◆ Trading Economics. (n.d.). *United States inflation rate (CPI)*. Trading Economics. Retrieved from <https://tradingeconomics.com/united-states/inflation-cpi>
  
- ◆ U.S. Bureau of Labor Statistics. (2025, January 15). *Consumer Price Index – December 2024*. U.S. Department of Labor. Retrieved from [https://www.bls.gov/news.release/archives/cpi\\_01152025.htm](https://www.bls.gov/news.release/archives/cpi_01152025.htm)

- ◆ U.S. Federal Reserve Board of Governors. (2024, December 18). *Press conference transcript*. Board of Governors of the Federal Reserve System. Retrieved from <https://www.federalreserve.gov/mediacenter/files/FOMCpresconf20241218.pdf>
  
- ◆ Wall Street Prep. (n.d.). *GAAP vs IFRS comparison*. Wall Street Prep, Inc. Retrieved from <https://www.wallstreetprep.com>