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M&A and Its Strategic Impact on Asset Management: A Comparative Analysis of Corporate and Fund Performance

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Introduction

Mergers and acquisitions have long been regarded as a key strategic tool for firms seeking to expand their market presence, achieve economies of scale, and unlock operational efficiencies. In the asset management industry, where firms operate in an increasingly competitive, highly regulated, and rapidly evolving financial landscape, M&A transactions are often pursued to enhance investment capabilities, improve technological infrastructure, and access new client segments. Given the industry's unique reliance on intellectual expertise, digital platforms, and scalable business models, M&A activity in asset management presents a distinctive case for evaluating both short-term market reactions and long-term financial performance. Despite the increasing prevalence of consolidation in this sector, the actual value creation and financial impact of these transactions remain complex and widely debated. This thesis seeks to examine the impact of M&A transactions in the asset management industry by focusing on two fundamental dimensions: the market's short-term reaction to acquisition announcements and the long-term operational performance of acquirers post-transaction. Specifically, this study investigates whether M&A announcements generate significant abnormal stock returns for acquiring firms and whether post-merger profitability improves as a result of realized synergies. These two dimensions align with broader academic discussions on the efficiency of financial markets in processing M&A-related information and the extent to which acquisitions translate into tangible operational benefits. A key theoretical foundation underlying this research is signaling theory, which posits that firms use their actions—like M&A announcements—as a strategic tool to convey information to the market about their financial strength, growth ambitions, and competitive positioning. In this context, acquisition can act as a signal to investors regarding a firm’s confidence in the future profitability and market expansion. To address these research questions, the study is structured around two distinct yet interconnected analyses. First, an event study methodology is employed to assess the short-term stock price reaction of acquirers to M&A announcements, measured through Cumulative Abnormal Returns (CARs). This approach tests the hypothesis that investors react favorably to deals perceived as strategically valuable, particularly when they involve higher potential for synergy realization. However, existing literature suggests that market reactions to M&A announcements are often muted for acquiring firms, not always responding favorably to those signals, as investors rise concerns about potential overpayment risks, integration challenges, and uncertainties surrounding synergy realization. The second part of the research shifts from market perception to long-term operational performance, measured through Return on Invested Capital (ROIC). By employing an OLS regression model, the study examines whether acquirers that successfully integrate their targets and realize cost efficiencies experience higher post-merger profitability. Previous research has consistently demonstrated that firms that successfully realize synergies through M&A transactions tend to achieve significant operational improvements. These synergies, whether through cost efficiencies, resource optimization, or managerial integration, contribute to enhanced profitability and long-term financial performance. Studies have shown that

effective post-merger integration and strategic alignment play a crucial role in determining the extent to which firms can capitalize on these synergies, ultimately driving sustainable value creation. A defining characteristic of this study is its exclusive focus on M&A transactions within the asset management industry, distinguishing it from broader M&A research that spans multiple sectors. The asset management industry presents a particularly compelling case for M&A-driven value creation due to the nature of its target firms—often characterized by intangible assets such as investment portfolios, fund management expertise, and financial technology platforms. Unlike industries that rely on physical assets, such as manufacturing, where post-merger integration may require substantial logistical adjustments, asset management acquisitions are inherently more flexible and potentially faster in realizing synergies. This sector-specific focus allows the study to explore also whether asset management firms benefit from a relatively accelerated timeline for post-merger value creation compared to traditional industries. Beyond contributing to academic discussions on M&A efficiency, this research also provides practical insights for asset managers, investors, and financial analysts. Understanding how market participants react to M&A announcements can help firms anticipate investor sentiment and optimize deal structuring strategies. Similarly, identifying key drivers of post-merger profitability can guide decision-making regarding target selection, integration planning, and synergy realization. The study also highlights the potential discrepancies between market perception and actual operational outcomes, emphasizing the importance of not solely relying on short-term stock price movements when evaluating deal success. These insights equip industry professionals with a deeper understanding of the conditions under which M&A transactions generate value, thereby informing strategic decision-making and future acquisition planning. By bridging financial market analysis and corporate performance evaluation, this study aims to offer a holistic perspective on the strategic and financial implications on M&A for the management of these companies. The thesis is structured as follows: Chapter 1 introduces the asset management industry, its evolution, and the increasing role of M&A as a strategic tool. Chapter 2 presents the theoretical foundation of the study, reviewing relevant literature on M&A synergies, market reactions, and post-merger operational performance. It also defines the research hypotheses and key variables. Chapter 3 details the empirical analysis, beginning with the event study methodology, followed by the OLS regression analysis of post-merger ROIC, and concludes with a discussion of the findings. Finally, a conclusion synthesizes the results, evaluates their alignment with the formulated hypothesis, and discusses potential avenues for future research. By integrating short-term market sentiment analysis with long-term operational performance evaluation, this thesis aims to provide a comprehensive assessment of M&A value creation in asset management. The findings contribute to ongoing debates on the effectiveness of acquisitions, the complexities of synergy realization, and the broader implications for financial markets and corporate strategy.

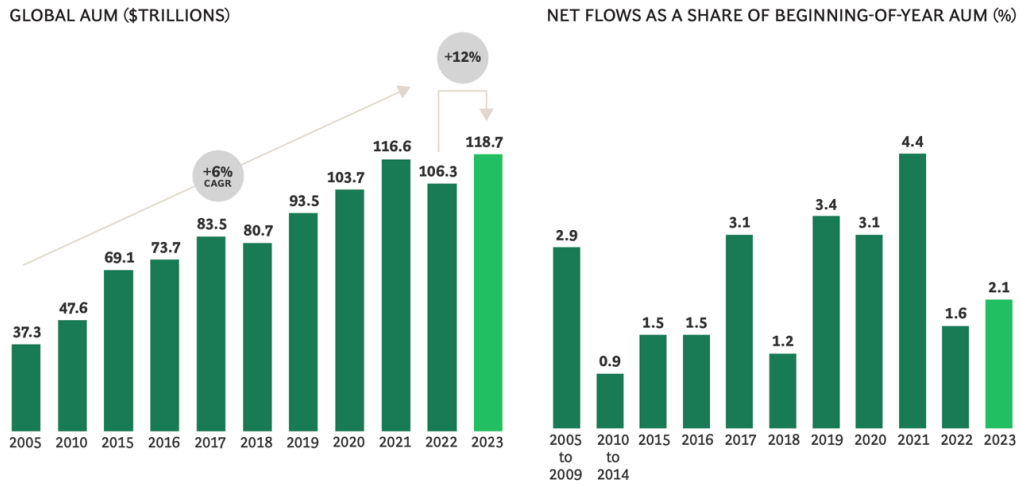
Chapter 1

1. The Asset Management Industry

1.1.1 Asset Management - An Overview

Asset management plays an integral role in the financial ecosystem, aimed at overseeing, growing, and preserving clients' wealth through a diverse range of investments. By managing investments across a spectrum of asset classes —ranging from equities and bonds to real estate and alternatives like private equity and hedge funds— asset managers design strategies to meet specific financial objectives, working on behalf of institutional clients (such as pension funds, insurance companies, and corporations) and retail clients (individual investors). The primary aim is to balance risk and return, with the overarching goal of generating value over time, while tailoring approaches to clients' financial needs and risk tolerances. Major players in asset management include specialized firms solely focused on investment management, such as BlackRock, Vanguard, State Street, Schroders and Amundi, as well as divisions within large financial conglomerates, including JPMorgan Asset Management, Goldman Sachs Asset Management, Allianz Global Investor and BNP Paribas Asset Management. These firms operate globally, with many overseeing trillions in assets and often with a vast array of investment vehicles to meet client demand across different regions and asset classes. The scale of these firms is immense; BlackRock, for example, manages $11.5 trillion in assets globally, reflecting the sector's significant influence on global capital flows and financial markets. The product offerings in asset management are diverse and have expanded significantly over the years: a distinct divide exists between actively managed funds, where portfolio managers make specific asset choices, and passively managed funds, such as exchange-traded funds (ETFs) and index funds, which track predefined market indices.

Exhibit 1 The Global Asset Management Industry's AuM Grew by 12% in 2023



Sources: BCG's Global Asset Management Market Sizing Database, 2024; BCG's Global Asset Management Benchmarking Database, 2024.

1.1.2 The Industry Evolution

The 2008 financial crisis fundamentally reshaped the asset management industry, introducing extensive regulation aimed at transparency, systemic risk reduction, and accountability. In the United States, the Dodd-Frank Act of 2010 imposed significant changes, including elevated collateral requirements for over-the-counter derivatives and mandatory registration for private equity and hedge fund advisors with the SEC. These measures increased operational costs and reporting obligations, compelling firms to reassess risk strategies and compliance frameworks. The Volcker Rule, another key aspect of Dodd-Frank, restricted proprietary trading by banks, indirectly affecting asset managers by limiting their interactions with large financial institutions that historically provided liquidity and trading facilitation. In Europe, the UCITS IV streamlined cross-border fund distribution within the EU, promoting market efficiency, and the AIFMD, introduced stricter oversight of hedge funds and private equity, enhancing governance and investor protection. The 2018 introduction of MiFID II brought stricter transparency and investor protection standards, requiring firms to disclose detailed costs and fees while separating research expenses from trading costs. This regulation reshaped pricing dynamics, pushing firms to streamline operations and manage research functions more efficiently. Following the crisis, the industry underwent significant transformation driven not only by these regulatory pressures, but also shifting investor preferences. The rise of passive and alternative investments defined this period, with exchange-traded funds (ETFs) and other passive vehicles gaining popularity due to their cost-effectiveness and diversification benefits. By the late 2010s, passive funds catalyzed the development of hybrid products, such as smart beta, which combined the low-cost structure of passive strategies with targeted active returns. From 2012 to 2017, inflows into passive funds surged, reflecting a broader shift away from traditional active management. Alternative investments like private equity, real estate, and infrastructure also grew in appeal, offering diversification and reducing exposure to public market volatility. These alternatives represented about 10% of assets under management (AUM) but generated nearly 30% of the industry's revenues by 2017. The rise of passive and alternative investments, alongside fee compression and intensifying competition, prompted industry-wide consolidation, as small and mid-sized firms merged to achieve economies of scale and cut costs. In the years leading up to COVID-19, asset management enjoyed steady growth, supported by a stable global economy. However, the COVID-19 pandemic disrupted the industry, exposing the inadequacy of existing systems and prompting a rapid acceleration in digital transformation. Asset managers adopted advanced digital tools and automated platforms to maintain operations and client relations during remote work, laying the foundation for personalized and data-driven client experiences that remain integral today. This period also sparked a shift in investor preferences, with growing demand for resilient and sustainable investment options. The rise of ESG investing was driven by heightened awareness of social and environmental challenges, as well as regulatory frameworks like Europe's Sustainable Finance Disclosure Regulation (SFDR), solidifying ESG as a core element of investment strategies. The post-pandemic recovery introduced new complexities. Inflation surged, exacerbated

by supply chain disruptions and geopolitical tensions like the Ukraine conflict, leading central banks to raise interest rates. These conditions pressured asset managers to move even further toward alternative assets, which offered potential hedges against inflation and public market volatility. Amid these challenges, technology emerged as a central pillar of innovation. By 2023, artificial intelligence (AI) had transitioned from experimental to indispensable, revolutionizing operational efficiency, portfolio management, and client engagement. AI-enabled tools allowed firms to process vast amounts of data, generate predictive insights, and offer personalized investment solutions at scale, aligning with the increasingly sophisticated demands of retail and institutional clients.

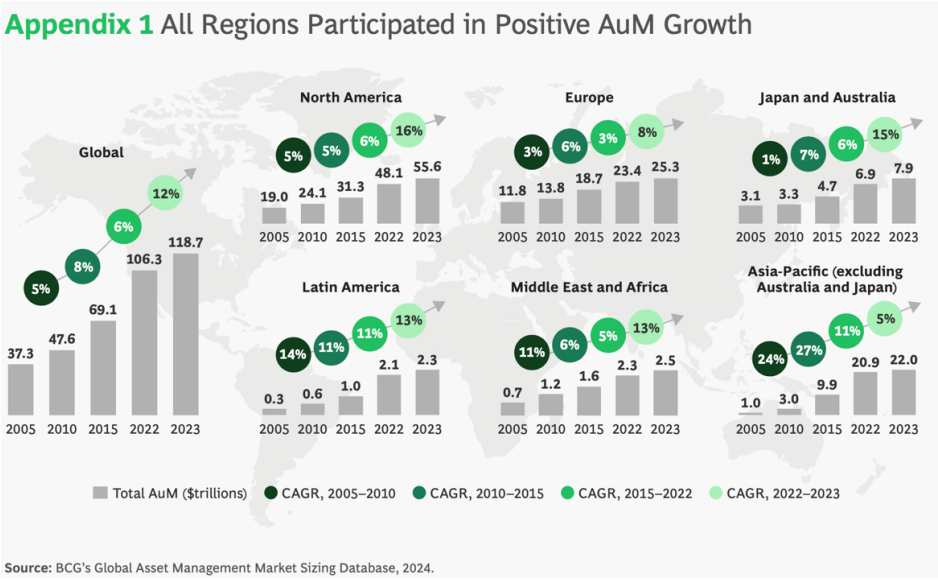
1.1.3 A Strategic Tool: M&A

As firms adapt to the complexities of global markets, they face mounting pressures from heightened competition, increasing operational costs, and evolving client demands. The simultaneous rise of AI, the emphasis on ESG, the shift toward passive and alternative investments, and stricter regulatory frameworks have reshaped the industry's strategic priorities. These trends compel firms to enhance operational efficiency, integrate advanced technologies, and diversify their investment offerings to remain competitive in an environment where client expectations are more sophisticated than ever. In this context, M&A has emerged as a critical tool for transformation. By acquiring technological capabilities and expertise, asset managers can accelerate innovation and specialization at a pace that organic growth alone cannot achieve. M&A enables firms to achieve economies of scale, expand into new asset classes, and optimize their operational frameworks to align with the demands of digital innovation and sustainability. It provides a pathway for asset managers to consolidate their positions in a rapidly evolving market while entering new growth areas, such as private markets and infrastructure investments. This strategic use of M&A positions firms to not only address immediate challenges but also redefine their long-term competitive advantage. In this evolving landscape, M&A has become indispensable for navigating the intersection of digital transformation, regulatory pressures, and client-centric investment strategies, setting the stage for deeper analysis of its impacts on performance, positioning, and strategic adaptation.

2. M&A in the Asset Management Industry

1.2.1 Early 2000s: Foundations and Growth Motivations

In the early 2000s, mergers and acquisitions in asset management were driven by a range of motivations that reflected the industry's evolving landscape. As markets expanded, firms sought to enhance their operational capacity, broaden product offerings, and respond to client demands for diversified investment vehicles. This period was marked by increased global interconnectedness, economic growth and low-interest rates, fueling M&A activity as asset managers aimed to capture new markets and build a stronger international presence. Scale was a key motivator, with firms looking to grow their assets under management (AuM) and leverage economies of scale to lower costs, enhance operational efficiency, and expand their reach. A prominent example of this scaling trend was BlackRock's acquisition of Merrill Lynch Investment Managers (MLIM) in 2006. The transaction allowed BlackRock to nearly double its AuM, positioning the firm as one of the largest asset managers globally. This acquisition reflected a growing need among asset managers to consolidate resources and offer a broader range of products, including both actively managed and passive investment options. During this time, acquisitions allowed asset managers to achieve operational efficiencies by merging administrative functions, reducing redundant processes, and aligning technology infrastructure, all of which helped firms compete more effectively in a cost-sensitive industry. Another key driver was diversification, as firms recognized that a broader product suite would not only attract more clients but also mitigate risks associated with market fluctuations. Asset managers sought to offer clients a wider array of investment vehicles, including equities, bonds, and emerging alternatives, providing balanced portfolios that catered to varying risk appetites. Diversification through M&A enabled firms to protect against sector-specific downturns, a benefit that would become especially relevant in the years that soon followed.



Source: BCG's Global Asset Management Market Sizing Database, 2024.

1.2.2 The 2010s: The "Acquisition" of Passive Investment

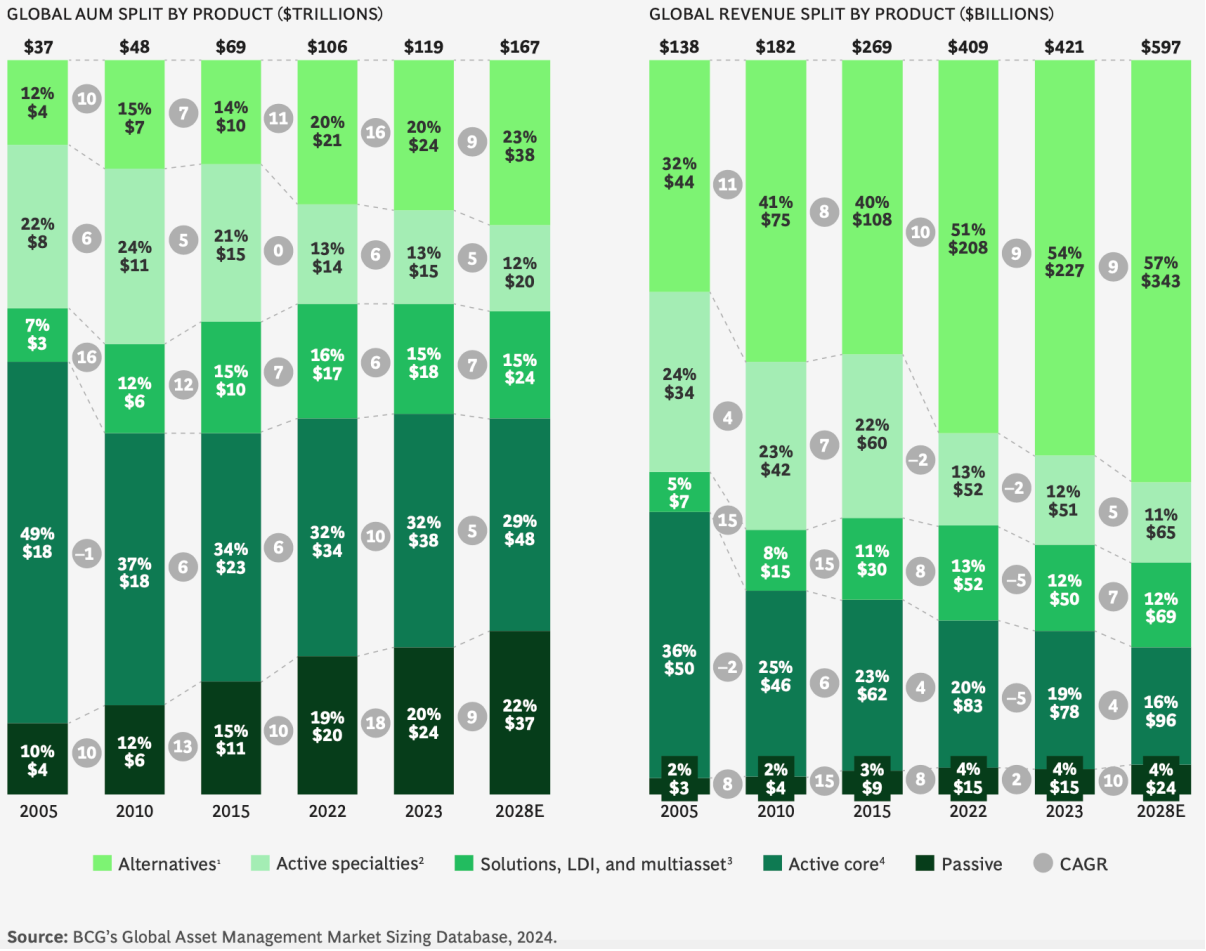
The financial crisis of 2008 marked a turning point for the asset management industry. It imposed new regulatory pressures and led to a reevaluation of risk management strategies, particularly as asset managers faced scrutiny over their exposure to volatile markets. Asset managers, particularly those with diversified portfolios, were able to weather the storm more effectively than those dependent on a narrower range of assets. The crisis revealed vulnerabilities in the financial system, highlighting the risks associated with high leverage and inadequate risk oversight, which led regulators to impose stricter compliance measures. These regulations reshaped the motivations for M&A, as firms now had to consider not only growth but also stability, risk mitigation, and compliance with newly implemented regulations, such as Dodd-Frank in the U.S. and the EU's subsequent financial reforms. This period of heightened regulation and market volatility made it clear that M&A would need to serve not just as a growth engine but also as a tool for creating more resilient and diversified portfolios, since clients shifted towards safer, more transparent investment options. One of the most significant acquisitions during this period was BlackRock's purchase of Barclays Global Investors (BGI) in 2009 for $13.5 billion. This acquisition marked a crucial moment in the industry, as it positioned BlackRock as the world's largest asset manager, solidifying its leadership in both actively managed funds and passive investment products, notably exchange-traded funds (ETFs). BGI's iShares business brought a massive portfolio of ETFs to BlackRock, aligning with a growing investor preference for low-cost, transparent, and index-tracking funds. The deal highlighted the strategic value of scale and product diversification, with BlackRock now able to offer a comprehensive range of products that catered to a broad spectrum of clients and investment styles. This acquisition underscored a new era in asset management, where M&A became a strategic tool not only for growth but also for expanding into high-demand segments. The crisis had catalyzed a shift in investor behavior, with clients increasingly seeking safe, cost-effective options that provided stability amidst economic uncertainty. ETFs, which allowed investors to achieve market exposure with minimal fees, became highly attractive, and BlackRock's acquisition of BGI positioned it to capture this demand. The success of the BGI acquisition set a precedent for other asset managers, showcasing how M&A could provide a dual advantage: expanding a firm's product portfolio and simultaneously addressing market shifts toward transparency and efficiency.

1.2.3 A Growing Fashion

Building upon the strategic shifts that emerged in the aftermath of the 2008 financial crisis, the asset management industry experienced a dynamic and evolving M&A landscape throughout the following decade. By the early 2010s, mergers and acquisitions had shifted toward addressing regulatory pressures, achieving operational scale, and capturing emerging market demand for diversified and low-cost investment options.

The post-crisis regulatory landscape—particularly the implementation of the Dodd-Frank Act in the U.S. and MiFID II in Europe—prompted asset managers to consolidate to manage higher compliance costs and improve transparency. M&A activity surged as firms sought not only to grow but to build resilience and maintain competitive positioning amidst fee compression and regulatory complexities. The period from 2012 to 2014 marked the beginning of a notable wave of consolidation, with mid-sized asset managers feeling the squeeze from rising costs and stagnant growth in active management. This phase of M&A was driven by fee pressures, as the rise of passive investment products such as ETFs, accelerated by BlackRock's success with iShares, pushed investors toward cost-effective alternatives. These shifts underscored a need for economies of scale, which firms achieved through mergers designed to reduce redundancies and boost efficiency. By 2016, M&A activity reached new heights, driven by the need for diversification and the rise of alternative investments, as well as technological advancements. Asset managers sought to add value through acquisitions that expanded their product lines to include private equity, real estate, infrastructure, and ESG-focused funds. This strategy allowed firms to cater to institutional clients and high-net-worth individuals increasingly interested in alternative assets. The demand for passive and alternative investments fueled M&A as asset managers pursued acquisitions to build or enhance their ETF and different asset classes capabilities, positioning themselves to attract a broader client base and withstand market volatility.

Appendix 2 Alternatives Continue to Generate More Than Half of Global Revenue Despite Representing Less Than a Quarter of Total AuM



Source: BCG's Global Asset Management Market Sizing Database, 2024.

From 2017 through 2019, the sector saw fewer but larger deals, with mega mergers becoming the norm as firms sought to build scale and resilience in an increasingly competitive and regulatory-driven market. The impact of MiFID II, which took effect in 2018, was significant, especially in Europe, where increased transparency and compliance costs further squeezed margins. Smaller firms struggled to keep pace, leading to a surge in consolidation, with European deal value peaking as firms merged to create cost efficiencies and meet compliance standards more effectively. Notable transactions, such as Standard Life's merger with Aberdeen Asset Management, showcased how firms used M&A to achieve synergies, reduce operational costs, and expand their global footprint. This wave continued, with asset managers increasingly targeting technological acquisitions to address client demand for digital solutions, including robo-advisors, data analytics, and customized investment platforms. The need for digital transformation encouraged firms to acquire fintech companies, integrating advanced data capabilities to personalize client offerings and enhance risk management. This focus on technology and data was seen as essential for firms striving to remain competitive, especially as client expectations evolved toward more transparent, responsive, and customized investment experiences. As the decade drew to a close, the sector's M&A dynamics underscored a shift from traditional growth-driven deals to transactions focused on strategic resilience, operational efficiency, and technological enhancement. The groundwork laid during this period positioned the industry to face new challenges and opportunities as it entered the next era, which would soon be marked by the unforeseen disruptions of the COVID-19.

1.2.4 The 2020s: Resilience and Digital Transformation

Along with the pandemic era in 2020, the unprecedented economic shutdowns, market volatility, and rapid shift to remote work reshaped both operational strategies and client expectations. M&A activity in this period reflected the need for resilience, with firms pursuing acquisitions that could help address heightened demand for digital engagement and operational efficiency. The pandemic highlighted a critical need for technological agility, prompting asset managers to pursue deals that would bolster digital capabilities and support the remote management of client relationships. Firms leveraged M&A to secure fintech and data analytics solutions, enabling them to deliver enhanced, client-centric experiences while adjusting to a largely virtual business environment. Moving into 2021 and 2022, M&A continued to play a pivotal role as asset managers faced intensified fee compression and rising investor preference for low-cost, passive, and alternative assets, especially due to a succession of ups and downs. In 2021, the asset management industry experienced a surge in M&A activity, fueled by favorable conditions created by post-COVID recovery packages and government stimulus measures. However, 2022 saw a sharp decline in deal volume due to heightened uncertainty driven by multiple factors, particularly the economic instability caused by conflicts, rising inflation, and tightening monetary policies. Against this backdrop, firms increasingly sought scale through consolidation, leading to a series of transformative mergers. Notable deals, such as BlackRock's acquisition of Global Infrastructure

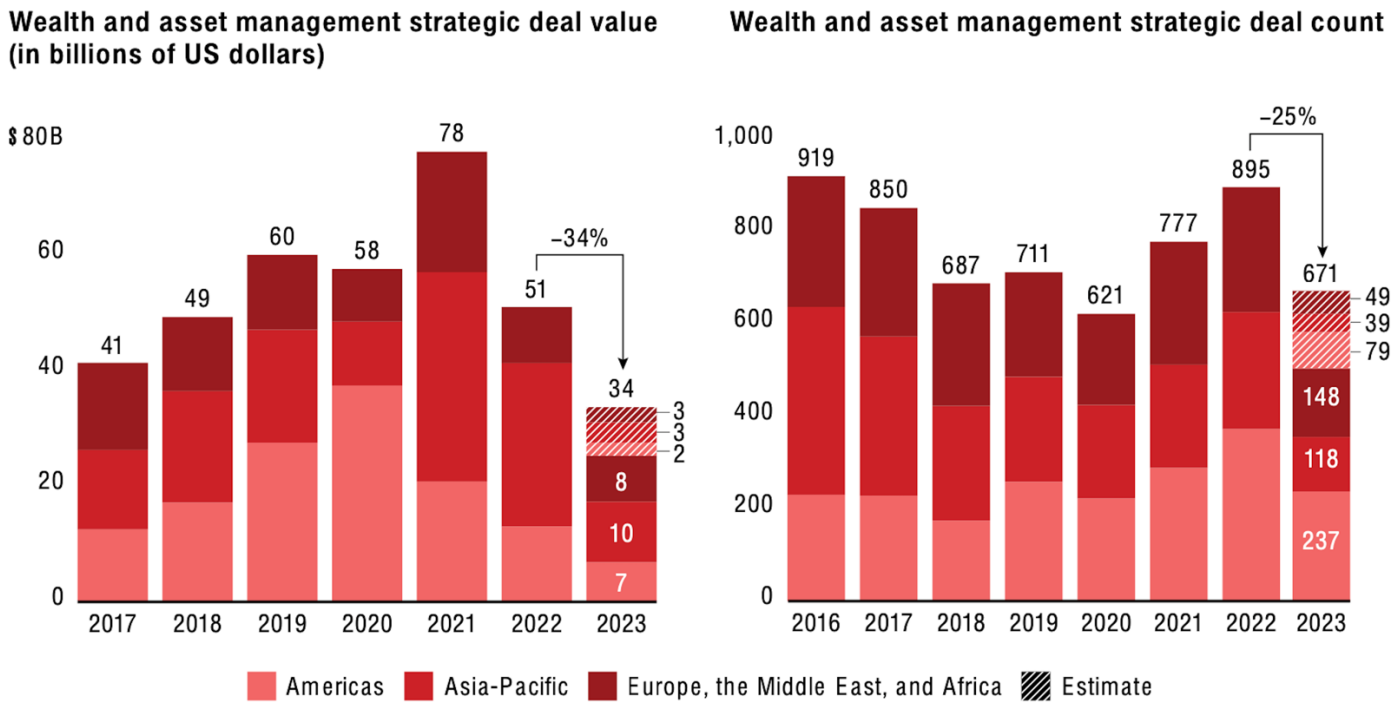
Partners (GIP), illustrated how managers used acquisitions to expand into high-growth alternative asset classes. The appeal of alternatives, particularly infrastructure and private markets, was heightened by investors' growing demand for inflation-resistant and non-correlated assets amidst uncertain public market conditions. The 2022 geopolitical landscape—most notably, the war in Ukraine—introduced additional layers of complexity. The conflict not only disrupted supply chains and spurred inflation but also drove up energy prices, creating both risks and opportunities for asset managers. In response, firms continued to turn toward alternatives, particularly in real assets and private credit, to hedge against inflation and diversify away from volatile public markets. M&A activity in this period was largely geared toward expanding capabilities in these areas, with firms acquiring specialist expertise to meet demand for infrastructure and energy-related assets. This pivot reflected a broader industry trend: as traditional revenue sources became more vulnerable, asset managers increasingly used acquisitions to diversify their product offerings and stabilize their portfolios. By 2023, M&A activity in asset management was shaped by the rapid rise of artificial intelligence and advanced data analytics, which had become essential tools for staying competitive. Asset managers recognized AI's potential not only to enhance operational efficiency but also to support real-time decision-making, risk assessment, and client engagement. Major players began acquiring technology-driven firms to accelerate AI integration, while mid-sized firms used M&A to access scalable, AI-oriented solutions without developing them in-house. The widespread adoption of AI tools allowed firms to offer a higher level of portfolio personalization, automate compliance tasks, and gain predictive insights into market behavior. This strategic focus on technology-driven acquisitions helped asset managers meet increasing client expectations for customized, responsive services. Throughout 2023, the drive for scale and efficiency remained paramount, but the types of deals shifted towards smaller, capability-based transactions. Rising interest rates and persistent inflation created valuation disparities, slowing down larger deals while favoring strategic, smaller acquisitions that targeted specific expertise or technology. Additionally, regulatory pressures, especially those surrounding ESG and consumer transparency, continued to push firms to consolidate or acquire capabilities in sustainable investing and data reporting. This trend was particularly evident in Europe, where MiFID II compliance and ESG reporting requirements raised the operational costs for mid-sized firms, making M&A an attractive path to achieve regulatory alignment and spread compliance costs over a larger asset base. By late 2024, the M&A landscape in asset management had evolved to reflect both the lessons learned during COVID-19 and the industry's response to the complex economic conditions of recent years. The focus on scale and technological differentiation persisted, but firms were also exploring minority investments and structured financing deals, allowing them to gain access to new growth areas without taking full control. Larger asset managers with strong capital bases continued to acquire alternative asset specialists and digital platforms, while smaller firms increasingly relied on partnerships or joint ventures to enter new markets or expand distribution networks. This diversified approach to M&A reflects an industry that is becoming both more adaptable and more cautious, seeking growth while managing risks in an increasingly complex regulatory and economic landscape.

3. Key Drivers of M&A

1.3.1 Value Creation in M&A: What is Achieved

At its core, M&A in the asset management sector is driven by the pursuit of value creation by combining resources, capabilities, and expertise in ways that generate results beyond what the individual firms could achieve. This value arises from leveraging synergies that enhance the financial, operational, and strategic dimensions of the combined entity, transforming its ability to compete and adapt in an evolving market. These synergies, while diverse in their nature, converge on three primary outcomes: operational efficiencies, portfolio diversification, and strategic alignments, each contributing to a broader framework of organizational and market advantages. Central to this process is the concept of scalability. In an environment characterized by fee compression and growing regulatory costs, the ability to manage larger pools of assets more efficiently becomes essential. By merging, asset management firms can leverage their expanded size to reduce costs, enhance bargaining power, and optimize resource allocation. However, scalability alone is not sufficient. The real value lies in complementing scale with strategic fit and the ability to integrate complementary strengths. Unlike industries where value might be driven predominantly by physical or technological assets, asset management's reliance on human capital and intellectual expertise makes these mechanisms more nuanced. Indeed, value also arises from the reallocation of resources, particularly human capital, where fund managers and investment teams are positioned to maximize their strengths. Reallocating human capital effectively within the combined entity ensures optimal utilization of intellectual expertise, a key asset in this industry. This often leads to improved decision-making and enhanced portfolio performance post-merger. For instance, acquiring expertise in ESG investing or alternative assets can provide immediate benefits, aligning with market demands while diversifying offerings. Another significant achievement of M&A is complementarity. Successful transactions often involve firms with distinct yet synergistic capabilities, such as a broad distribution network on one side and specialized expertise on the other. This alignment enables the combined entity to access untapped markets, introduce new products, and respond effectively to emerging client demands, such as sustainable investments or alternative assets. Beyond these internal benefits, value creation also requires a focus on market positioning. Firms leverage M&A to enhance their competitive edge by entering high-growth markets, diversifying their revenue streams, and aligning their strategies with long-term investment trends (for instance, acquisitions targeting technology or alternative investments). Value creation, therefore, serves as the foundation for all other synergies realized in M&A. Its dimensions—operational efficiencies, portfolio diversification, and strategic alignments—are not only the mechanisms for delivering enhanced performance but also the benchmarks by which the success of M&A transactions is ultimately measured.

Figure 1: Wealth and asset management deal value declined by 34% year over year while deal volume declined by 25%, reflecting smaller average deal sizes



Notes: Proprietary Bain classification methodology; 2023 data forecast through full year using first-quarter through third-quarter data

1.3.2 Value Creation in M&A: How It is Achieved

While the ultimate goal of M&A is value creation, the mechanisms through which this value is realized are rooted in the synergies that emerge during and after the integration process. These synergies can be broadly categorized into operational and strategic dimensions, each addressing distinct aspects of the combined entity's efficiency, market positioning, and growth trajectory. Additionally, the type of transaction—whether focused on achieving scale or scope—determines the specific pathways through which these synergies unfold. Operational synergies are among the most immediate and tangible outcomes of M&A. These synergies are often realized through the streamlining of processes, consolidation of administrative functions, and integration of technological systems. For instance, by merging back-office operations or centralizing data platforms, firms can reduce redundancies, improve efficiency, and lower costs. In asset management, where operational scalability is essential to maintaining profitability amid fee compression, such efficiencies are a critical driver of success. Furthermore, the integration of advanced technology systems not only enhances operational performance but also supports better decision-making by providing unified, high-quality data across the organization. These synergies ensure that the combined entity operates more effectively, leveraging its larger asset base to deliver superior results. On the other hand, strategic synergies are more forward-looking, focusing on enhancing the combined firm's competitive edge and market adaptability. These synergies often involve the expansion of capabilities into high-growth areas or the acquisition of specialized expertise that aligns with evolving market trends. For example, acquiring a firm with niche expertise in alternative

investments or ESG frameworks allows the acquirer to tap into growing demand for sustainable and resilient investment options. Strategic synergies also enable firms to strengthen their distribution networks, expand geographically, and align their offerings with client preferences for diversification and innovation. By leveraging these synergies, firms can reposition themselves as leaders in emerging sectors, ensuring long-term relevance and profitability. The success of these synergies is often influenced by the type of transaction undertaken. Broadly, M&A transactions in asset management fall into two categories: scale-focused and scope-focused deals. Scale-focused transactions are designed to increase the size of the firm, enabling it to achieve cost efficiencies and enhance its market presence. These deals are particularly effective in addressing industry-wide pressures such as rising regulatory costs, as the larger asset base allows the combined entity to spread fixed costs more effectively. In contrast, scope-focused transactions prioritize diversification, targeting firms with specialized expertise or unique capabilities. These deals are instrumental in enhancing the acquirer's product portfolio, entering new markets, or adapting to industry shifts such as the rise of passive investments and alternative assets. The choice between these transaction types depends on the acquirer's strategic priorities, with many firms adopting a hybrid approach to balance scale and scope. The process of realizing synergies and achieving value creation requires careful planning and execution. At the bottom line, operational synergies lay the foundation for efficiency, while strategic synergies and the appropriate transaction type ensure that the combined entity is positioned for growth and adaptability.

1.3.3 Strategic Variables to Achieve Performance

While operational and strategic synergies form the structural backbone of value creation in M&A, the success of these integrations depends on different factors. First, in the asset management industry, where intellectual expertise and decision-making capabilities drive performance, the ability to effectively manage, retain, and reallocate human resources post-merger becomes a defining determinant of success. The insights from *The Value of Human Capital Synergies in M&A* and *Returns to Scale from Labor Specialization* emphasize that human capital is not merely an operational input but a strategic asset that can amplify or erode the value created through M&A. One of the most profound contributions of human capital synergies lies in the reallocation of managerial expertise. Post-merger, firms often undergo significant internal restructuring to align talent with the combined entity's strategic priorities. This process involves not only retaining top-performing fund managers but also assigning them to roles where their specialization and experience can deliver the highest impact. For instance, as noted in *Returns to Scale from Labor Specialization*, mergers allow firms to expand their internal labor markets, enabling them to assign managers to areas where they hold a comparative advantage. This often leads to increased specialization, which is strongly associated with higher risk-adjusted returns in both core and non-core investment areas. Second, another key factor influencing fund performance post-merger is the size of the combined entity’s assets under management (AUM). Larger AUM not only provides operational leverage but also enhances the firm’s ability to invest in advanced technologies and

analytics. According to *The Value of Human Capital Synergies in M&A*, firms with greater AUM benefit from a broader scope of investments and more sophisticated risk management practices. Additionally, the ability to allocate resources across a larger asset base reduces inefficiencies and allows managers to explore new market opportunities with greater agility. Third, another variable that profoundly influences post-merger outcomes is the strategic nature of the target firm. Acquiring companies in sectors adjacent to traditional asset management, such as infrastructure, technology, or artificial intelligence, can significantly enhance the acquirer's capabilities and market positioning. For example, acquisitions in high-tech or AI-driven firms enable asset managers to integrate advanced analytics into their operations. Furthermore, the sectoral focus of target firms can shape the acquirer's ability to adapt to emerging market trends. Acquisitions of firms with expertise in ESG criteria allow asset managers to align with the growing demand for sustainable investments while meeting regulatory expectations. Similarly, targets operating in the alternative investments space provide access to higher-yielding assets that are less correlated with public market volatility, enhancing the resilience of the merged entity's portfolio. Nevertheless, not only the industry, but also the geographic location of the target adds another layer of strategic importance. In highly regulated markets such as North America and Europe, mergers often aim to achieve compliance efficiencies and consolidate market share, leveraging the stability and maturity of these regions. Looking ahead, these frameworks will guide the discussion in the next chapter, where we will empirically evaluate the dynamics of M&A in asset management. By focusing on the interplay between these variables and post-merger performance, we aim to uncover the factors that drive success in M&A transactions.

Chapter 2

1. Foundations of the Research

2.1.1 An Overview of the Research

This chapter establishes the theoretical and analytical framework for understanding the impact of M&A in the asset management sector, focusing on key factors that shape post-merger performance. The research adopts a specific approach, centering its analysis on market reaction to M&A announcements and post-acquisition operational performance. The study is structured around two econometric models:

- An event study analysis that examines the short-term market reaction using Cumulative Abnormal Returns (CAR) as the dependent variable.
- A long-term performance analysis, where Return on Invested Capital (ROIC) serves as the key measure of post-merger operational efficiency.

To investigate these effects, the study considers sector affiliation of both the acquiring and target firms, geographic scope, firm size, and synergies. Some of these variables were selected based on their relevance in existing literature, which has extensively studied the role of strategic integration in M&A success. The chapter begins by reviewing some key academic contributions on M&A in asset management, discussing how prior research has framed the discussion around synergies effects, in particular on how human capital outplacement can improve fund performance. It then introduces the research hypotheses, outlining expected relationships between independent and dependent variables. Next, to operationalize these relationships, the chapter defines the variables used in the analysis, detailing how they are constructed and measured. Finally, the chapter concludes by discussing the anticipated contributions of this study, acknowledging that, while prior literature has found strong evidence for certain post-merger synergies, the findings of this research may provide a nuanced or even contrasting perspective.

2.1.2 The Strategic Role of Human Capital and Scale in M&A

While this thesis primarily focuses on market reaction and long-term operational performance following M&A transactions, a relevant and highly insightful body of literature has explored a different but related dimension of M&A effects: the impact on fund performance. One particularly significant contribution in this regard comes from the studies of Luo, Manconi, and Schumacher, who analyze how mergers in the asset management industry influence fund-level outcomes rather than corporate-level performance metrics such as stock price or

ROIC. Their findings provide valuable insights into how the expansion of firm size through M&A facilitates managerial specialization, leading to improvements in fund performance. This perspective offers an intriguing complement to the discussion by demonstrating how M&A generates value beyond traditional operational synergies. Given that fund management performance is a crucial determinant of an asset manager's competitive positioning and investor appeal, understanding these effects remains highly relevant to the broader discourse on M&A in the industry. Among these researches, *The Value of Human Capital Synergies in M&A: Evidence from Global Asset Management* (2018) and *Returns to Scale from Labor Specialization: Evidence from Asset Management Mergers* (2023) provide comprehensive evidence that performance improvements of funds are closely tied to the scale of the firm and its ability to optimally reallocate human capital. Building on the foundational work of Berk and Green (2004) and Chen et al. (2004), which underscore a negative relationship between fund size and its performance and a positive one between firm size and fund performance, these studies emphasize how larger asset management firms can leverage their scale to assign more specialized tasks to fund managers. This enhanced specialization improves managerial productivity, leading to significant performance gains. They provide compelling evidence that human capital—encompassing the intellectual and managerial expertise of fund managers—acts as a cornerstone for value creation in an industry where performance is fundamentally tied to the effective allocation of this expertise. Drawing from a comprehensive dataset of over 176 mergers in the global asset management industry between 2001 and 2013, they demonstrate that firm size, when substantially expanded through mergers, has a marked positive impact on fund performance. Smaller mergers, while contributing incrementally, fail to generate the same depth of specialization and efficiency gains as larger transactions. This result ties back to the necessity of substantial scale for realizing transformational outcomes. Specifically, funds managed by firms with above-median growth in assets under management (AUM) post-merger achieved annual market-adjusted returns approximately 1.2% higher than in the pre-merger period. In contrast, mergers resulting in marginal AUM increases showed no such performance gains, highlighting the importance of achieving substantial scale to realize these benefits. This performance improvement is closely linked to the ability of larger firms to optimize their internal labor markets. By expanding the pool of human capital, these firms are better equipped to align managerial expertise with specific investment needs. The studies underscore this point by emphasizing the asset management industry's unique reliance on human capital as its principal production input—a factor that differentiates it from other sectors. The post-merger period is often characterized by significant managerial reallocation and specialization, which contribute to enhanced fund performance, particularly in non-core investment areas. For instance, they document a marked increase in managerial turnover following mergers—up to 20% overall and over 30% among generalist fund managers—indicating a strategic reshuffling of human resources. Generalist managers, in particular, are frequently reassigned or replaced, leading to a shift toward specialization. This reallocation allows firms to leverage expertise more effectively, aligning managers with roles that maximize their strengths. Specifically, post-merged larger firms can assign more specialized roles to fund managers, moving away from generalist approaches that can dilute effectiveness. This task specialization translates into higher-quality decision-making and targeted investment strategies, resulting in

measurable performance improvements. These findings underscore the interplay between scale and specialization as a dual engine of value creation, highlighting thresholds beyond which additional scale no longer produces incremental benefits unless accompanied by corresponding increases in specialization; without sufficient labor specialization, the benefits of scale diminish over time. Larger firms that fail to optimize labor allocation through specialization often experience inefficiencies, such as decision bottlenecks and reduced agility in portfolio management. The resulting focus on specialization also fosters greater differentiation of fund portfolios, enabling managers to pursue opportunities in previously unexplored or underutilized areas. By assigning dedicated specialists to explore peripheral or new investment domains, firms create long-term competitive advantages since labor specialization facilitates the identification of high-yield investment opportunities in both core and peripheral markets. This is the granular mechanics of how specialized fund managers, when given a narrower focus, can deliver higher returns due to their expertise in specific market niches or asset classes. Therefore, these managerial adjustments are accompanied by substantial changes in portfolio allocation. Following a merger, funds tend to reduce their exposure to core investment areas and allocate up to 14% of their portfolios to non-core areas within three years. This rebalancing strategy reflects the enhanced flexibility provided by expanded internal labor markets and the strategic complementarity of merging firms. Importantly, the study finds that investments in non-core areas deliver superior risk-adjusted returns, outperforming core investments by up to 2% annually. This outperformance is further amplified when new managers are involved, as they tend to allocate resources more aggressively and strategically in these non-core areas. However, the benefits of M&A on fund performance, driven by labor specialization, tend to manifest over a longer horizon. Unlike the immediate efficiency gains often associated with operational synergies, the improvements stemming from specialization accrue as managers adapt to focused roles and refine their investment strategies. Another important aspect emphasized by Luo, Manconi and Schumacher is the selection of the target firm, that plays a foundational role in shaping the potential synergies of a merger. Bidders often prioritize targets with complementary attributes to optimize the human capital synergies of the combined entity. Metrics such as differences in pre-merger portfolios (*PortfolioDistance*) and lifetime manager expertise (*ManagerDistance*) underscore how complementary expertise can drive innovative investment strategies and fund performance improvements, particularly in non-core areas. However, bargaining dynamics often lead to 'like buys like' scenarios, where bidders and targets share similarities, limiting optimal matches. Despite these constraints, mergers consistently deliver measurable performance enhancements, particularly in transactions that expand the firm's human capital pool (*ΔManagers*), enabling a more precise allocation of expertise across funds. Crucially, these synergies are not merely a transfer of resources from the target to the acquirer. Instead, both bidder and target funds benefit symmetrically from these post-merger changes. The shared value creation dispels concerns about resource extraction by the acquirer and underscores the collaborative potential of mergers. The study reveals that these mutual benefits are particularly evident in non-core investment areas, where the complementary expertise of the merging firms unlocks opportunities that would otherwise remain unrealized. The cumulative impact of these changes is reflected in the incremental value added by funds post-merger. For example, funds

experiencing managerial turnover generate an additional $4.2 million in annual after-fee value added, with 76% of this improvement stemming from non-core investment areas. This finding highlights the transformative potential of well-executed mergers, where the alignment of human and investment capital not only enhances firm performance but also creates shared value across all parties involved. While human capital synergies dominate the narrative, mergers in asset management also yield value through alternative channels. Access to new distribution networks is a prominent driver. For instance, when a bidder acquires a firm in a geographically distinct market, it gains access to the target's established distribution channels and investor base. Empirical findings show that post-merger fund launches increasingly target these new markets, often yielding higher capital inflows than launches in pre-existing markets. This diversification not only expands the revenue base but also aligns the firm with global investment trends.

2. Framework of the Research

2.2.1 Beyond the Literature: Sector and Geography

This thesis takes inspiration from the literature developed by Luo, Manconi, and Schumacher, whose works provide a comprehensive exploration of human capital synergies and economies of scale within asset management mergers. Their studies we just discussed, *The Value of Human Capital Synergies in M&A* (2018) and *Returns to Scale from Labor Specialization* (2023), represent a cornerstone for understanding how strategic realignments post-M&A contribute to value creation. By delving into managerial reallocation, specialization, and performance improvements, these papers highlight critical mechanisms that underlie successful mergers in this sector. What distinguishes this thesis is its aim to push beyond these established findings, expanding the scope of inquiry to encompass new dimensions and nuances. My study will still consider the firm size and synergies as important factors, since a determinant of post-merger performance as the scale of an asset management firm or the synergies it is able to generate play a crucial role in defining its competitive positioning and cost efficiency. However, rather than focusing solely on these two variables, it broadens the scope of inquiry by examining how sectoral characteristics and geographic factors influence M&A outcomes. The first one key variable involves analyzing how the industry or sector of the acquired firm—be it technology, infrastructure, or alternative investments—impacts post-merger performance and integration dynamics. This approach seeks to unravel whether certain industries inherently generate stronger synergies or if their strategic value varies based on the acquiring firm's targets. Unlike previous studies that often treat M&A transactions as a homogenous set of activities —as well as Luo, Manconi and Schumacher, who consider only acquisitions in the financial services sector—, this research integrates different sector-specific analyses. For instance, does the acquisition of firms in high-growth industries like technology or infrastructure yield greater synergies compared to acquisitions in more traditional sectors? By analyzing sectoral differences, the thesis aims to uncover patterns and insights that can inform strategic decision-making for asset managers. More specifically, the analysis will delve into how the sector of the acquired firm shapes the realization of synergies. This focus acknowledges that certain industries may inherently facilitate or constrain synergies, potentially leading to varying levels of performance improvement. The other crucial focus of this thesis is the geographical context. While the existing literature does touch on global mergers, this study aims to provide a comparative analysis between M&A transactions in North America and Europe. This comparative lens is motivated by the understanding that cultural, regulatory, and market structure differences could play a significant role in shaping the outcomes of such transactions, as the integration processes and the realization of synergies. For example, cross-border mergers might encounter challenges related to cultural integration but could simultaneously unlock unique opportunities in terms of market expansion and strategic differentiation. Or again, do cross-border mergers between firms in North America and Europe result in higher

performance improvements compared to domestic mergers? By tackling these questions, the research aims to highlight the contextual factors that amplify or diminish the success of M&A strategies. Unlike the more general approach of previous studies, this research specifically seeks to determine if regulatory environments, cultural contexts, and market structures influence the effectiveness of overall merger outcomes. For example, I will analyze whether cross-border mergers between these regions face distinct challenges in achieving synergies compared to domestic mergers, and how these challenges impact corporate strategy and performance. By addressing these dimensions, the thesis aspires to provide a more granular understanding of M&A dynamics that captures the interplay between sectoral characteristics and geographic contexts. Ultimately, a last important dimension is the dual focus on the impact of M&A not only on market reaction but also on the operational performance of the acquiring firm. By linking the CAR analysis with the operating valuation, the analysis can provide a holistic view of how mergers influence both operational success and market perception, offering actionable insights for stakeholders at all levels.

2.2.2 Research Hypotheses

The hypotheses of this research are grounded in the understanding that M&A transactions can represent a critical tool for shaping the performance and strategic direction of asset management firms. These hypotheses are designed to explore the nuanced mechanisms through which mergers affect corporate outcomes, considering factors such as geographic scope, sectoral focus, size and synergies dynamics. By systematically examining these dimensions, this research aims to uncover insights that deepen our understanding of M&A dynamics while offering practical guidance for asset managers navigating these transactions. The first hypothesis posits that Mergers and acquisitions (M&A) announcements often generate short-term abnormal returns, reflecting market expectations regarding the strategic value and anticipated synergies of the transaction. Prior literature suggests that various factors influence how investors react to an M&A announcement, including the geographic scope of the deal, the industry alignment between acquirer and target, and the size of the acquiring firm. This hypothesis investigates whether the Cumulative Abnormal Returns (CAR) following an M&A announcement are systematically influenced by the geographic scope (domestic vs. cross-border acquisitions), the grade of industry similarity or divergence between acquirer and target and the Firm size (AUM of the acquiring firm). I examine whether these characteristics affect the market's perception of value creation, using event study methodology to compare the market reaction across different M&A deal structures. A substantial body of research has explored how cross-border versus domestic M&A transactions impact shareholder returns. Feito-Ruiz and Menéndez-Requejo (2009) analyze how the legal and institutional environment influences bidder firm returns in cross-border deals. Their study finds that acquiring-firm shareholders react more positively to cross-border M&A announcements than to domestic ones. However, this effect depends on the relative strength of the legal and institutional environment of the acquiring and target firms' countries. When an acquirer comes from a country with stronger legal protections than the target, the

market reaction is more favorable, likely due to expectations of better governance, enforcement, and managerial oversight. Conversely, when the acquirer comes from a weaker legal environment than the target, the market perceives greater risks, leading to a less favorable reaction. Similarly, Otto, Sampaio, and Silva (2021) provide further evidence on how acquirer nationality affects market reaction to M&A announcements. Their research examines acquirers from both developed and emerging markets, showing that developed-market firms benefit more from cross-border deals than from domestic acquisitions. Interestingly, emerging-market acquirers experience positive CARs when acquiring domestically but face negative CARs when engaging in cross-border acquisitions. This suggests that institutional familiarity and regulatory alignment play crucial roles in shaping market expectations about the success of a merger. These findings indicate that the market reaction to M&A announcements is not uniform across geographies. Instead, investors value cross-border deals differently depending on the regulatory environment, country-specific institutional factors, and whether the acquirer is from a developed or emerging market. This research seeks to empirically verify these findings by analyzing whether the CARs in our dataset align with the literature. Specifically, I test whether cross-border M&A deals generate higher CARs than domestic deals for developed-market acquirers. Another key determinant of market reaction to M&A deals is the sectoral alignment between the acquiring and target firms. While prior literature has largely treated M&A transactions as homogeneous events, recent studies highlight that the degree of industry-relatedness between the two firms can significantly affect market perception. Lee and Yun (2023) introduce a novel measure for production process heterogeneity across industries and find that the greater the functional distance between an acquirer's and a target's industry, the lower the announcement returns and post-M&A success rates. This suggests that when companies acquire targets from industries with vastly different production technologies and business models, market skepticism increases. Investors may anticipate greater integration challenges, cultural mismatches, and operational inefficiencies, leading to lower expected synergies and weaker CARs. Conversely, acquisitions within the same industry—where acquirers and targets share similar production processes, customer bases, and regulatory frameworks—are often viewed more favorably. These deals tend to exhibit higher synergy realization potential, lower operational risks, and stronger investor confidence at the announcement stage. This research aims to test these theoretical predictions by analyzing how industry characteristics influence the CARs observed in our dataset. Specifically, I examine whether M&A transactions within the same industry yield higher CARs compared to cross-industry acquisitions**,** whether deals involving targets from high-growth, high-tech sectors generate stronger market reactions than those in traditional industries, and the extent to which industry similarity moderates investor expectations regarding post-M&A synergies. Firm size is the last critical factor influencing the market reaction to M&A announcements which will be studied in this specific analysis. While larger firms generally have greater access to capital and resources, studies suggest that they often experience weaker market reactions to acquisition announcements compared to smaller firms. Moeller, Schlingemann, and Stulz (2004) examine over 12,000 acquisitions and find that smaller acquirers experience significantly higher CARs than larger firms. They argue that this is due to two main factors: market expectations of deal efficiency and size premium in synergy realization. The first refers to the fact that smaller

acquirers are often seen as more disciplined buyers who carefully select high-value targets; the second refers to the fact that smaller firms typically have more room for growth and efficiency improvements, so investors expect acquisitions to have a greater relative impact on their valuation. In contrast, larger firms often overpay for acquisitions and face diseconomies of scale, leading to weaker market reactions. Moreover, when large asset managers acquire smaller firms, investors may perceive the deal as a defensive rather than strategic move, contributing to muted or even negative CARs. So, this study aims to determine whether smaller acquiring firms generate higher CARs compared to larger ones, whether large acquirers face a "size discount" in market reaction due to perceived overpayment or limited synergy realization, and the interaction between firm size and sector/geography further moderates the announcement effect. Although these studies have identified a relationship between M&A announcements and acquirer CARs also considering different variables in game, several others have found no significant stock price reactions for acquiring firm. Kellner (2021) analyzed the European M&A market and observed that while target experience strong stock price increases, acquiring firms exhibited weak or negligible market reactions. Similarly, Adnan and Hossain (2016) found that acquirers often faced post-announcement stock price declines, suggesting that investors may remain skeptical about the actual value generated by these deals. Their findings imply that concerns over integration challenges, potential overpayment and uncertainty regarding synergy realization could explain the lack of significant positive CARs. Additionally, Spyrou and Siougle (2007) demonstrated that market reactions to target firm announcements tend to be stronger and more efficient than those for acquirers. However, my study will try to find a relation between the deal announcement and a price reaction for the buyer. Based on the signaling theory (Spence, 1973), which posits that firms convey information to the market through observable actions—such as M&A announcements—to signal their quality, strategic direction, or expected future performance, one would expect investors to react accordingly by adjusting stock prices to reflect these signals. Following this theory, the first hypothesis is defined as:

- H1: M&A announcements positively influence acquirer’s stock price.

This hypothesis will be tested using event study methodology, where we analyze CARs around M&A announcements and compare them across different geographic, sectoral, and firm-size classifications.
Mergers and acquisitions are often pursued with the expectation of long-term performance improvements, yet the extent to which these benefits materialize depends on several key factors. While short-term market reaction to M&A announcements /measured through CAR) reflects investor sentiment and market expectations, long-term financial performance, particularly measured through Return on Invested Capital, provides a more concrete assessment of the actual value created (or destroyed) by an acquisition. ROIC serves as a critical metric to assess whether M&A transactions translate into improvements in efficiency and profitability. Prior research suggests that several variables influence post-merger operational performance, including the realization of synergies, the geographic scope of the deal, the industry alignment between the acquirer and target, and the size of the acquiring firm. The goal of this study is to determine whether these factors

significantly impact the post-M&A ROIC of asset management firms. Among the most critical determinants of long-term success are synergies, which can take multiple forms, including operational synergies (cost efficiencies and process optimization), technological synergies (innovation and R&D expansion), and strategic synergies (market positioning and resource consolidation). Research has consistently demonstrated that firms achieving higher operational synergies tend to experience significant improvements in cost efficiency, profitability, and market competitiveness. The study carried out by Oira, Omagwa, and Abdul (2023) highlights the importance of operational synergy in improving firm performance. Their findings suggest that companies that successfully integrate operational functions, processes, and managerial capabilities tend to experience enhanced profitability, cost efficiency, and overall financial performance. More specifically, Vinocur (2018) discusses the concept of M&A capability as a determinant of long-term performance. Their study finds that firms with strong M&A capabilities—defined by experience, strategic alignment, and effective integration—achieve higher profitability, as measured by return on equity (ROE) and market value (Price-to-Book ratio). This insight suggests that firms that accumulate expertise in managing acquisitions are better positioned to leverage synergies effectively, reinforcing the idea that experience plays a crucial role in determining post-M&A success. Similar findings emerge in the work of Septian and Dharmastuti (2019), who analyze M&A synergies using Return on Assets (ROA) and Tobin's Q as performance indicators. Their results indicate a strong positive correlation between synergy realization and post-M&A profitability. However, their study highlights a critical caveat: while synergy generally enhances firm performance, excessive diversification can dilute these benefits. When firms acquire targets in highly unrelated industries, the complexity of integration increases, potentially weakening the expected financial gains. This aligns with the findings of Ang and Wu (2011), who focus on technological synergies and demonstrate that acquisitions of firms with complementary technologies enhance overall synergy realization. Their study shows that when acquirers and targets operate in technologically compatible industries, post-M&A R&D investments and patent production increase, resulting in stronger long-term financial performance, including ROIC improvements. These findings demonstrate the importance of the sector in which the target company operates to generate synergies that can improve operating results. Always considering the industry, the study by Alhenawi and Krishnaswami (2015) investigates the long-term impact of M&A synergies on Tobin's Q and excess value, examining a sample of mergers completed between 1998 and 2007 over a five-year post-merger window. A key finding of their research is that while excess value is initially negative for unrelated mergers and positive for related ones, both types of mergers experience a decline in value during the first post-merger year. However, in the following four years, Tobin's Q and excess value increase systematically, with unrelated mergers experiencing a greater improvement compared to related mergers. Their study attributes this delayed performance recovery to the gradual realization of market power, economies of scale, and internal capital market efficiencies, which take time to materialize, especially in unrelated mergers. Building on these insights, this study aims to test whether post-M&A profitability, as measured by ROIC, is influenced not only by the realization of operational synergies, but also the industry compatibility between acquirer and target, the geographic characteristics of the deal and the size of the acquiring firm as additional

checks. Specifically, I hypothesize that firms achieving higher operational synergies (measured through ΔEBITDA Margin) will experience stronger post-M&A ROIC improvements. Specifically, the second hypothesis suggests that:

- H2: Synergy realization positively influence ROIC variation after the deal completion.

This hypothesis will be tested using OLS regression, analyzing post-M&A ROIC changes while controlling for synergies and additional variables as geography, sector, and firm size. The results of this analysis will provide insights into the long-term financial impact of M&A transactions in the asset management sector, shedding light on the key factors that drive profitability improvements post-acquisition. In conclusion, by integrating event study techniques for market reaction and OLS regression for long-term profitability, this methodological framework will try to provide a comprehensive assessment of M&A impact on the asset management sector.

2.2.3 Variables of the Study: Defining the Analytical Framework

In this research, the dependent variables have been selected to assess the impact of M&A transactions from both a short-term market perspective and a long-term operational performance standpoint. The two primary measures used are Cumulative Abnormal Returns, which captures the immediate market reaction to an M&A announcement, and Return on Invested Capital, which evaluates the financial performance of the acquiring firm post-merger. These variables provide a comprehensive framework for analyzing how M&A transactions influence investor sentiment and the long-term profitability of asset management firms. The first dependent variable, Cumulative Abnormal Returns, measures how stock prices react in the days surrounding an M&A announcement by comparing observed stock returns to expected returns derived from a benchmark index. This allows for an assessment of whether markets view the acquisition as a value-creating or value-destroying event. CAR serves as a key indicator of market confidence in the strategic rationale behind the transaction and is used to determine whether certain factors influence the extent of the market reaction. This metric is particularly valuable in evaluating the perceived synergies and risks associated with an acquisition, offering insights into how investors price future expectations into stock valuations. The second dependent variable, Return on Invested Capital, provides a long-term measure of post-M&A profitability by assessing the efficiency with which an acquirer generates returns on its capital following a transaction. ROIC is particularly relevant in evaluating the realization of operational synergies, as it reflects improvements in capital allocation, cost efficiency, and overall firm performance. By analyzing changes in ROIC before and after an acquisition, this study aims to determine whether firms that achieve greater operational and strategic synergies experience higher long-term profitability. By integrating CAR for short-term market perception and ROIC for long-term performance evaluation, this study offers a dual-perspective analysis of

M&A impact on the industry under study. The independent variables in this study focus on factors that influence both short-term market reactions and long-term operational profitability, particularly through the lens of synergy realization, firm size, geographic and sectoral characteristics. These variables are essential for understanding how M&A transactions impact profitability over time, with the goal of assessing whether firms that achieve greater integration efficiencies experience higher long-term financial returns. The first key independent variable is operational synergies, which represents the degree to which cost-saving or revenue-enhancing efficiencies are realized post-merger. This study quantifies operational synergies using the percentage change in EBITDA margin (ΔEBITDA Margin), measured as the difference between the EBITDA margin one year after closing and the EBITDA margin at closing. This choice is based on the premise that synergies do not materialize immediately upon announcement but rather begin to take effect only after the actual completion of the acquisition, once regulatory approvals (e.g., SEC in the U.S. or equivalent antitrust bodies in other jurisdictions) are obtained and integration efforts are underway. By measuring EBITDA margin changes over a one-year post-closing period, this study captures the medium-to-long-term effects of M&A transactions on profitability, reflecting whether the combined entity successfully realizes efficiency gains or struggles with integration challenges. This metric serves as a proxy for integration efficiency, reflecting whether the combined entity achieves cost reductions, improved asset utilization, or enhanced profitability. When operational synergies are successfully realized, firms tend to improve their capital allocation, streamline redundant operations, and generate higher ROIC in the long term. The significance of operational synergies in driving post-M&A performance is well documented in the literature. Studies show that successful operational integration leads to higher profitability, cost efficiency, and financial stability, with firms leveraging synergies outperforming competitors. Analyses using financial metrics like ROA and Tobin's Q confirm that synergy realization drives improved performance. This reinforces the idea that strong operational synergies contribute to greater ROIC improvements in asset management firms. The second independent variable, firm size, is measured using log(AUM), where AUM represents the total assets under management of the acquiring firm at the time of the announcement. Unlike some studies that assess AUM changes before and after the acquisition, this research considers only the AUM at the announcement stage, as this metric reflects the firm's scale before any potential post-merger expansion. The decision to use the logarithm of AUM rather than absolute AUM values is driven by the need to account for diminishing marginal returns to scale. Larger firms, while having more resources, may face challenges in extracting additional efficiency gains from acquisitions due to pre-existing economies of scale. In contrast, smaller firms may experience greater proportional benefits from an acquisition, as increased size can unlock operational efficiencies, reduce cost ratios, and improve capital allocation. Using log(AUM) ensures that the analysis captures these non-linear effects, allowing for a more precise assessment of how firm size influences post-M&A performance. The sector of the acquired firm represents the third critical independent variable in this study, as industry characteristics can significantly influence post-merger performance and synergy realization. To capture this effect, two sector-related variables are introduced: one that classifies the acquiring firm's business model and another that categorizes the industry of the target firm. The first sector variable, represented as a dummy

variable, differentiates between traditional asset management firms and firms involved in alternative investments. Asset management firms primarily engaged in equity and fixed-income securities are assigned a value of 1, while those specializing in private markets, hedge funds, and private equity are categorized separately with a value of 0. This distinction allows the analysis to assess whether firms operating in traditional asset management experience different post-M&A outcomes compared to those focused on alternative investment strategies, given the structural differences in their business models, investment horizons, and revenue structures. The classification of the target firm's industry has been implemented in the model through five distinct dummy variables, each representing one of the predefined industry groups: (i) traditional asset management, (ii) alternative investments (private equity, hedge funds, private markets, and private debt & credit), (iii) financial services and insurance, (iv) technology and fintech, and (v) real estate, infrastructure, and energy. Each target firm is assigned a value of 1 for the sector it belongs to and 0 for all others, ensuring that every acquisition is categorized into a single industry group. This approach allows for a clear comparison of post-merger performance across different sectors, enabling an assessment of whether strategic acquisitions within related industries yield stronger synergies compared to cross-sector deals, where integration complexity may reduce financial benefits. The geographic scope of M&A transactions is another key independent variable, as cross-border deals introduce unique challenges and opportunities compared to domestic transactions. To analyze this dimension, two separate dummy variables are employed. The first variable distinguishes between acquirers based in North America and those based in Europe, assigning a value of 1 to North American acquirers and 0 to European acquirers. This classification enables an assessment of whether regional differences in regulatory environments, market maturity, or institutional quality influence the financial outcomes of M&A transactions. The second geographic variable captures whether a transaction is cross-border or domestic, assigning a value of 1 to cross-border acquisitions (CBAs) and 0 to domestic deals. This distinction is critical, as CBAs often involve greater regulatory scrutiny, cultural integration challenges, and operational complexities, all of which can impact the realization of synergies. Prior research has highlighted that cross-border M&A can either enhance firm performance through market expansion and access to new growth opportunities or diminish financial benefits due to integration risks and compliance costs. By incorporating this variable, the study seeks to determine whether the expected advantages of international diversification outweigh the inherent risks associated with cross-border transactions in the asset management sector. Throughout operational synergies, AUM, sector, and geographic scope, this study aims to provide a comprehensive understanding of the determinants of post-M&A success. The interplay between these factors will be analyzed through event study analysis and panel data regression to evaluate the market reaction to M&A announcements, the impact of operational synergies on ROIC, and the extent to which geographic and sectoral factors influence this relationship.

2.2.4 Data Sources and Sample Selection

To analyze the impact of mergers and acquisitions in the asset management industry, this study constructs a dataset comprising M&A deals executed by companies operating within the asset management industry. The acquiring firms in the sample include both traditional asset management firms—such as BlackRock, State Street, Amundi, Schroders, Anima, and Generali Asset Management—as well as firms specializing in alternative investments, including Blackstone, KKR, and Ares Management. These companies were selected based on their prominence in the industry and their active involvement in M&A transactions. Additionally, the dataset includes firms headquartered in both North America (United States and Canada) and Europe (including the United Kingdom), allowing for geographic comparisons of M&A effects. Regarding the choice of specific transactions, a key criterion for inclusion in the dataset is that they must be direct acquisitions executed at the corporate level, rather than acquisitions made by investment funds managed by these firms. This ensures that the deals have a direct impact on the acquiring firm's financial statements—including its balance sheet, income statement, and overall capital structure— making ROIC an appropriate metric for evaluating post-merger performance. Also, analyzing only direct transactions ensures that stock price reactions reflect investor sentiment towards the acquiring firm itself. Excluding funds' acquisitions eliminates potential distortions that could arise from transactions in which the acquiring firm does not consolidate the acquired entity's financials. The final dataset consists of 140 acquisitions, each of which was identified and checked using publicly available financial reports and company announcements, covering a time window beginning in 2016 and ending in 2024. For each transaction, two key dates were recorded:

- Announcement date (signing date): the date on which the acquiring firm publicly announces a signed agreement with the target company, indicating that a definitive acquisition deal has been reached. This is the moment when the transaction details become publicly known and market expectations adjust accordingly.

- Completion date (closing date): the date when the acquisition is finalized, following regulatory approvals of the antitrust authority (e.g., SEC, CONSOB) and the formal transfer of ownership and payment.

These dates serve as reference points for both short-term and long-term analyses. The announcement date is essential for calculating CAR, as it marks the moment when investors react to the deal's potential impact. The completion date, on the other hand, defines the beginning of the post-merger period, allowing the study to measure the effect of M&A transactions on operational efficiency through changes in ROIC. By aligning financial performance metrics with these dates, the analysis aims to isolate the effects of the acquisition itself,

distinguishing them from other market-driven factors that could influence stock price movements or operational performance over time. To assess the market reaction to M&A announcements, Cumulative Abnormal Returns were calculated using historical market data on stock prices. The methodology involves comparing the observed returns of the acquiring firms around the announcement date to their expected returns based on a benchmark index. To obtain the necessary price data, daily closing prices for both the acquiring firms and relevant market indices were extracted using the *yfinance* library (Yahoo Finance). This dataset provides a comprehensive historical record of stock performance, allowing for the computation of abnormal returns by determining the difference between actual stock returns and expected returns derived from a market model, which, when aggregated over the event window, yields the CAR. By analyzing the stock price movements before and after the announcement, this approach enables an evaluation of how investors perceive the strategic and financial implications of the acquisition. The use of daily frequency ensures that short-term market reactions are captured with precision, minimizing distortions from unrelated long-term trends. On the other hand, to assess the long-term impact of mergers and acquisitions on operational efficiency, this study employs Return on Invested Capital as the primary performance metric. ROIC measures a firm's ability to generate returns relative to the capital it has deployed, making it a useful indicator of whether M&A transactions contribute to increased profitability and efficient capital allocation. In this analysis, the change in ROIC (ΔROIC) is calculated as the difference between ROIC one year after the completion (closing) of the deal and ROIC at the time of closing. This approach ensures that the study captures the post-merger evolution of capital efficiency rather than the immediate effects, which may be distorted by short-term integration costs or transaction-related expenses. To compute ROIC at closing and one year post-closing, the Net Operating Profit After Taxes (NOPAT) was first derived from EBIT adjusted for taxation. The tax rate applied to each firm was the average corporate tax rate for the specific country in the given period. This method ensures consistency across firms operating in different regulatory environments while avoiding distortions caused by one-off tax optimizations or temporary fluctuations in corporate tax policies. NOPAT is then divided by the firm's invested capital**.** The invested capital was defined as the sum of total debt and shareholders' equity, reflecting the full capital structure supporting operational activities. By aligning both NOPAT and invested capital to the same quarter, this methodology maintains consistency in measuring capital efficiency over time. Both EBIT and invested capital were sourced from Forecaster, selecting financial data from the closest available quarter to the transaction date. In addition to ROIC, the study evaluates operational synergies resulting from M&A transactions. While synergies can manifest in multiple forms—including revenue growth, cost reductions, and increased pricing power—this analysis focuses on cost synergies, measured through changes in EBITDA margin. The EBITDA margin, calculated as EBITDA divided by total revenues, provides insight into how efficiently a firm converts revenue into operating profit. The rationale behind using ΔEBITDA margin as a proxy for operational synergies lies in its ability to reflect improvements in cost efficiency and profitability—two fundamental objectives of M&A transactions aimed at achieving integration benefits. A rising EBITDA margin post-acquisition suggests that the acquiring firm has successfully optimized operational costs, streamlined management processes, or leveraged economies of scale,

all of which are key drivers of synergy realization. Conversely, a declining margin could indicate integration challenges, higher-than-expected restructuring costs, or inefficiencies in combining operations. The change in EBITDA margin (ΔEBITDA margin) is computed as the difference between the EBITDA margin one year after closing and the EBITDA margin at closing. These values were also obtained from Forecaster, ensuring consistency with the ROIC calculation. The decision to measure EBITDA margin changes from closing rather than announcement stems from the fact that operational synergies only materialize once the transaction is finalized and integration begins. At the signing stage, no cost-reducing measures or efficiency improvements have yet been implemented, making it an unsuitable reference point for this variable. In cases where EBIT or EBITDA data were not available, an approximation based on historical growth rates was used to estimate missing values. I decided to use a time span of one year mainly for two reasons. Firstly, from a logical perspective, mergers and acquisitions within the asset management and financial services sector tend to involve the integration of intangible assets, such as investment portfolios, fund management structures, and financial technology platforms. Unlike industries where post-merger integration requires extensive logistical coordination—such as manufacturing, where physical assets like machinery and production facilities need time to be absorbed into the acquirer's operations—the nature of these financial and technological assets allows for a relatively swift consolidation process. Asset managers acquiring other financial services firms or alternative investment firms primarily deal with securities, investment strategies, and client accounts, which can be integrated into existing platforms and structures without significant physical realignment. Similarly, acquisitions in the fintech and data infrastructure space involve digital assets, software, and databases, which can typically be merged into the acquirer's operations more rapidly compared to acquisitions involving hard assets or supply chain adjustments. Given this higher degree of integration efficiency, a one-year timeframe is considered a reasonable horizon to capture the initial realization of synergies without extending too far into a period where other exogenous factors might dilute the measurable effects of the acquisition. Secondly, from a practical standpoint, extending the analysis beyond one year would have imposed significant constraints on the dataset. If a longer post-acquisition period were chosen—such as three or five years—it would have required restricting the sample to acquisitions completed before 2021, thereby reducing the number of observations available for analysis. This limitation would be particularly problematic given the already selective nature of the dataset, which focuses exclusively on direct acquisitions by asset management firms rather than a broader industry research. Furthermore, extending the window would increase the difficulty of data collection, as financial statements and key performance indicators become progressively harder to track for older transactions, especially for firms that may have undergone further strategic shifts post-merger. By keeping the window at one year, the study maintains a balance between capturing synergy realization and preserving a robust sample size for meaningful statistical analysis. Overall, the one-year post-completion window provides a practical yet sufficiently comprehensive period to assess the impact of M&A on operational efficiency while ensuring that the dataset remains large enough to yield statistically relevant insights. Firm size is another crucial variable in this study, as larger asset managers may experience different M&A outcomes compared to smaller firms. In this analysis, Assets Under Management (AUM) at the time of

announcement serve as a proxy for firm size. AUM data are not systematically available in financial databases as EBIT, EBITDA or revenues are, necessitating manual extraction from company reports. Indeed, the AUM values were collected directly from the quarterly reports of each acquiring firm, selecting figures from the quarter closest to the announcement date. Unlike ΔROIC and ΔEBITDA margin, which measure post-merger changes, AUM is not assessed through a pre- and post-deal delta due to two reasons. Firstly, because only acquisitions involving asset management firms would contribute to a direct increase in AUM. Acquisitions in other industries—such as technology or infrastructure—would not have an immediate or direct effect on the acquiring firm's AUM. As a result, a ΔAUM approach would be misleading, as it would not accurately reflect the impact of M&A across different deal types. Secondly, because large asset managers, such as BlackRock, State Street or Amundi, experience frequent and substantial changes in AUM due to market movements, fund inflows/outflows, and organic growth. Given this variability, isolating the effect of a single acquisition on AUM over a prolonged period is highly complex. A fund's AUM may increase by billions of dollars in a matter of months, but attributing this directly to an acquisition—rather than to market growth or investor activity—would be problematic. Then, the AUMs of the European companies were converted to dollars according to the exchange rate of the reference date, so as to have a quantity with the same unit of measurement for each acquisition—this type of conversion was not applied to EBIT, EBITDA and revenues because since they are used for percentage measurements, the exchange rate would not have been affected. Lastly, to account for differences in firm size while preventing distortions due to extreme values, AUM values were normalized using a logarithmic transformation (log(AUM)). This transformation is particularly useful in financial analysis, as firm size tends to exhibit diminishing returns: the marginal impact of an increase in AUM is more significant for smaller firms than for industry giants. By applying the natural logarithm to AUM values, the study ensures a more proportional representation of firm size effects in the regression model.

2.2.5 Expectations and Contributions

This thesis tries to explore how mergers and acquisitions influence the financial and strategic performance of asset management firms, focusing on market reactions and long-term profitability, both influenced by variables as firm size, operational synergies, and the geographic and sectoral dimensions of M&A transactions. By integrating insights from the literature with an empirical approach, this research seeks to uncover the mechanisms that drive successful acquisitions, providing both academic contributions and practical applications for industry professionals. At its core, this study operates on the premise that M&A acts as a strategic catalyst for asset management firms, allowing them to enhance operational efficiency, market positioning, and long-term value creation. From an operational standpoint, well-executed acquisitions are expected to streamline costs, optimize capital allocation, and unlock synergies, particularly when integration is handled effectively. Firms that achieve greater cost efficiencies and process improvements post-merger are likely to experience higher ROIC, reinforcing the importance of synergy realization. Strategically, M&A

provides asset managers with a pathway for expansion, portfolio diversification, and competitive differentiation. Acquiring firms that target high-growth industries such as fintech and alternative investments are expected to gain innovative capabilities and new revenue streams, strengthening their market positioning. Similarly, cross-border acquisitions, despite their higher complexity and regulatory hurdles, may offer distinct advantages such as access to new capital markets, global client bases, and financial innovation hubs. However, while M&A is broadly expected to enhance efficiency and growth, its impact is likely to vary based on the specific characteristics of each transaction. Indeed, the sector of the acquired firm also influences post-merger success: acquisitions within similar or complementary industries may facilitate stronger synergy realization, whereas cross-sector deals may introduce higher integration costs and operational frictions. Beyond structural factors, firm size adds another layer of complexity: larger asset managers are expected to realize consistent yet incremental synergies, leveraging their infrastructure and economies of scale. Meanwhile, mid-sized acquirers absorbing significant targets may undergo transformational shifts, gaining market share, technological expertise, or diversification benefits—but with a higher risk of integration failure. The findings of this study could have implications for both academic research and industry practice. On a practical level, the results provide actionable insights for asset managers, helping them assess the conditions under which M&A transactions generate the highest value. By examining how sector alignment, geographic scope, and firm size influence post-merger success, this research tries to offer strategic guidance on target selection, integration planning, and synergy realization. From a theoretical perspective, the study builds on existing literature by examining how multiple transaction features interact to shape post-merger outcomes, expanding the understanding of synergy realization, economies of scale, and the influence of market conditions on M&A success. Furthermore, by assessing how firm size affects the ability to generate synergies, this research contributes to ongoing discussions on the efficiency of large-scale acquisitions and the challenges associated with post-merger integration. By bridging practical and theoretical perspectives, this thesis aims to help M&A research while possibly offering insights for asset managers and investors trying to provide a framework for making informed acquisition decisions.

Chapter 3

1. Empirical Analysis of M&A Performance

3.1.1 Anticipation of the Research

This chapter presents the empirical analysis of M&A transactions through two distinct approaches: an event study analysis and a regression model examining the variation in ROIC. The chapter is structured to first introduce the event study methodology, outlining the estimation of abnormal returns and the cumulative abnormal return (CAR) as a measure of market reaction to M&A announcements. Following the methodological framework, the implementation of the event study model is detailed, describing how historical stock price data was processed, normal returns were estimated, and CARs were computed. The findings are then discussed, interpreting whether acquiring firms experience significant abnormal returns around deal announcements. The second part of the chapter shifts focus to the longer-term operational performance of acquirers, measured through the variation in return on invested capital (ΔROIC). The methodology underlying the regression analysis is first introduced, explaining the rationale for selecting key independent variables, including firm size, geographic factors, and operational synergies. The construction of the dataset and the estimation of the model are then described, followed by a discussion of the results, highlighting which factors most significantly impact post-merger operational efficiency. Finally, the chapter concludes by synthesizing the key insights from both empirical analyses, discussing the extent to which market reactions (CARs) and fundamental financial improvements (ΔROIC) provide complementary perspectives on the impact of M&A. The findings are critically examined in relation to prior academic research, assessing whether they reinforce or challenge established theories on M&A synergies, investor expectations, and post-deal performance dynamics.

2. Event Study Analysis: Measuring Market Reactions

3.2.1 Methodology and Model Specification

To evaluate the impact of M&A announcements on stock performance, this study employs the event study methodology, a widely used approach in financial research to measure abnormal stock returns in response to specific corporate events. The central premise of this methodology is that, under normal market conditions,

stock prices follow predictable trends, and any significant deviation from expected returns can be attributed to the event under investigation. The event study framework is structured around two key time windows: the estimation window and the event window. These periods are carefully defined to ensure a robust measurement of the market reaction. The estimation window, covering 250 trading days before the event window, is used to estimate the parameters of the market model, which predicts the normal returns of the acquiring firm's stock. These normal returns represent the returns that would be expected in the absence of the M&A event, serving as a baseline for comparison. The choice of an approximately one-year period of trading data ensures a reliable calculation of market expectations while avoiding data that is too distant from the event, which might not accurately reflect recent market conditions. The event window, spanning ±10 days around the M&A announcement date, captures the immediate market reaction to the deal. This window accounts for both pre-event anticipation—as markets may react to rumors or leaks—and post-event adjustments, where investors incorporate new information into stock prices. By analyzing stock price movements before and after the announcement, the event study provides a comprehensive view of how investors perceive the strategic and financial implications of the M&A event.

To compute abnormal returns (ARs), this study employs the market model, which establishes a linear relationship between stock returns and overall market movements. The model assumes that an individual stock's return is driven by systematic market movements, represented by the following regression equation:

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + \varepsilon_{i,t}$$

Where:

- $R_{i,t}$ represents the return of stock *i* at time *t*.
- $R_{m,t}$ is the return of the market index at time *t*.
- α_i and β_i are the parameters estimated from historical data.
- $\varepsilon_{i,t}$ is the error term, capturing stock-specific deviation from the market trend.

This regression is performed individually for each M&A event over the 250-day estimation window prior to the event window, allowing for the calculation of firm-specific alpha (α) and beta (β) coefficients. Using these estimated parameters, the expected returns (*E(Ri)*) during the event window are computed as:

$$E(R_{i,t)} = \alpha_i + \beta_i R_{m,t}$$

These expected returns represent the performance of the stock in the absence of the M&A event, forming the basis for calculating abnormal returns (ARs). This latter represents the deviation between the actual returns of a stock and its expected returns as predicted by the market model. This deviation captures the stock price reaction to the M&A announcement, isolating the impact of the event from broader market movements. The abnormal return for stock *i* on day *t* is computed as follows:

$$AR_{i,t} = R_{i,t} - (\alpha_i + \beta_i R_{m,t})$$

To evaluate the cumulative effect of the announcement over the event window, the Cumulative Abnormal Return (CAR) is calculated by summing the abnormal returns over the event period. This measure provides insight into the total impact of the M&A event on the acquirer's stock price. The CAR for each firm *i* over the [-10, +10] day event window is computed as:

$$CAR_i = \sum_{t=-10}^{+10} AR_{i,t}$$

To determine whether acquirers experience statistically significant abnormal returns, a one-sample t-test is performed on the mean CAR across all M&A events. The test evaluates the null hypothesis:

$$H_0: CAR = 0 \quad \text{(No abnormal return)}$$
$$H_A: CAR \neq 0 \quad \text{(Significant abnormal return)}$$

The test statistic is computed as:

$$t = \frac{\overline{CAR}}{\frac{s}{\sqrt{n}}}$$

Where:

- $\overline{CAR}$ is the mean CAR across all M&A events.
- s is the standard deviation of CAR.
- n is the number of observations (M&A events).

The significance level (α) is set at 5%, ensuring the robustness of the statistical inference. If the null hypothesis is rejected, it indicates that M&A announcements systematically generate abnormal stock price reactions, either positive or negative.

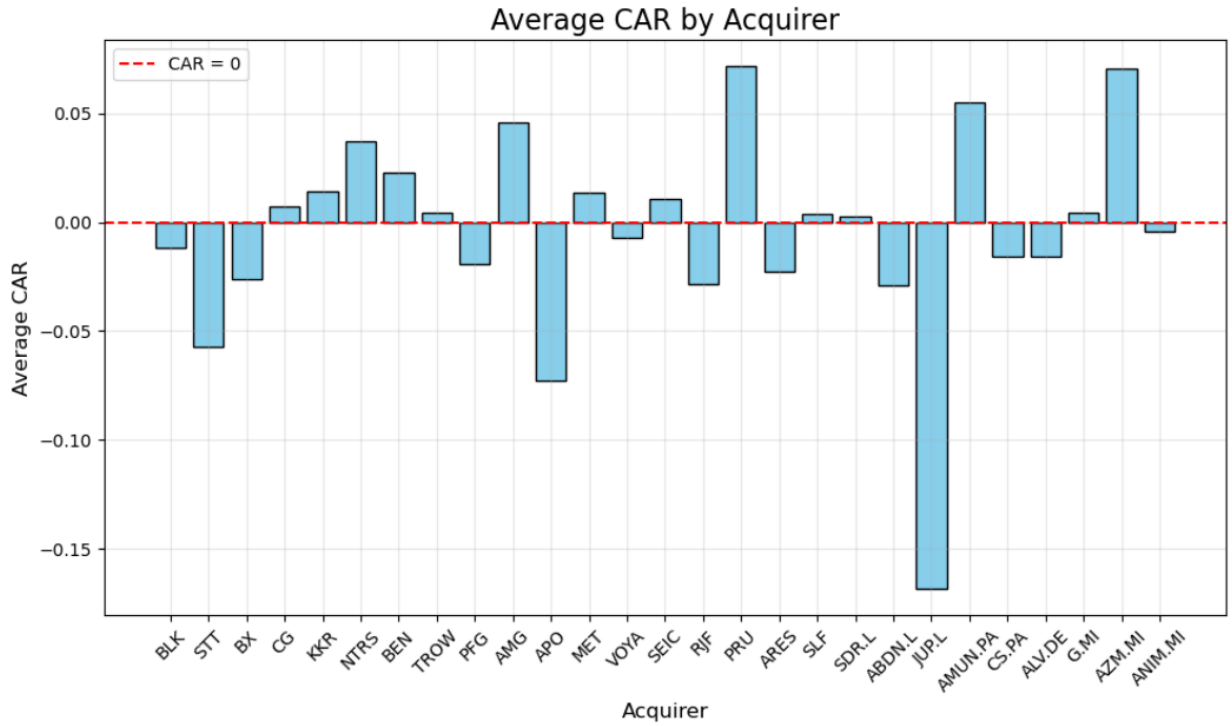
3.2.2 Implementation of the Event Study Model

To assess the market's reaction to M&A announcements, an event study methodology was implemented in Python. The process began with data acquisition, where M&A event data was imported from a CSV file

containing key details: the acquiring company, the target firm, and the announcement date. Since financial markets do not operate on weekends or public holidays, a function was created to align the event date with the nearest available trading day, ensuring consistency in stock return calculations. To establish a market benchmark, daily closing prices of the S&P 500 index were retrieved using the *yfinance* library, and market returns were computed. Similarly, historical stock price data was collected for each acquiring firm, allowing for the calculation of daily stock returns. These returns were then used to estimate normal expected returns, which form the basis for calculating abnormal returns. The methodology employed two time windows: an estimation window of 250 days before the event, used to estimate the relationship between stock and market returns; an event window covering ±10 days around the announcement, capturing deviations from expected returns. If a company lacked sufficient historical data to fit the model, it was automatically excluded from the analysis to maintain robustness. To estimate expected stock returns, an Ordinary Least Squares (OLS) regression was applied over the estimation window, computing the market model parameters (intercept and market beta). These parameters were then used to forecast the expected returns in the event window, which were compared to actual stock returns to determine abnormal returns. The cumulative abnormal return (CAR) was then computed for each firm by summing the abnormal returns over the event window, capturing the total market impact of the M&A announcement. A looping structure was implemented to perform this analysis across multiple M&A events. The calculated CAR values were aggregated, and a one-sample t-test was conducted to determine whether the average CAR across events was statistically different from zero, indicating a significant market reaction. The empirical results of the event study analysis are presented in the table below. It provides detailed data on average cumulative abnormal returns (CARs), t-statistics, p-values, and significance levels for each acquirer.

	Acquirer	Number of Events	Average CAR	t_stat	p_value	Significant
0	BLK	10	-0.011802	-0.794613	0.447285	False
1	STT	4	-0.057266	-1.194635	0.318068	False
2	BX	16	-0.026142	-1.351739	0.196492	False
3	CG	3	0.007427	0.265612	0.815411	False
4	KKR	2	0.014036	0.393930	0.761100	False
5	NTRS	4	0.037111	0.972323	0.402606	False
6	BEN	6	0.022852	0.822457	0.448248	False
7	TROW	2	0.004237	0.167893	0.894104	False
8	PFG	2	-0.018932	-1.091753	0.472093	False
9	AMG	1	0.045657	NaN	NaN	False
10	APO	2	-0.072826	-5.625316	0.112000	False
11	MET	4	0.013885	1.717896	0.184313	False
12	VOYA	1	-0.007242	NaN	NaN	False
13	SEIC	7	0.010750	1.279286	0.248039	False
14	RJF	10	-0.028536	-1.528471	0.160747	False
15	PRU	1	0.071704	NaN	NaN	False
16	ARES	7	-0.022602	-1.289363	0.244743	False
17	SLF	4	0.003572	0.203126	0.852033	False
18	SDR.L	8	0.002966	0.205376	0.843123	False
19	ABDN.L	3	-0.029066	-1.252737	0.336921	False
20	JUP.L	1	-0.168386	NaN	NaN	False
21	AMUN.PA	5	0.054822	1.889039	0.131897	False
22	CS.PA	4	-0.015960	-0.436094	0.692244	False
23	ALV.DE	11	-0.015993	-0.972790	0.353600	False
24	G.MI	10	0.004342	0.536783	0.604431	False
25	AZM.MI	2	0.070792	10.116044	0.062728	False
26	ANIM.MI	2	-0.004378	-0.179592	0.886874	False

Finally, a bar chart was generated to visualize the average CAR for each acquiring firm, allowing for a clear interpretation of which companies experienced the most pronounced investor responses. A dashed reference line at CAR = 0 was included to indicate the benchmark for no abnormal returns. This visualization provides a concise and intuitive representation of how M&A announcements influenced stock prices across different firms.



The findings reveal that most acquirers do not experience statistically significant CARs around M&A announcement dates. Only a small subset of firms exhibit CARs that are statistically significant at the 5% level, while the majority have p-values above 0.05, indicating that their stock price reactions are not significantly different from normal market movements. One possible explanation for this lack of a strong market reaction is investor skepticism regarding the ability of M&A transactions to generate immediate value. Market participants may believe that integration challenges, potential overpayment for targets, or uncertainty in realizing synergies outweigh the expected benefits of the acquisition. Particularly in the asset management industry, where acquisitions often involve intangible assets such as investment strategies, client relationships, and technological capabilities, the realization of value might be more complex and less immediately reflected in stock prices. Indeed, an important factor to consider is the pricing dynamic between acquirers and targets. A well-documented phenomenon in M&A literature is that, following an acquisition announcement, the stock price of the target company tends to experience a sharp upward adjustment, reflecting the premium offered by the acquirer and the market's anticipation of the deal's completion. This reaction is largely intuitive—shareholders of the target firm benefit directly from the acquisition, as the offered purchase price typically represents a premium over the pre-announcement market value. Conversely, the reaction of the acquirer's stock price is far more complex and unpredictable. Unlike the target firm, where the price adjustment is largely

driven by a clear financial incentive, the acquiring firm's valuation is influenced by a wide range of strategic, financial, and psychological factors that make predicting a consistent post-announcement pattern highly challenging. One of the key reasons for this asymmetry is that the financial markets often struggle to immediately quantify the benefits of an acquisition for the buyer. While investors can easily observe the premium paid and assess whether it is excessive, the realization of synergies, cost efficiencies, and revenue expansions remains uncertain at the time of the announcement. The process of integrating a newly acquired firm—whether it involves consolidating operations, aligning investment strategies, or leveraging new client relationships—takes time, and the market may hesitate to price in these potential advantages upfront. Additionally, acquisitions inherently introduce risk and uncertainty for the acquiring firm. Investors may perceive a deal as value-enhancing if they believe the transaction will create synergies and expand market presence, but they may also see it as destructive if they suspect overpayment, cultural misalignment, or operational integration challenges. The interplay of these factors can result in muted or even negative short-term abnormal returns for the acquirer, even when the acquisition ultimately proves beneficial in the long run. Ultimately, it is also crucial to consider the time horizon of my analysis. The event window of ±10 days focuses exclusively on short-term market reactions. The absence of significant CARs does not necessarily imply that M&A deals fail to create value, but rather that investors may require more time to assess the financial and strategic impact of the transaction. Long-term performance effects, driven by factors such as post-merger integration success, cost efficiencies, and revenue synergies, could still manifest beyond the event window. In conclusion, the findings suggest that while M&A announcements in the asset management sector do not consistently trigger immediate stock price movements, this does not preclude the possibility of long-term value creation, which remains contingent upon the execution and realization of post-merger synergies.

3.2.3 Results and Discussion

The Event Study Analysis findings, which questioned about the CAR and the market reaction to the announcement, align closely with existing literature on the stock price reactions to M&A announcements, reinforcing the widely documented asymmetry between target and acquirer returns. Prior research has consistently shown that target firms experience strong positive abnormal returns both before and after the announcement, as investors anticipate acquisition premiums and potential synergies. In contrast, acquirers tend to exhibit minimal or negative abnormal returns, reflecting market skepticism about immediate value creation. The results obtained in this study confirm this pattern, as most acquiring firms in the sample do not experience statistically significant cumulative abnormal returns around the announcement date. From the perspective of signaling theory, M&A announcements can be interpreted as signals firms send to the market about their strategic vision, financial strength, or expected synergies. However, the absence of substantial positive CARs for acquirers suggests that investors may not perceive these signals as unambiguously positive.

While firms intend to convey confidence and growth potential through acquisitions, market participants might interpret such transactions with caution, weighing concerns over integration risks, potential overpayment, or uncertain synergy realization against the intended positive message. This dynamic aligns with the conclusions of Kellner (2021), Adnan and Hossain (2023), and Spyrou and Siougle (2007), who examined the M&A market and observed that, while target stock prices increased significantly, acquirer reactions were generally weak or nonexistent in some cases, even negative in others, suggesting that investors remain cautious about the true value of these deals. While my study does not directly analyze target stock price movements, the lack of significant CARs for acquirers indirectly supports their conclusion, reinforcing the idea that expected gains are often priced into target firms rather than acquirers. However, unlike some findings on short-term negative reversals in acquirer stock prices, this study does not provide evidence of such a phenomenon. This discrepancy could stem from differences in the sample, event window definitions, or market efficiency across regions. Overall, the results reaffirm the notion that M&A transactions generate immediate value for target shareholders, while the benefits for acquirers are less apparent in the short term. The lack of strong positive CARs suggests that investors remain cautious, recognizing the complexities of post-merger integration and the risks associated with achieving expected synergies. While stock price movements around announcement dates provide valuable insights into market expectations, they may not fully capture the long-term financial impact of acquisitions. Consequently, while short-term market reactions indicate skepticism, they do not preclude the possibility that acquirers could realize value over time through effective execution and strategic alignment.

3. Long-Term Performance Analysis: Post-Acquisition ROIC Dynamics

3.3.1 Methodology and Variable Definition

To assess the long-term operational impact of M&A transactions, this study employs a regression analysis with ΔROIC as the dependent variable. The analysis considers a one-year post-acquisition window, meaning that the change in return on invested capital (ROIC) is measured from the quarter closest to the completion (closing) of the deal to the same quarter one year later. This timeframe allows enough room for operational synergies to materialize while maintaining a sufficient sample size. The primary dependent variable, ΔROIC, captures changes in the firm's return on invested capital post-merger. ROIC is calculated as follows:

$$ROIC = \frac{EBIT\ x\ (1 - Tax\ Rate)}{Invested\ Capital}$$

Where:

- *EBIT* represents the *Earnings Before Interest and Taxes*.
- *Tax Rate* is the average tax rate for the acquirer's country over the period considered.
- *Invested Capital* includes total *Debt* and *Equity*.
- *EBIT x (1 - Tax Rate)* is commonly known as *NOPAT*.

To measure the impact of M&A, the change in ROIC is computed as:

$$\Delta ROIC = ROIC_{t+1} - ROIC_t$$

Where:

- $ROIC_t$ is the ROIC at the closing quarter (completion of the acquisition).
- $ROIC_{t+1}$ is the ROIC one year after the closing.

This calculation provides insight into whether the acquisition led to improvements in capital efficiency over the medium term. Then, to capture operational synergies, this study considers the change in EBITDA margin, which measures cost efficiency improvements post-merger. The EBITDA margin is calculated as:

$$EBITDA\ Margin = \frac{EBITDA}{Revenues}$$

To assess the impact of the acquisition, the change in EBITDA margin is computed as:

$$\Delta EBITDA\ Margin = EBITDA\ Margin_{t+1} - EBITDA\ Margin_t$$

Where:

- $EBITDA\ Margin_t$ is measured at the closing quarter.
- $EBITDA\ Margin_{t+1}$ is measured one year after closing.

A positive ΔEBITDA margin suggests that the firm successfully reduced costs or improved revenue generation post-acquisition, which serves as a proxy for realized operational synergies. Also firm size, represented by Assets Under Management (AUM), is included in the regression model in logarithmic form to account for diminishing marginal effects. The transformation is expressed as:

$$\log(AUM)$$

where AUM is taken at the announcement date, ensuring that it reflects the firm's pre-acquisition scale without incorporating potential post-deal effects. The log transformation standardizes the variable and improves model interpretability. Lastly, the regression model also incorporates sector, geography, and deal characteristics as explanatory variables:

- Acquirer sector (Traditional Asset Management vs. Alternative Investments).
- Target sector, represented by five mutually exclusive industry dummies.
- Geographic scope, representing whether the acquirer is based in North America or Europe.
- Cross Boarder Acquisition, representing whether the deal is cross-border or domestic.

These variables, combined with ΔEBITDA margin and log(AUM), form the full set of independent variables used in the regression analysis to evaluate their impact on post-merger changes in ROIC. Ultimately, an important assumption must be clarified before proceeding with the explanation of the research. This study assumes that the variation in EBITDA margin during the year following an acquisition serves as a reasonable proxy for operational synergies generated from that specific acquisition of the sample. Although it is impossible to attribute changes in this margin solely to M&A activity, the use of quarterly data significantly enhances the precision of isolating the impact of each acquisition. By capturing EBITDA and revenues as close as possible to the closing date and comparing them to those recorded exactly one year later, this approach tries to minimize the influence of external market fluctuations, broader economic conditions, or firm-specific dynamics unrelated to the acquisition that could otherwise obscure the direct impact of the M&A. The high granularity of quarterly data ensures that any observed changes in EBITDA margin are closely tied to the transaction, rather than reflecting general firm-wide developments over an extended period. This methodological choice strengthens the assumption that ΔEBITDA margin provides a reliable measure of operational synergies arising from each acquisition, acknowledging that some residual noise may still be present.

3.3.2 ROIC Performance Model Implementation

In this section, I conduct a quantitative analysis to assess the impact of M&A transactions on the operational efficiency of asset management firms. Specifically, I examine whether various factors—such as the size of the acquiring firm (AUM), sector affiliation of the acquirer and target, geographical attributes, and operational synergies—contribute to changes in the Return on Invested Capital following a merger. To achieve this, I implement a multiple linear regression model (OLS) using Python, where ΔROIC (DROIC) serves as the dependent variable. The regression framework is designed to isolate the effects of each independent variable, allowing me to evaluate whether firm characteristics or strategic decisions significantly influence post-merger operational performance. The analysis begins by importing the necessary Python libraries and loading the dataset, which contains financial and transactional data for mergers conducted by asset management firms across North America and Europe. The dataset includes key firm attributes, industry classifications, and geographic indicators, all of which serve as independent variables in the regression. Before running the model, a crucial preprocessing step is undertaken to ensure comparability among variables. Specifically, three continuous variables—log(AUM), ΔROIC, and ΔEBITDA margin—are standardized. Standardization is necessary because these variables have vastly different magnitudes, and failing to normalize them could lead to biased coefficient estimates. By transforming these variables to have a mean of zero and a standard deviation of one, I ensure that differences in scale do not distort the regression outcomes. Following the standardization, I define the variables by setting DROIC (ΔROIC) as the label (dependent variable) and selecting a set of features (independent variables) based on theoretical considerations and empirical relevance: log(AUM) (firm size), DEBITDAm (ΔEBITDA margin), Geo (geographic location of the acquirer), CBA (cross-border vs. domestic acquisition), SectorA (sector of the acquirer), and SectorT1, SectorT2, SectorT3, SectorT4, SectorT5 (sector classification of the target). Before explaining the rest of the study, a clarification is necessary because in the process of analyzing the residuals from the regression model, an observation was identified as significantly deviating from the overall pattern. This discrepancy suggested the presence of a potential outlier, which warranted further investigation before proceeding with the final interpretation of results. To systematically locate and examine this observation, I employed a targeted approach using Python. The implemented code first retrieved the residual values from the regression model. Given that the goal was to isolate a specific residual, I defined a target residual value that was visually identified as unusually high in the residual distribution plot. The code searched for any residuals within a very small tolerance range of the specified target value. This ensured that minor numerical discrepancies due to floating-point precision do not interfere with identifying the correct observation. Once the relevant index was located in the dataset, the corresponding observation's full set of variables was retrieved, allowing for an in-depth assessment of its characteristics. Based on this inspection, an informed decision was made removing the observation, thereby improving the reliability of the final analysis. Now returning to the study explanation, given the complexity of M&A transactions, multicollinearity or correlation between independent variables is a potential concern

that must be addressed to ensure the reliability of the regression model. For this reason, to assess the relationships between the independent variables, a correlation matrix was firstly computed. This matrix provides Pearson correlation coefficients, which measure the strength and direction of the linear relationships between variables. High correlation values may indicate redundancy in the model, leading to inflated standard errors that could distort the estimated coefficients in the regression. By examining the correlation matrix, it is possible to detect such dependencies early and determine whether corrective measures are necessary. After executing the matrix in the study, we observe that DEBITDAm (operational synergies) appears to have the strongest positive relationship with DROIC (0.223), suggesting that efficiency gains post-acquisition may contribute to improved returns on invested capital. Other independent variables show weaker correlations (both positive or negative) with DROIC, implying that they might play a less direct role in influencing post-merger profitability. Among independent variables, no excessively high correlations (above ±0.6) are observed. However, some moderate correlations exist, such as between Geo and SectorA (0.405), as well as SectorT5 and SectorA (0.510), indicating that certain sectors are more frequently associated with specific geographic regions. While these relationships warrant attention, they are not extreme enough to suggest redundancy in the model.

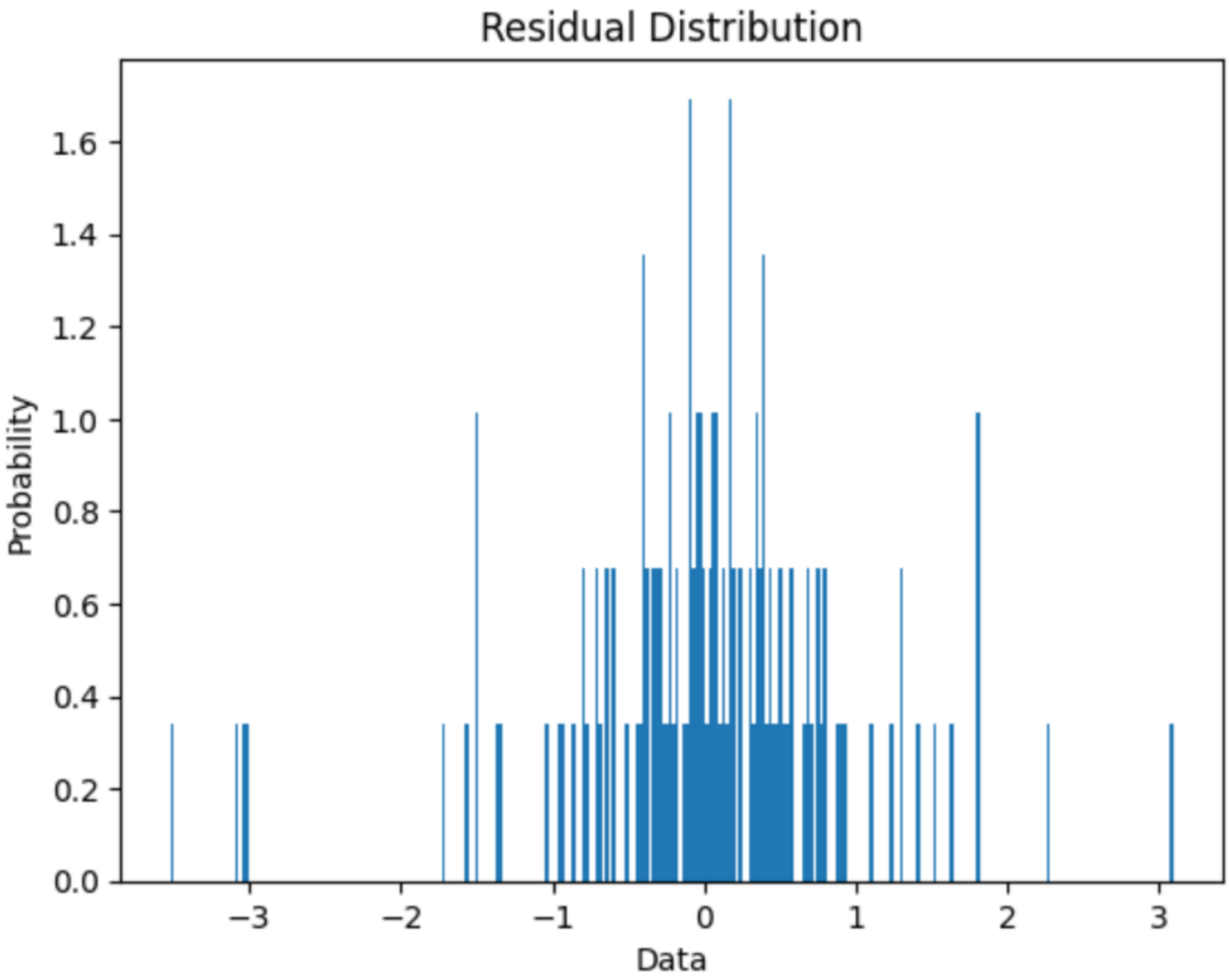
	DROIC	log(AUM)	DEBITDAm	Geo	CBA	SectorA	SectorT1	SectorT2	SectorT3	SectorT4	SectorT5
DROIC	1.000000	-0.145274	0.222906	-0.074578	-0.075189	0.026650	0.063291	-0.037941	-0.001164	-0.170726	0.132786
log(AUM)	-0.145274	1.000000	-0.104091	-0.061173	0.047219	-0.242402	-0.047719	0.168574	-0.060442	0.023745	-0.033102
DEBITDAm	0.222906	-0.104091	1.000000	-0.106745	-0.003765	-0.105373	-0.024815	-0.020179	0.120642	-0.050800	-0.050800
Geo	-0.074578	-0.061173	-0.106745	1.000000	-0.343497	0.405462	-0.015838	0.112186	-0.257882	0.078682	0.159166
CBA	-0.075189	0.047219	-0.003765	-0.343497	1.000000	-0.103426	0.006874	0.064153	0.175656	-0.251812	-0.018028
SectorA	0.026650	-0.242402	-0.105373	0.405462	-0.103426	1.000000	-0.202365	0.057477	-0.152314	-0.150955	0.510708
SectorT1	0.063291	-0.047719	-0.024815	-0.015838	0.006874	-0.202365	1.000000	-0.187385	-0.364261	-0.256255	-0.256255
SectorT2	-0.037941	0.168574	-0.020179	0.112186	0.064153	0.057477	-0.187385	1.000000	-0.226790	-0.159545	-0.159545
SectorT3	-0.001164	-0.060442	0.120642	-0.257882	0.175656	-0.152314	-0.364261	-0.226790	1.000000	-0.310141	-0.310141
SectorT4	-0.170726	0.023745	-0.050800	0.078682	-0.251812	-0.150955	-0.256255	-0.159545	-0.310141	1.000000	-0.218182
SectorT5	0.132786	-0.033102	-0.050800	0.159166	-0.018028	0.510708	-0.256255	-0.159545	-0.310141	-0.218182	1.000000

To further ensure the robustness of the regression, a Variance Inflation Factor (VIF) test was conducted to formally assess multicollinearity. This step is necessary to confirm that the independent variables provide distinct explanatory power without excessive overlap, ensuring that the regression coefficients remain stable and interpretable. The VIF test measures how much an independent variable is correlated with the other predictors in the model. If the VIF of a variable exceeds a threshold, it suggests that the variable may not provide unique explanatory power and should be reconsidered for inclusion in the regression. The results of the test indicate that most variables fall within an acceptable range, with VIF values well below the common threshold of 1.5, suggesting that multicollinearity is not a significant concern for these predictors. Specifically,

variables such as log(AUM), ΔEBITDA margin, geography (Geo), and cross-border acquisition (CBA) all exhibit VIF values below 1.5, confirming that these factors do not introduce redundancy into the model. However, a notable exception arises in the sectoral classification of the target firms. The acquirer's sector and the five sectoral dummies (SectorT1 to SectorT5) exhibit substantially higher VIF values, all exceeding the threshold of 1.5, indicating a strong degree of multicollinearity. This issue stems from the nature of the sectoral classification itself: the five dummy variables are mutually exclusive, meaning that each target firm is assigned to exactly one sector, while all other sectoral dummies are set to zero. As a result, the sum of these variables is always equal to 1, creating a linear dependency that inflates the VIF values. This phenomenon is a well-known statistical issue in regression models with categorical dummy variables that exhaustively cover all possible groups. To mitigate this issue, a common approach would be to exclude one of the sector dummies and use it as a baseline category. This would allow the remaining sector variables to be interpreted in relation to the omitted category, resolving the perfect linear dependency while preserving the model's explanatory power.

	Variable	VIF
0	DROIC	1.108191
1	DEBITDAm	1.063661
2	Geo	1.429180
3	CBA	1.249031
4	SectorA	1.656098
5	SectorT1	2.038202
6	SectorT2	1.675369
7	SectorT3	2.282732
8	SectorT4	1.618927
9	SectorT5	2.359403

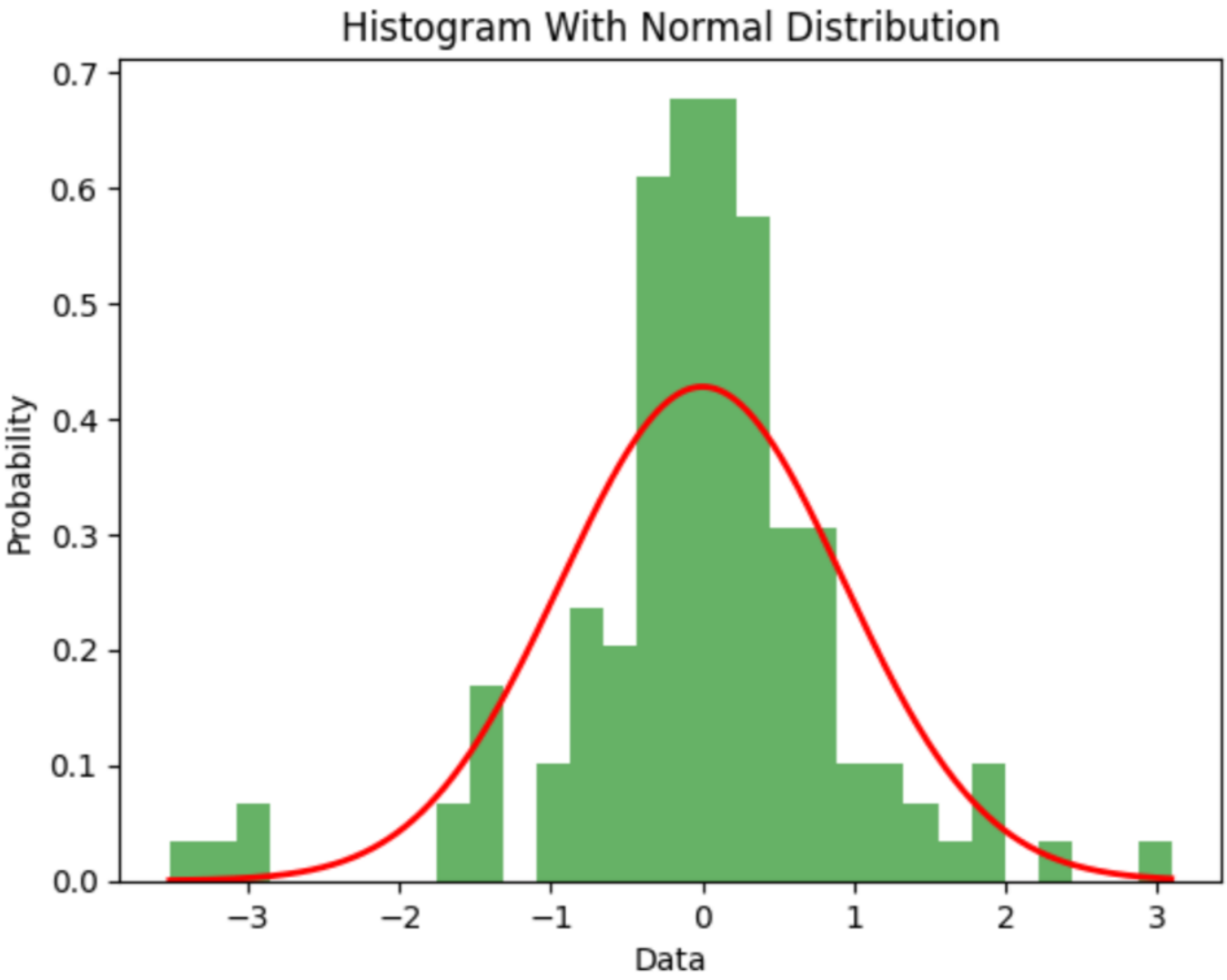
Given the elevated VIF values observed, after executing the first regression model I will proceed by running an alternative model excluding the five sectoral dummies to evaluate whether their removal improves the stability and interpretability of the results. Then, to assess the validity of the OLS model, an analysis of the residual distribution was conducted by plotting a histogram. Residuals represent the difference between the observed values of the dependent variable (ΔROIC) and the predicted values estimated by the regression. The histogram provides a visual representation of their distribution, which is essential for evaluating one of the key assumptions of linear regression: the normality of residuals. It allows for a preliminary assessment of whether the residuals are approximately normally distributed or if they exhibit any skewness, kurtosis, or other patterns that may indicate specification issues in the model. After plotting the histogram of residuals, we observe it indicates a distribution that approximates a normal shape, with most values clustering around zero and symmetrically tapering off towards the extremes.



This suggests that the residuals exhibit a roughly bell-shaped pattern, which is a desirable characteristic in linear regression models as it supports the assumption of normally distributed errors. However, some deviations from perfect normality are noticeable, particularly the presence of some isolated values at the tails. As demonstrated by the residuals identified, the highest positive residual reaches approximately 3.094, while the most negative residual extends to -3.517.

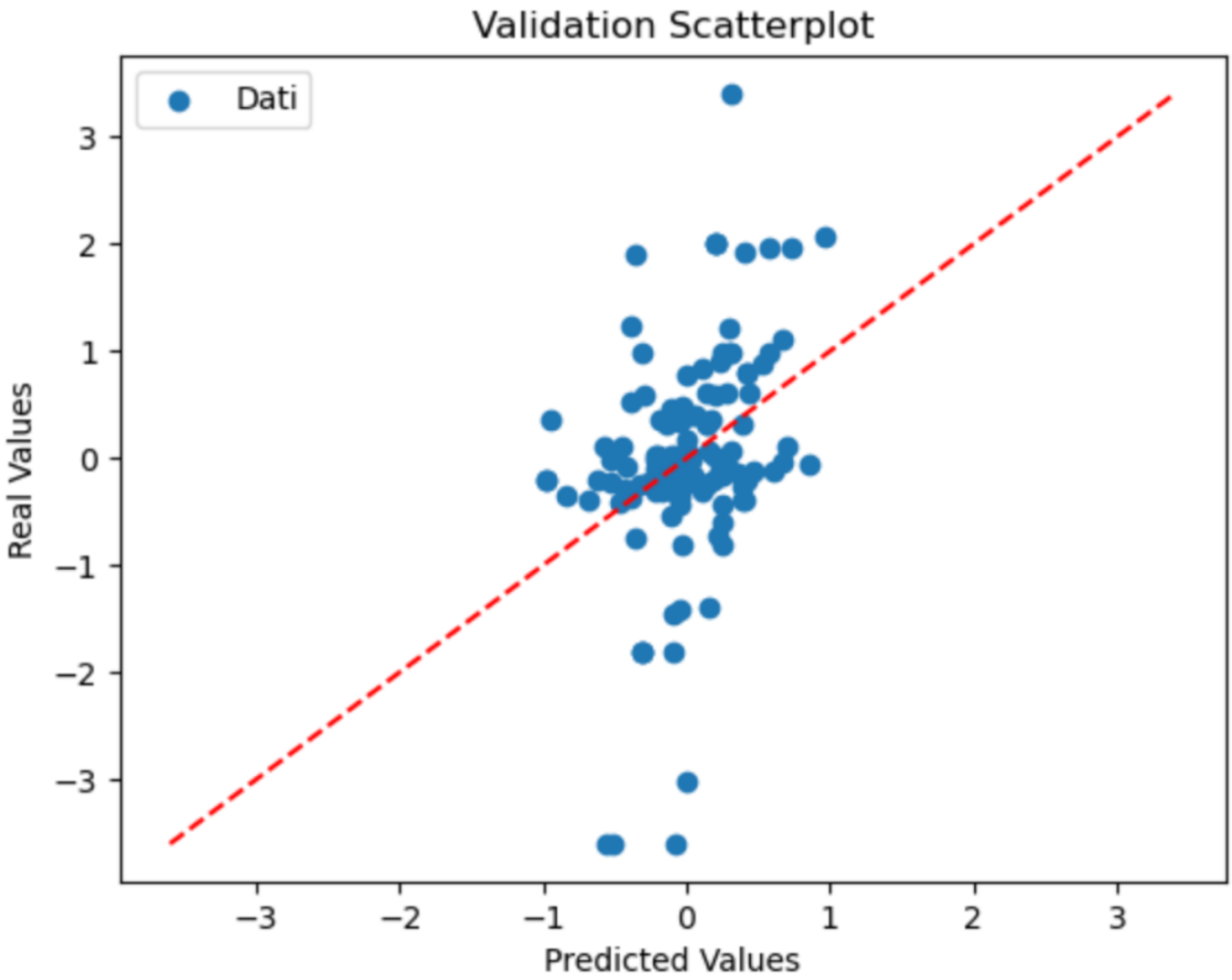
```
22    3.094689
73    2.269869
14    1.806579
16    1.806579
15    1.806579
        ...
57   -1.717413
45   -3.015054
21   -3.036319
17   -3.092485
20   -3.517032
Length: 134, dtype: float64
```

These might indicate mild skewness or the presence of a few outliers, which could slightly affect the model's efficiency in making unbiased estimations. Nevertheless, the overall distribution does not show any major distortions, implying that the model's residuals behave reasonably well, and that the assumption of normality is largely met. Then, to further check these findings, I compared their distribution with a normal distribution. This was achieved by overlaying the histogram of the residuals (in green) with a theoretical normal distribution (in red) based on the mean and standard deviation of the observed residuals.



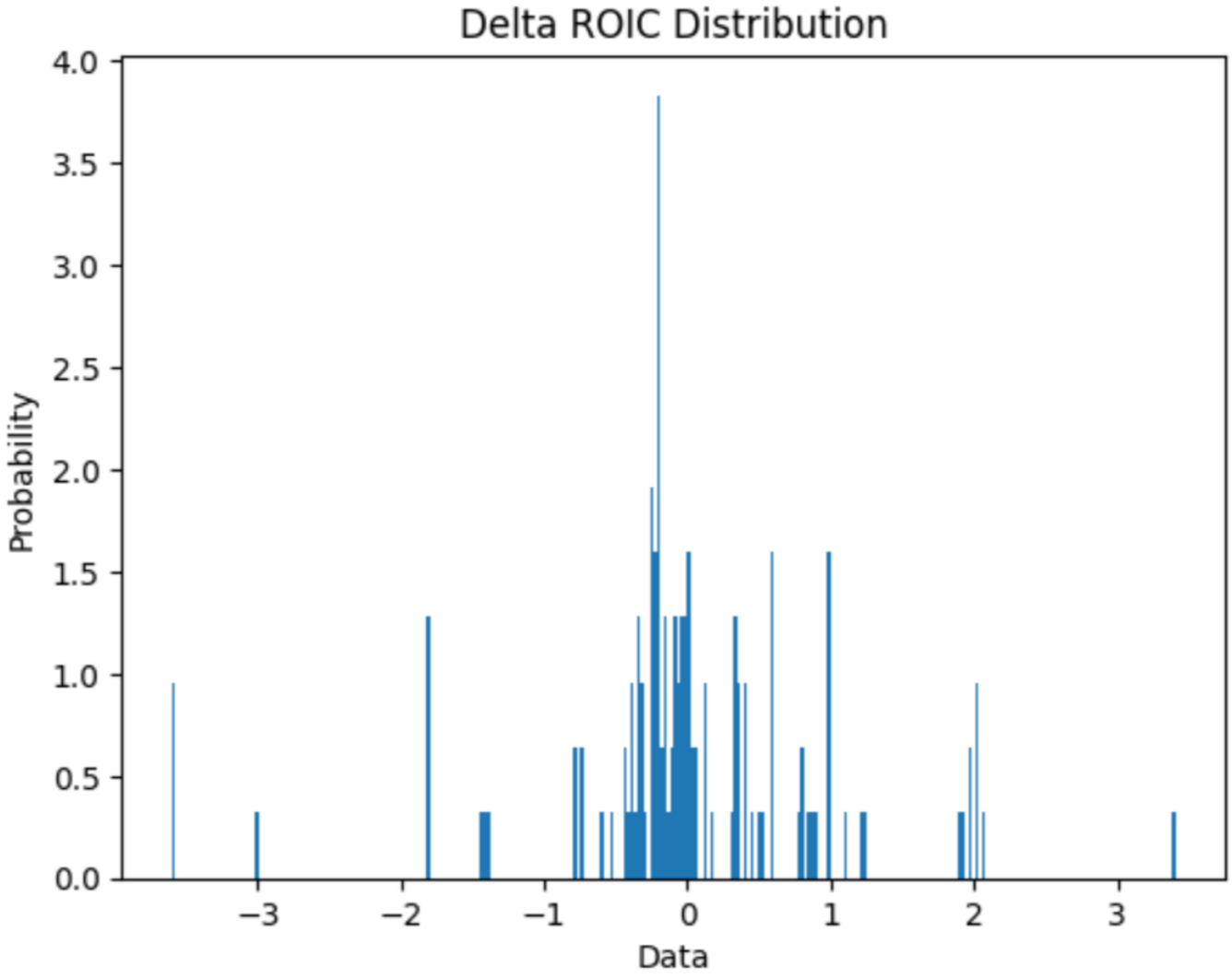
The resulting graph confirms that the residuals are approximately normally distributed, with most values concentrated around zero and a relatively symmetric spread. However, some discrepancies can be observed: the tails of the residual distribution are slightly more pronounced than those of the normal curve, suggesting the potential presence of kurtosis, which reflects a higher concentration of extreme values. Additionally, minor asymmetries indicate a slight skewness, which could point to potential deviations from perfect normality. Despite these small differences, the distribution remains sufficiently close to normal, meaning that the

assumption of normally distributed residuals is reasonably satisfied for the regression analysis. As another part of the diagnostic checks for the regression model, I compared the real values of ΔROIC with the values predicted by the model. To do this, a scatter plot was generated, where the x-axis represents the predicted values and the y-axis represents the real values observed in the dataset. The first step in this process is extracting the fitted values from the model, providing the estimated ΔROIC for each observation based on the regression equation. These predicted values are then plotted against the actual ΔROIC values to visualize how closely they align. Additionally, a reference line x=y is added to the plot, represented by a dashed red line. This line serves as a benchmark for perfect predictions: if the model were completely accurate, all points would lie exactly on this line, meaning that the predicted values match the actual values perfectly. This graphical assessment complements the statistical indicators obtained from the regression results (such as R^2, p-values, and standard errors) by providing a visual intuition of the model's performance.



Observing the scatter plot, it is evident that while most points are relatively close to the reference line, there is notable dispersion, particularly for some observations that deviate significantly from the expected trend. This

suggests that while the model captures general trends in the data, there are instances where predicted values diverge from actual outcomes, indicating potential noise or omitted factors influencing ΔROIC. The spread of the points around the reference line also reflects the model's residual variance, with larger deviations highlighting areas where prediction accuracy is lower. However, the overall concentration of points around the center suggests that the model is not entirely misaligned but may benefit from refinements or additional explanatory variables to improve precision. In addition, the distribution of the dependent variable ΔROIC was further analyzed through a histogram to visualize its shape and dispersion. This step is crucial in assessing whether the data approximates a normal distribution or exhibits potential skewness and outliers, which could affect the validity of the regression results.



The histogram represents the probability density of ΔROIC values, ensuring a standardized interpretation of data distribution. Observing the distribution, ΔROIC appears to roughly follow a normal shape but with some noticeable deviations. The central values cluster around zero, suggesting that most firms in the sample experience moderate changes in ROIC post-acquisition. However, the presence of outliers on both the positive

and negative extremes indicates that some transactions lead to unusually large improvements or deteriorations in operational profitability. Compared to the distribution of residuals, which was more tightly centered around zero, the ΔROIC distribution exhibits slightly more dispersion, suggesting greater variability in the actual outcomes of mergers. This could be attributed to firm-specific factors, deal characteristics, or broader market conditions influencing post-merger performance. Despite these deviations, the overall distribution does not show extreme skewness, meaning that the regression model is unlikely to be severely affected by non-normality in the dependent variable. However, the presence of outliers may require further examination to determine whether they represent meaningful variations or potential data anomalies. Once all these steps had been checked, the Ordinary Least Squares (OLS) regression was performed to estimate the effect of each independent variable on ΔROIC. The regression output provides critical insights, including coefficient estimates, statistical significance (p-values), and explanatory power (R-squared). By analyzing these results, we can determine whether firm size, operational synergies, sector affiliation, and geographic attributes play a meaningful role in shaping post-merger performance.

OLS Regression Results

Dep. Variable:	DROIC	R-squared:	0.129
Model:	OLS	Adj. R-squared:	0.066
Method:	Least Squares	F-statistic:	2.041
Date:	Sat, 08 Feb 2025	Prob (F-statistic):	0.0401
Time:	18:48:21	Log-Likelihood:	-180.88
No. Observations:	134	AIC:	381.8
Df Residuals:	124	BIC:	410.7
Df Model:	9		
Covariance Type:	nonrobust		

	coef	std err	t	P>|t|	[0.025	0.975]
const	0.2618	0.166	1.575	0.118	-0.067	0.591
log(AUM)	-0.1304	0.090	-1.448	0.150	-0.309	0.048
DEBITDAm	0.1959	0.086	2.283	0.024	0.026	0.366
Geo	-0.2271	0.206	-1.102	0.273	-0.635	0.181
CBA	-0.2888	0.185	-1.560	0.121	-0.655	0.078
SectorA	-0.1243	0.274	-0.454	0.650	-0.666	0.417
SectorT1	0.1381	0.169	0.817	0.415	-0.196	0.472
SectorT2	0.0821	0.238	0.346	0.730	-0.388	0.552
SectorT3	-0.0200	0.152	-0.132	0.895	-0.321	0.281
SectorT4	-0.3679	0.187	-1.965	0.052	-0.739	0.003
SectorT5	0.4296	0.213	2.014	0.046	0.007	0.852

Omnibus:	25.604	Durbin-Watson:	1.796
Prob(Omnibus):	0.000	Jarque-Bera (JB):	70.053
Skew:	-0.690	Prob(JB):	6.14e-16
Kurtosis:	6.262	Cond. No.	1.52e+16

Notes:
[1] Standard Errors assume that the covariance matrix of the errors is correctly specified.
[2] The smallest eigenvalue is 1.13e-30. This might indicate that there are
strong multicollinearity problems or that the design matrix is singular.

The results of the OLS regression provide insights into the factors influencing post-merger changes in ΔROIC, though the model exhibits limitations in its explanatory power. The R-squared value of 0.129 suggests that only 12.9% of the variability in ΔROIC can be explained by the independent variables included in the regression, indicating that a substantial portion of the variation remains unaccounted for. This is further confirmed by the Adjusted R-squared of 0.066, which corrects for the number of predictors and suggests that, while the model does capture some meaningful relationships, it lacks strong predictive capacity. Despite this, the F-statistic of 2.041 with an associated p-value of 0.0401 indicates that the regression model as a whole is statistically significant at a 5% level, meaning that at least one of the independent variables contributes significantly to explaining ΔROIC. Analyzing the coefficients individually, ΔEBITDA Margin (DEBITDAm) emerges as the most relevant variable, showing a positive and statistically significant coefficient of 0.1959 with a p-value of 0.024. This confirms that operational synergies, as captured by improvements in EBITDA margin, positively contribute to post-merger profitability. This finding aligns with expectations and existing literature, reinforcing the idea that firms achieving cost efficiencies through mergers tend to realize stronger operational performance in the medium to long term. The presence of a statistically significant relationship between ΔEBITDA Margin and ΔROIC supports the hypothesis that the realization of cost synergies plays a fundamental role in determining the success of M&A transactions in the asset management sector. Conversely, firm size, geographic scope, and cross-border acquisitions do not exhibit statistically significant effects on ΔROIC. The coefficient for log(AUM) is -0.1304, suggesting a negative relationship between firm size and post-merger profitability; however, its p-value of 0.150 implies that this effect is not statistically significant. This contradicts some prior literature that emphasizes economies of scale as a key driver of post-merger performance, raising the possibility that size alone may not be a determinant of increased profitability in asset management M&A. Similarly, geographic factors, including whether the acquirer is based in North America or Europe (Geo: coefficient = -0.2271; p = 0.273) and whether the acquisition is cross-border or domestic (CBA: coefficient = -0.2888; p = 0.121), do not display statistically significant relationships with ΔROIC. This suggests that, in this dataset, cross-border deals and geographic presence may not systematically influence operational efficiency improvements, despite some existing studies highlighting their potential impact. The analysis of sectoral effects reveals an interesting finding: SectorT5, representing alternative investments in Real Estate and Infrastructure, has a positive and statistically significant coefficient of 0.4296 with a p-value of 0.046. This suggests that acquisitions in this sector are more likely to generate improvements in ΔROIC, potentially due to their distinct business models, higher margins, or unique integration dynamics. A possible explanation for this result is the increasing interest of asset managers in alternative investments, particularly in real estate and infrastructure, as a means of diversifying portfolios and securing long-term stable returns. In recent years, institutional investors have shown a heightened demand for illiquid, non-traditional assets, which may enhance profitability for acquiring firms in the post-merger period. Additionally, while not falling within the conventional threshold of statistical significance, SectorT4, which represents acquisitions in the technology and fintech sectors, exhibits a coefficient of -0.3679 with a p-value of 0.052, suggesting a potential relationship that is just beyond the

standard 5% confidence level. This marginal significance may indicate that technology and fintech acquisitions could have an impact on ΔROIC, though the effect is weaker than that observed for real estate and infrastructure. This aligns with the increasing strategic importance of fintech integrations in asset management, where firms seek to enhance operational efficiencies through technological advancements, automation, and data-driven investment strategies. However, the slightly negative coefficient may suggest that, while these acquisitions are strategically relevant, they do not necessarily translate into immediate profitability gains within the one-year time frame considered in this analysis. None of the other sector categories show statistical significance, indicating that, within this dataset, sectoral differences—aside from alternative investments—do not strongly predict post-merger changes in ΔROIC. The absence of significance in traditional asset management acquisitions contradicts prior studies that emphasize the role of economies of scale and human capital synergies in driving post-merger fund performance, suggesting that these factors may not translate directly into corporate-level profitability. One possible explanation is that while fund performance improvements may arise from enhanced investment decision-making and portfolio management post-merger, these effects might not be immediately reflected in financial statements through higher returns on invested capital within the observed time frame of one year. Indeed, traditional asset management deals may take longer to generate measurable profitability improvements due to the nature of the business. The revenue models in asset management—largely fee-based—are highly dependent on market conditions, investor sentiment, and regulatory constraints, factors that could dilute the immediate financial benefits of mergers. Thus, while prior literature has strongly supported the notion that larger asset management firms benefit from scale-driven efficiencies, this study's findings suggest that these synergies do not necessarily lead to short or mid-term gains in ROIC and may require a longer horizon to materialize fully. Beyond the direct interpretation of the coefficients, some key diagnostic statistics provide additional context. The Durbin-Watson statistic of 1.796 suggests no severe autocorrelation in the residuals, confirming that the errors do not exhibit problematic patterns. However, the Omnibus and Jarque-Bera tests indicate some deviations from normality, which aligns with earlier observations from the residual distribution analysis. Additionally, the condition number of 1.52e+16 is extremely high, confirming potential multicollinearity concerns as we observed in the previous VIF analysis and we can see in the second notes of the OLS regression output. To adjust for the multicollinearity problem—specifically among the five sectoral dummy variables representing the industry of the target company—the model was re-estimated, as I already anticipated, without these variables. The revised regression now focuses on the remaining independent variables, including firm size (log(AUM)), operational synergies (ΔEBITDA margin), geographic location of the acquirer (Geo), cross-border nature of the deal (CBA), and whether the acquirer operates in the traditional asset management or in the alternative investment sector (SectorA—I intentionally left this variable in the model even if it showed a VIF of 1.6). This adjustment was intended to mitigate collinearity and improve the interpretability of the regression results.

OLS Regression Results

Dep. Variable:	DROIC	R-squared:	0.080
Model:	OLS	Adj. R-squared:	0.044
Method:	Least Squares	F-statistic:	2.229
Date:	Mon, 10 Feb 2025	Prob (F-statistic):	0.0553
Time:	21:10:29	Log-Likelihood:	-184.54
No. Observations:	134	AIC:	381.1
Df Residuals:	128	BIC:	398.5
Df Model:	5		
Covariance Type:	nonrobust		

	coef	std err	t	P>|t|	[0.025	0.975]
const	0.2230	0.189	1.182	0.239	-0.150	0.596
log(AUM)	-0.1122	0.088	-1.271	0.206	-0.287	0.062
DEBITDAm	0.2043	0.086	2.368	0.019	0.034	0.375
Geo	-0.2462	0.204	-1.206	0.230	-0.650	0.158
CBA	-0.2082	0.181	-1.149	0.253	-0.567	0.150
SectorA	0.1421	0.233	0.609	0.544	-0.320	0.604

Omnibus:	26.709	Durbin-Watson:	1.721
Prob(Omnibus):	0.000	Jarque-Bera (JB):	82.021
Skew:	-0.678	Prob(JB):	1.55e-18
Kurtosis:	6.585	Cond. No.	4.57

Notes:
[1] Standard Errors assume that the covariance matrix of the errors is correctly specified.

Despite the removal of the sectoral variables, the overall results remain largely consistent with the previous estimation. The R-squared value remains low at 0.080, indicating that while the model captures some variability in ΔROIC, there are likely other unobserved factors influencing post-merger profitability changes. The adjusted R-squared is similarly low at 0.044, reinforcing the idea that the explanatory power of the model is relatively limited. The most notable finding, consistent with the previous regression, is that operational synergies (ΔEBITDA margin) remain the only statistically significant variable at the 5% level (p-value = 0.019), becoming even more significant than before. The coefficient of 0.2043 suggests that improvements in EBITDA margins post-merger are still positively associated with increases in ΔROIC. This reinforces the idea that cost efficiencies and revenue synergies play a crucial role in determining the financial success of M&A transactions, aligning with previous research highlighting the importance of post-merger integration and operational optimization. Other variables, including log(AUM), Geo, CBA, and SectorA, remain statistically insignificant, with p-values well above conventional significance thresholds. The negative coefficient of log(AUM) (-0.1122) remains similar to the previous regression, albeit still non-significant ($p = 0.206$), suggesting that larger acquirers do not systematically experience better post-merger ROIC improvements. This finding is consistent with the idea that scale economies in asset management may not necessarily translate into immediate profitability gains, as efficiencies may already be maximized in large firms, or integration challenges may offset potential benefits. The negative coefficient of CBA (-0.2082, $p = 0.253$) suggests that cross-border deals might be associated with lower improvements in ΔROIC, possibly due to integration complexities, regulatory challenges, or cultural misalignment. However, the lack of statistical significance

prevents drawing firm conclusions. Interestingly, SectorA shows a positive but non-significant coefficient (0.1421, p = 0.544), implying that asset managers engaging in acquisitions may experience slight improvements in ΔROIC, but this effect is not robust enough to be conclusive due to the law significance. Overall, the removal of the sectoral variables does not substantially alter the key findings of the previous model. The primary takeaway remains the operational synergies, as measured by changes in EBITDA margins, appear to be the dominant driver of improvements in ROIC post-merger. This underscores the importance of successful post-merger integration efforts in realizing financial benefits, while other factors—such as firm size, geographic location, or deal structure—do not appear to have a statistically meaningful impact within the observed sample. However, the low explanatory power of the model highlights the fact that ΔROIC is likely influenced by additional variables not captured in this regression, reinforcing the complexity and firm-specific nature of M&A outcomes in the sector. Future research could improve the model by incorporating additional financial, strategic, or macroeconomic factors to enhance its explanatory capacity.

3.3.3 Empirical Results and Interpretation

The findings of this OLS regression focused on ΔROIC reinforce the extensive body of literature emphasizing the critical role of synergies in driving post-M&A performance improvements, particularly in the context of operational efficiency and return on invested capital (ROIC). In the asset management sector, where acquisitions often involve intangible assets such as financial portfolios, investment platforms, or technological infrastructure, the ability to generate and effectively integrate operational synergies becomes a fundamental determinant of post-merger success. The results of this study align with prior research that underscores how firms that successfully realize cost efficiencies and process optimizations tend to experience enhanced profitability and financial performance. The significance of operational synergies that has emerged supports the conclusions of a large body of research, among which Oira, Omagwa, and Abdul (2023), who highlight how operational synergies drive firm profitability by improving cost efficiency and optimizing managerial structures. But more than anything, the conclusions of the regression analysis are supported by Septian and Dharmastuti (2019), who examine return on assets (ROA) as an indicator of post-merger financial performance, showing that firms that realize operational synergies experience a significant improvement in this measure. Since ROA and ROIC are closely related—both assessing a company's ability to generate returns on its assets or invested capital—this study's findings extend their conclusions into the asset management sector, demonstrating that the benefits of operational synergies are just as relevant in an industry where capital allocation and cost efficiency are paramount. Similarly, Vinocur (2018), whose work focus on return on equity (ROE) as a measure of post-merger profitability, indicates that firms with strong M&A capabilities—defined by experience, strategic alignment, and effective integration—achieve superior ROE. The parallel with ROIC is clear: both metrics capture the efficiency with which firms utilize their capital, highlighting the fundamental role of profitability and capital efficiency in post-M&A success. By confirming the link between operational

synergies and post-merger improvements in ROIC, this study contributes to the growing body of evidence that M&A success is not merely a function of scale or expansion but of effective integration. The ability to streamline processes, optimize resource allocation, and enhance cost structures emerges as the primary driver of post-merger value creation. This underscores the idea that, even in a specialized industry like asset management, successful acquisitions are those where firms can capitalize on operational synergies to improve financial efficiency, reinforcing the long-term strategic benefits of well-executed M&A transactions. Building on this notion of industry-specific dynamics, it is particularly relevant to explore how asset management, as a sector characterized by the rapid integration of intangible assets, may exhibit a different post-merger performance trajectory compared to broader M&A trends. The study by Alhenawi and Krishnaswami (2015) I mentioned before in this thesis, shows as M&A experiences a decline in value during the first post-merger year, and then rises in the following four years. This pattern—an initial decline in performance followed by gradual improvement—contrasts with the findings of this thesis, which observes a positive and significant increase in ROIC within the first year post-merger. A key factor that may explain this difference lies in the nature of the industry under analysis. Alhenawi and Krishnaswami consider M&A transactions across all industries, while this research focuses exclusively on the asset management sector. The structure of asset management firms and their acquisition targets may lead to faster synergy realization compared to sectors that rely on more complex integrations. As previously discussed in this thesis, the asset management sector often involves M&A transactions where integration is relatively straightforward, primarily because acquisitions tend to involve intangible assets such as investment portfolios, financial strategies, technological platforms (e.g., fintech and data analytics), or alternative investment firms rather than physical production facilities or supply chain infrastructures. In contrast, industries such as manufacturing, industrials, or retail may require more time to integrate supply chains, production equipment, or physical assets, which could explain the slower post-merger performance recovery observed in the broader dataset analyzed by Alhenawi and Krishnaswami. Additionally, the study suggests that related mergers are often motivated by technology and innovation transfers rather than immediate synergy realization, which may further contribute to the initial performance dip they observe. In contrast, within asset management, acquiring firms can often leverage the acquired firm's resources—such as investment expertise, client networks, or technology infrastructure—relatively quickly, leading to an earlier enhancement in operational efficiency and profitability. Thus, while prior research suggests that synergies take time to fully materialize across industries, this study provides evidence that in sectors where integration challenges are lower, such as asset management, the benefits of M&A transactions may emerge more rapidly, aligning with the observed increase in ROIC within the first year. These findings may contribute to the broader discussion on how sectoral characteristics influence the timeline and magnitude of M&A-performance improvements.

Conclusion

This thesis has explored the impact of mergers and acquisitions in the asset management sector, investigating their effects on both market reaction perspective and long-term operational performance. The study aimed to assess how various factors—including geographic scope, sector alignment, firm size, and synergy realization—influence these outcomes, contributing to the ongoing discussion on the drivers of M&A success. By structuring the research around two main hypotheses, the analysis sought to validate or challenge widely accepted theories regarding short-term investor sentiment and long-term profitability in the context of asset management M&A. The first hypothesis (H1) suggested that M&A announcements should have positively influenced acquirer's stock price. However, the empirical findings did not validate this hypothesis, as most acquirers did not experience statistically significant CARs following deal announcements. This aligns with the broader literature on M&A market reactions, which often finds that investor sentiment toward acquirers remains neutral or even negative, likely due to concerns about integration risks, overpayment, or uncertainty regarding synergy realization. The results also reinforce the notion that while M&A activity tends to generate immediate and substantial gains for target firms, the short-term impact on acquiring firms is more ambiguous and difficult to isolate from other market factors. The signaling theory posits that firms use M&A announcements to convey strategic intent, financial strength or expected growth. In theory, investors should interpret these signals and adjust stock prices accordingly. However, the findings of this study suggest that in asset management, M&A announcements do not function as strong signals to the market. Investors may require tangible evidence of synergy realization before adjusting their valuation of the acquiring firm, rather than reacting purely to the announcements itself. Therefore, while H1 was not supported, this finding is consistent with prior research, which suggests that the market's ability to immediately assess the value creation potential of an acquisition for an acquirer is inherently limited. In contrast, the second hypothesis (H2), which proposed that a positive change in ROIC is driven by synergy realization, found stronger empirical support, although with some nuances. The regression results confirmed that operational synergies, as measured by changes in EBITDA margins, influence post-M&A ROIC, reinforcing the idea that cost efficiencies and process optimizations play a key role in long-term value creation. Furthermore, while the impact of the target sector was less pronounced than anticipated, acquisitions in real estate, infrastructure, and—partially—technology/fintech sectors exhibited level of significance, suggesting that certain industries may indeed foster faster or more effective synergy realization. These results align with existing research that emphasizes the role of post-merger integration strategies in shaping performance outcomes, confirming that the successful execution of synergies remains one of the most critical determinants of M&A success. Given this consistent evidence, one might expect investors to react more favorably to M&A announcements, recognizing their long-term value potential. Yet, market responses remain largely neutral or even skeptical, suggesting that investors either underestimate the realization of synergies or prioritize short-term uncertainties over long-term strategic

benefits. This raises an intriguing question: if synergies have been repeatedly shown to drive profitability, why does the market remain hesitant to reward acquirers at the announcement stage? Understanding this disconnect between empirical evidence and investor behavior remains an open challenge, warranting further exploration into how M&A expectations are shaped and whether firms can better communicate the true value creation potential of their deals. Nevertheless, all these findings provide valuable managerial implications for asset management firms considering M&A as a strategic tool for growth. One of the most critical takeaways is that, based on the analysis of short-term market reactions, M&A announcements generally do not generate a significant positive response from investors. This suggests that firms should not engage in acquisitions expecting an immediate increase in shareholder value, as market participants often remain skeptical about the potential for value creation. Instead, managers should approach M&A with a long-term perspective, focusing on how well the deal aligns with strategic objectives and operational efficiencies rather than relying on market sentiment for validation. M&A should be pursued primarily for operational and strategic benefits rather than market signaling effects. Given this reality, firms must also carefully manage investor expectations by clearly articulating the rationale behind acquisitions, emphasizing the anticipated benefits, and providing transparent synergy targets to reassure stakeholders of the deal's value proposition. Another key insight from this study is that the long-term financial impact of M&A transactions is significantly influenced by synergy realization, particularly in specific sectors. The regression analysis on post-merger ROIC revealed that acquisitions in some alternative investments as real estate and infrastructure tend to generate stronger operational improvements, reinforcing broader industry trends that highlight the increasing appeal of these sectors. These findings suggest that asset managers aiming to maximize post-merger profitability should prioritize acquisitions in sectors where they can diversify their portfolios as a defensive strategy to face volatility and uncertainty issues. In contrast, acquisitions in traditional asset management firms did not show a statistically significant effect on ROIC, which challenges the common assumption that increasing AUM through acquisitions necessarily leads to enhanced profitability. This indicates that simply scaling up does not automatically translate into higher efficiency, making it imperative for asset managers to carefully assess whether a target firm can genuinely contribute to synergy realization beyond mere asset accumulation. Lastly, the muted stock price reaction to M&A announcements highlights the need for careful timing and communication strategies. Investors often react cautiously to acquisition news, particularly when deals involve significant integration challenges, high transaction costs, or uncertain synergies. To mitigate negative market perceptions, asset managers should take a proactive approach in investor relations by detailing not just the strategic motivation behind an acquisition, but also how it will be successfully executed and what financial improvements are expected over time. By demonstrating a clear roadmap for value creation and providing regular updates on integration progress, firms can help bridge the gap between market skepticism and long-term operational success. Furthermore, considering that short-term market reactions to M&A announcements are generally weak, asset managers should carefully consider the timing of their acquisitions, ensuring that deals are pursued in periods where integration can be efficiently executed and financial markets are stable. For all these reasons, asset managers should not be discouraged by muted short-term market reactions, but rather

use M&A as a strategic tool to enhance capabilities, expand into high-growth areas, and improve long-term financial performance. By aligning acquisition strategies with industry-specific synergies, focusing on post-merger execution, and maintaining clear investor communication, firms can maximize the true value-creation potential of M&A in asset management. Lastly, while this study provides a dual perspective on M&A value creation—analyzing both short-term stock market reactions and long-term operational performance—several avenues for future research remain open. One potential extension is the application of Panel Data Analysis, which would allow for a more dynamic assessment of firm performance over multiple years. This approach could help disentangle the persistent effects of M&A from temporary fluctuations, providing deeper insights into how synergies evolve over time. Additionally, incorporating qualitative insights by examining managerial decisions, integration strategies, and cultural fit could shed light on the underlying drivers of post-merger success or failure, complementing the quantitative findings of this study. Moreover, future research could explore the impact of deal structure and financing methods on both stock price reactions and operational efficiency. The role of timing is another area worth investigating. Acquisitions made during economic upturns are expected to benefit from stronger investor sentiment and greater capital inflows, potentially leading to higher abnormal returns and long-term valuation gains. Conversely, deals executed in economic downturns may initially face greater investor skepticism and operational difficulties but could generate greater long-term value if executed at discounted valuations. Expanding the analysis to include macroeconomic conditions—such as monetary policy cycles or regulatory shifts—could further refine our understanding of how external factors shape M&A success. Ultimately, while this study highlights that M&A transactions do not consistently generate short-term market rewards for acquirers, they can still foster value creation through operational improvements and strategic positioning. The findings reinforce the notion that successful M&A outcomes depend not only on the deal itself but on the execution of post-merger integration strategies. In a sector where scale, efficiency, and differentiation are critical, acquisitions remain a powerful—though complex—tool for growth. Whether they translate into sustained financial success depends on how well firms navigate the challenges of integration, resource allocation, and long-term strategic alignment. Ultimately, this research has sought to contribute to the ongoing academic and practical discourse on M&A by providing a granular analysis of key performance drivers in the asset management sector. While many aspects of M&A dynamics remain complex and difficult to quantify, this study has attempted to shed light on some of the mechanisms through which acquisitions create—or fail to create—value over time. In doing so, it has combined rigorous analytical research with broader strategic insights, recognizing that M&A is not just a financial transaction but a multifaceted process that blends data-driven decision-making with strategic vision, operational execution, and market psychology. As such, this thesis has aimed to balance the technical with the intuitive, the quantitative with the qualitative—analyzing M&A not merely as a science, but also as an art.

Appendix

The appendix includes the datasets and Python codes used in this study to ensure transparency and reproducibility of the analyses. Specifically, two datasets have been provided. The first dataset (M&A Events) contains the list of acquisitions, including the announcement and closing dates, which were used for the event study analysis to measure Cumulative Abnormal Returns. The second dataset (Dataset ROIC) extends the first by also including the independent and all the dependent variables used in the regression analysis on ROIC. Additionally, the Python scripts for both models—the event study on CAR and the regression analysis on ROIC performance—have been included. These scripts detail the methodology used to collect and process financial data, perform statistical modeling, and generate the results presented in this study.

M&A Events

Acquirer	Target	Announcement Date	Closing Date
BLK	SpiderRock Advisors	2024-03-08	2024-05-01
BLK	Global Infrastructure Partners	2024-01-12	2024-10-01
BLK	Kreos Capital	2023-06-08	2023-08-02
BLK	Aperio	2020-11-23	2021-02-01
BLK	eFront	2019-03-22	2019-05-31
BLK	BlackRock TCP Capital	2018-04-17	2018-08-01
BLK	Tennenbaum Capital Partners	2018-04-17	2018-08-01
BLK	Banamex	2017-11-28	2018-09-24
BLK	Cachematrix	2017-07-25	2017-07-25
STT	CF	2023-03-22	2024-02-01
STT	Mercatus	2021-07-21	2021-08-31
STT	BestX	2018-08-17	2018-08-17
STT	Charles River	2018-07-20	2018-10-01
BX	Tricon	2024-01-19	2024-05-01
BX	PS Business Parks	2022-04-25	2022-07-31
BX	American Campus	2022-04-19	2022-07-31
BX	Preferred Apartments Communities	2022-02-16	2022-06-23
BX	ASK Group	2022-02-14	2022-02-14
BX	Resource REIT	2022-01-24	2022-05-19
BX	Bluerock Residential Growth	2021-12-20	2022-10-06
BX	WPT Industrial Real Estate Investment Trust	2021-08-09	2021-10-20
BX	Sphera Solutions	2021-07-06	2021-09-14
BX	Hansteen	2019-12-18	2020-02-31
BX	Colony Capital	2019-09-30	2019-12-10
BX	Dream	2019-09-15	2019-12-10
BX	Refinitiv	2018-08-01	2018-10-01
BX	LaSalle Hotel Properties	2018-05-21	2018-11-21
BX	Gramercy	2018-05-07	2018-10-10
BX	Croesus Retail Trust	2017-06-28	2017-10-16
CG	NSM Insurance Group	2022-05-09	2022-08-01
CG	CBAM	2022-03-09	2022-03-09
CG	CFGI	2018-02-01	2018-03-01
KKR	Neighborly	2021-07-08	2021-09-31
KKR	Global Atlantic Financial Group	2020-07-08	2021-02-31
NTRS	Parilux Investment Technology	2021-05-06	2021-05-06
NTRS	FXBEX	2018-12-05	2018-12-05
NTRS	Emotomy	2019-09-04	2019-09-04
NTRS	Belvedere Advisors	2019-07-29	2019-09-04
BEN	Putnam	2023-05-31	2024-01-01
BEN	Alcentra	2022-06-01	2022-11-01
BEN	AdvisorEngine	2020-05-06	2020-05-06
BEN	Legg Mason	2020-02-18	2020-07-31
BEN	Edinburgh Partners	2018-01-17	2018-01-17
BEN	AlphaParity	2017-02-07	2017-02-28
TROW	Retiree Income	2023-04-20	2023-04-20
TROW	Oak Hill Advisors	2021-10-28	2021-12-29
PFG	Robustwealth	2018-05-30	2018-11-30
PFG	Metlife Afore	2017-10-26	2018-02-20
AMG	Parnassus Investments	2021-07-06	2021-10-04

APO	Griffin Capital Company	2021-12-02	2022-05-03
APO	Athene	2021-03-08	2022-01-03
MET	Raven	2023-02-07	2023-03-02
MET	Affirmative Investment	2022-08-29	2022-12-15
MET	PetFirst	2019-12-05	2020-03-30
MET	Logan Circle Partners	2017-07-07	2017-09-15
VOYA	Czech Asset Management	2022-08-02	2022-12-15
SEIC	Altigo	2023-12-21	2024-05-21
SEIC	National Pension Trust	2023-07-14	2023-11-21
SEIC	Atlas Mastertrust	2021-10-21	2021-11-22
SEIC	Novus	2021-11-12	2021-11-12
SEIC	Finomial	2021-03-31	2021-10-27
SEIC	Oranj	2021-03-31	2021-09-30
SEIC	Archway	2017-07-05	2017-07-05
RJF	Solus Trust Company	2022-12-06	2023-09-05
RJF	Sumridge	2022-03-28	2022-07-05
RJF	TriState Capital Bank	2021-10-20	2022-06-01
RJF	Cebile Capital	2021-05-25	2021-09-30
RJF	Financo	2020-12-17	2021-03-30
RJF	NWPS	2020-12-10	2020-12-24
RJF	OAKTrust	2020-04-28	2020-04-28
RJF	Silver Lane Advisors	2019-01-23	2019-04-30
RJF	Mummert & Company	2016-06-01	2016-06-01
RJF	3Macs	2016-05-26	2016-08-31
PRU	Assurance	2019-09-05	2019-10-10
ARES	Crescent Point	2023-07-17	2023-10-02
ARES	Black Creek Group	2021-05-21	2021-07-01
ARES	BrightSphere Investment Group	2021-03-31	2021-06-02
ARES	Landmark Partners	2021-03-31	2021-06-02
ARES	AMP	2021-12-23	2022-02-10
ARES	Altico Capital	2021-01-21	2021-07-15
ARES	SSG Capital Management	2020-01-21	2020-07-07
SLF	AAM	2022-09-01	2023-02-01
SLF	Crescent Capital Group	2020-10-22	2021-01-05
SLF	InfraRed Capital Partners	2019-12-18	2020-07-01
SLF	BentallGreenOak	2019-07-02	2019-07-02
SDR.L	Greencoat Capital	2021-12-21	2022-04-11
SDR.L	Cairn Real Estate	2021-11-11	2022-02-01
SDR.L	Sandaire	2020-09-19	2020-12-18
SDR.L	Pamfleet	2020-07-01	2020-07-31
SDR.L	Woodford Investment Management	2019-10-24	2020-04-24
SDR.L	BlueOrchard	2019-07-26	2019-10-31
SDR.L	Secquaero	2019-07-18	2019-10-31
SDR.L	BLUE Asset Management	2019-05-28	2019-11-28
ABDN.L	Archax	2022-08-12	2022-08-12
ABDN.L	Interactive Investor	2021-12-02	2022-05-31
ABDN.L	Finimize	2021-10-29	2021-11-26
ABDN.L	Parmenion	2016-01-12	2016-01-12
JUP.L	Merian Global Investors	2020-02-17	2020-07-31

AMUN.PA	Alpha Associates	2024-02-07	2024-04-02
AMUN.PA	Lyxor	2021-04-07	2021-12-31
AMUN.PA	Sabadell Asset Management	2020-01-21	2020-06-30
AMUN.PA	Anatec	2019-01-18	2019-01-18
AMUN.PA	Pioneer Investments	2016-12-12	2017-07-03
AMUN.PA	Kleinwort Benson Investors	2016-05-23	2016-08-31
AMUN.PA	KBI Global Investors	2016-05-23	2016-08-31
CS.PA	Laya Healthcare	2023-08-03	2023-10-31
CS.PA	Grupo GACM EspaÃ±a	2023-07-13	2023-07-13
CS.PA	Credit Mutuel Alliance Federale	2023-07-12	2023-07-12
CS.PA	XL Group	2018-03-04	2018-09-12
ALV.DE	Luko	2024-01-24	2024-01-24
ALV.DE	TUA Assicurazioni	2023-10-12	2024-03-01
ALV.DE	Jubilee Allianz General Insurance	2021-05-04	2022-09-23
ALV.DE	European Credit	2022-06-08	2022-12-08
ALV.DE	European Reliance	2022-02-11	2022-07-04
ALV.DE	Aviva	2021-03-04	2021-10-01
ALV.DE	Jubilee Insurance	2020-09-01	2021-03-01
ALV.DE	MAWISTA	2018-03-19	2018-03-19
ALV.DE	Janashakthi Insurance	2018-02-02	2018-03-31
ALV.DE	Ensure	2017-08-30	2017-09-31
ALV.DE	Sound Harbor Partners	2016-12-01	2017-02-31
G.MI	Generali china insurance	2024-01-10	2024-01-10
G.MI	Conning	2023-07-06	2024-04-03
G.MI	Liberty Seguros	2023-06-15	2024-01-31
G.MI	Future Generali India Life Insurance	2022-03-30	2022-03-30
G.MI	La Medicale	2022-02-01	2022-07-01
G.MI	Cattolica	2021-10-29	2021-11-05
G.MI	AXA Insurance sa (greece)	2021-01-04	2021-05-31
G.MI	Tranquilidade	2019-07-18	2020-01-08
G.MI	Sycomore Asset Management	2019-02-13	2019-02-13
G.MI	Trip Mate	2019-02-08	2019-02-08
AZM.MI	Sanctuary Wealth	2020-11-02	2021-02-22
AZM.MI	Sigma Funds Management	2016-03-01	2016-06-31
ANIM.MI	Castello	2023-02-27	2023-07-19
ANIM.MI	Kairos	2023-11-16	2024-05-02
AGN.MI	Cofunds	2016-08-11	2017-01-31

Dataset ROIC

Acquirer	Target	DROIC	log(AUM)	DEBITDAm	Geo	CBA	SectorA	SectorT
BLK	SpiderRock Advisors	0,05%	9,256508053	-0,07	1	0	0	1
BLK	Global Infrastructure Partners	-0,06%	9,211239967	-0,32	1	1	0	5
BLK	Kreos Capital	0,19%	9,151142232	0,02	1	1	0	2
BLK	Aperio	0,31%	9,068396551	-0,02	1	0	0	1
BLK	eFront	-0,01%	8,781908536	-0,03	1	0	0	4
BLK	BlackRock TCP Capital	-0,02%	8,750999691	0,00	1	0	0	2
BLK	Tennenbaum Capital Partners	-0,02%	8,750999691	0,00	1	0	0	2
BLK	Banamex	-0,02%	8,74643014	0,00	1	1	0	3
BLK	Cachematrix	0,19%	8,646342497	0,00	1	0	0	4
STT	CF	0,13%	8,325548307	0,07	1	0	0	1
STT	Mercatus	0,11%	8,258940463	0,00	1	0	0	4
STT	BestX	-0,09%	7,940939762	-0,07	1	1	0	4
STT	Charles River	-0,09%	7,909489493	-0,08	1	0	0	1
BX	Tricon	-0,75%	6,947168281	-0,06	1	1	1	5
BX	PS Business Parks	1,35%	6,819470364	-0,13	1	0	1	5
BX	American Campus	1,35%	6,819470364	-0,13	1	0	1	5
BX	Preferred Apartments Communities	1,35%	6,819470364	-0,13	1	0	1	5
BX	ASK Group	-2,09%	6,780944112	-0,27	1	1	1	1
BX	Resource REIT	-0,74%	6,780944112	-0,18	1	0	1	5
BX	Bluerock Residential Growth	0,87%	6,780944112	-0,03	1	0	1	5
BX	WPT Industrial Real Estate Investment Trust	-2,09%	6,527957918	-0,16	1	1	1	5
BX	Sphera Solutions	-2,09%	6,527957918	-0,13	1	0	1	4
BX	Hansteen	2,21%	6,347564326	0,24	1	1	1	5
BX	Colony Capital	-0,15%	6,317164687	-0,14	1	0	1	5
BX	Dream	-0,15%	6,317164687	-0,14	1	1	1	5
BX	Refinitiv	-0,12%	6,08541016	-0,01	1	1	1	4
BX	LaSalle Hotel Properties	-0,12%	6,08541016	-0,01	1	0	1	5
BX	Gramercy	-0,12%	6,108358299	-0,01	1	0	1	5
BX	Croesus Retail Trust	-0,77%	5,916471568	-0,25	1	1	1	5
CG	NSM Insurance Group	-0,01%	5,783825182	-1,05	1	0	1	3
CG	CBAM	-0,01%	5,783825182	-0,24	1	0	1	2
CG	CFGI	0,60%	5,305789381	-0,06	1	0	1	3
KKR	Neighborly	-0,33%	6,061223792	0,27	1	0	1	3
KKR	Global Atlantic Financial Group	0,05%	5,401776075	0,60	1	0	1	3
NTRS	Parilux Investment Technology	0,07%	7,278697953	-0,02	1	0	0	4
NTRS	FXBEX	-0,11%	6,974853023	-0,01	1	0	0	4
NTRS	Emotomy	-0,09%	7,091575712	-0,03	1	0	0	4
NTRS	Belvedere Advisors	-0,09%	7,073439195	-0,03	1	0	0	3
BEN	Putnam	-0,01%	7,259889931	-0,14	1	0	0	1
BEN	Alcentra	-0,34%	7,22969384	-0,12	1	1	0	2
BEN	AdvisorEngine	0,48%	6,363545211	0,00	1	0	0	4
BEN	Legg Mason	0,48%	6,540452632	0,02	1	0	0	1
BEN	Edinburgh Partners	0,34%	6,624330797	-0,08	1	1	0	1
BEN	AlphaParity	0,34%	6,597554895	-0,01	1	0	0	1
TROW	Retiree Income	0,44%	7,201916318	0,01	1	0	0	4
TROW	Oak Hill Advisors	-1,73%	7,385230923	-0,03	1	0	0	2
PFG	Robustwealth	-0,03%	6,479277397	-0,01	1	0	0	4
PFG	Metlife Afore	-0,03%	6,486465621	0,00	1	1	0	3
AMG	Parnassus Investments	1,30%	6,627644472	0,24	1	0	0	1

APO	Griffin Capital Company	0,80%	6,209796541	0,29	1	0	1	5
APO	Athene	5,41%	6,133614939	0,00	1	0	1	3
MET	Raven	0,06%	6,362683216	0,15	1	0	0	2
MET	Affirmative Investment	0,00%	6,347739411	-0,96	1	1	0	1
MET	PetFirst	0,02%	6,399260271	0,00	1	0	0	3
MET	Logan Circle Partners	0,11%	6,124683391	0,02	1	0	0	1
VOYA	Czech Asset Management	0,03%	5,465525286	0,04	1	0	0	1
SEIC	Altigo	0,40%	6,06819408	0,16	1	0	0	4
SEIC	National Pension Trust	0,64%	6,035242169	0,16	1	1	0	1
SEIC	Atlas Mastertrust	-0,99%	5,969985515	-0,06	1	1	0	1
SEIC	Novus	-0,99%	5,969985515	-0,06	1	0	0	4
SEIC	Finomial	-0,99%	5,949860997	-0,06	1	0	0	4
SEIC	Oranj	-0,99%	5,949860997	-0,06	1	0	0	4
SEIC	Archway	-0,07%	5,728149831	0,01	1	0	0	4
RJF	Solus Trust Company	0,88%	5,225208895	-0,31	1	1	0	3
RJF	Sumridge	1,33%	5,26631057	0,42	1	0	0	1
RJF	TriState Capital Bank	1,33%	5,256974403	0,42	1	0	0	3
RJF	Cebile Capital	0,00%	5,252273428	-0,01	1	1	0	3
RJF	Financo	0,00%	5,133442723	-0,01	1	0	0	3
RJF	NWPS	0,13%	5,133442723	-0,01	1	0	0	3
RJF	OAKTrust	0,13%	4,853591544	-0,06	1	1	0	3
RJF	Silver Lane Advisors	-0,25%	4,840242308	0,02	1	0	0	3
RJF	Mummert & Company	0,16%	4,264087337	0,15	1	1	0	3
RJF	3Macs	0,16%	4,264087337	0,15	1	1	0	1
PRU	Assurance	-0,21%	7,325675828	-0,04	1	0	0	3
ARES	Crescent Point	1,29%	5,954541193	-0,16	1	1	1	2
ARES	Black Creek Group	0,73%	5,52744299	0,11	1	0	1	5
ARES	BrightSphere Investment Group	0,73%	5,412538511	0,11	1	0	1	1
ARES	Landmark Partners	0,73%	5,412538511	0,11	1	0	1	2
ARES	AMP	0,73%	5,723585102	-0,02	1	1	1	3
ARES	Altico Capital	0,73%	5,283203729	0,11	1	1	1	5
ARES	SSG Capital Management	0,37%	5,003946306	0,03	1	1	1	2
SLF	AAM	-0,02%	7,150701458	-0,10	1	1	0	1
SLF	Crescent Capital Group	0,06%	7,078594499	0,01	1	1	0	2
SLF	InfraRed Capital Partners	0,06%	7,002428893	0,10	1	1	0	5
SLF	BentallGreenOak	-0,01%	6,932252751	-0,01	1	0	0	5
SDR.L	Greencoat Capital	0,10%	6,877811403	0,01	0	0	0	5
SDR.L	Cairn Real Estate	-0,04%	6,864952157	0,01	0	1	0	5
SDR.L	Sandaire	0,02%	6,540308238	-0,01	0	0	0	3
SDR.L	Pamfleet	0,61%	6,4875318	-0,01	0	1	0	5
SDR.L	Woodford Investment Management	0,61%	6,360611393	-0,01	0	0	0	1
SDR.L	BlueOrchard	0,49%	6,310826956	-0,01	0	1	0	1
SDR.L	Secquaero	0,49%	6,323641859	-0,01	0	0	0	3
SDR.L	BLUE Asset Management	0,49%	6,334699579	-0,01	0	1	0	5
ABDN.L	Archax	0,37%	6,171074096	0,11	0	0	0	4
ABDN.L	Interactive Investor	0,37%	6,425031085	0,11	0	0	0	4
ABDN.L	Finimize	0,34%	6,456612657	-0,92	0	0	0	4
ABDN.L	Parmenion	-0,03%	5,898800862	0,11	0	0	0	4
JUP.L	Merian Global Investors	0,19%	3,817712326	-0,04	0	0	0	1

AMUN.PA	Alpha Associates	0,02%	7,727094485	-0,06	0	1	0	2
AMUN.PA	Lyxor	0,67%	7,6432433	-0,05	0	0	0	1
AMUN.PA	Sabadell Asset Management	0,22%	7,526986777	0,00	0	1	0	1
AMUN.PA	Anatec	-0,13%	7,397316407	0,02	0	1	0	4
AMUN.PA	Pioneer Investments	-0,02%	7,048994391	0,01	0	1	0	1
AMUN.PA	Kleinwort Benson Investors	-0,01%	7,015263487	-0,06	0	1	0	1
AMUN.PA	KBI Global Investors	-0,01%	7,015263487	-0,06	0	1	0	1
CS.PA	Laya Healthcare	0,08%	6,688354714	0,97	0	1	0	3
CS.PA	Grupo GACM España	0,08%	6,688354714	0,02	0	1	0	3
CS.PA	Credit Mutuel Alliance Federale	0,08%	6,688354714	0,02	0	0	0	3
CS.PA	XL Group	0,11%	6,359227788	0,04	0	1	0	3
ALV.DE	Luko	-0,01%	7,806289289	0,01	0	1	0	3
ALV.DE	TUA Assicurazioni	-0,01%	7,736307097	0,01	0	1	0	3
ALV.DE	Jubilee Allianz General Insurance	0,10%	7,991592282	0,01	0	1	0	3
ALV.DE	European Credit	0,10%	7,787299035	0,01	0	1	0	2
ALV.DE	European Reliance	0,10%	7,925338262	-0,01	0	1	0	3
ALV.DE	Aviva	0,14%	7,957002238	-0,01	0	1	0	3
ALV.DE	Jubilee Insurance	0,14%	7,885705391	-0,01	0	1	0	3
ALV.DE	MAWISTA	-0,07%	7,744569809	0,00	0	0	0	3
ALV.DE	Janashakthi Insurance	-0,07%	7,744569809	0,00	0	1	0	3
ALV.DE	Ensure	0,01%	7,72753511	0,01	0	1	0	3
ALV.DE	Sound Harbor Partners	0,01%	7,586803535	0,00	0	1	0	2
G.MI	Generali china insurance	0,32%	6,524002738	0,19	0	1	0	3
G.MI	Conning	0,32%	6,530440214	0,28	0	1	0	1
G.MI	Liberty Seguros	0,32%	6,530440214	0,19	0	1	0	3
G.MI	Future Generali India Life Insurance	0,13%	6,632660322	-0,01	0	1	0	3
G.MI	La Medicale	0,13%	6,632660322	-0,03	0	1	0	3
G.MI	Cattolica	-0,37%	6,672032945	0,01	0	0	0	3
G.MI	AXA Insurance sa (greece)	-0,37%	6,623533878	0,01	0	1	0	3
G.MI	Tranquilidade	0,42%	6,533788838	0,00	0	1	0	3
G.MI	Sycomore Asset Management	-0,03%	6,369900983	-0,01	0	1	0	1
G.MI	Trip Mate	-0,03%	6,369900983	-0,01	0	1	0	3
AZM.MI	Sanctuary Wealth	0,33%	4,266896327	0,06	0	1	0	4
AZM.MI	Sigma Funds Management	0,04%	3,747148362	0,01	0	1	0	1
ANIM.MI	Castello	1,39%	5,263725922	0,12	0	0	0	5
ANIM.MI	Kairos	0,66%	5,293304825	-0,03	0	0	0	1
AGN.AS	Cofunds	0,11%	5,857933154	0,09	0	1	0	4

Python codes of the Event Study Model

```python
import pandas as pd
import yfinance as yf
import numpy as np
import statsmodels.api as sm
from scipy.stats import ttest_1samp
import matplotlib.pyplot as plt

# Parameters
market_ticker = "^GSPC"         # S&P 500 as the market proxy
estimation_window = 250         # Days for estimation window
event_window = 10               # ±10 days around the event
alpha_level = 0.05              # Significance level

# Load event data
file_path = "/Users/davidebardozzo/Downloads/M&A_Events.csv"
events_df = pd.read_csv(file_path)
events_df['Date'] = pd.to_datetime(events_df['Date'])

# Check for required columns
required_columns = ["Acquirer", "Target", "Date"]
if not all(col in events_df.columns for col in required_columns):
    raise ValueError(f"The CSV must contain the following columns: {required_columns}")

# Download market data
market_data = yf.download(market_ticker, start="2015-01-01", end="2024-12-31")["Close"]
market_returns = market_data.pct_change().dropna()

# Function to find the closest trading date
def find_closest_date(event_date, available_dates):
    return available_dates[np.argmin(np.abs(available_dates - event_date))]
```

```python
# Function to calculate CAR
def calculate_car(ticker, event_date):
    # Download stock data
    stock_data = yf.download(ticker, start="2015-01-01", end="2024-12-31")["Close"]
    stock_returns = stock_data.pct_change().dropna()

    # Align event date to the closest trading day
    event_date = pd.to_datetime(event_date)
    if event_date not in stock_returns.index:
        event_date = find_closest_date(event_date, stock_returns.index)
    if event_date not in market_returns.index:
        event_date = find_closest_date(event_date, market_returns.index)

    # Define windows
    event_idx = stock_returns.index.get_loc(event_date)
    if event_idx < estimation_window + event_window or event_idx + event_window >= len(stock_returns):
        return None

    estimation_returns = stock_returns.iloc[event_idx - estimation_window - event_window:event_idx - event_window]
    estimation_market = market_returns.reindex(estimation_returns.index).dropna()

    if len(estimation_market) < 30:
        return None

    # Market Model Regression
    X = sm.add_constant(estimation_market)
    y = estimation_returns.loc[estimation_market.index]
    model = sm.OLS(y, X).fit()
    alpha, beta = model.params

    # Abnormal Returns
    event_window_dates = stock_returns.index[event_idx - event_window:event_idx + event_window + 1]
    actual_returns = stock_returns.reindex(event_window_dates).dropna()
    expected_returns = alpha + beta * market_returns.reindex(actual_returns.index)

    # Ensure alignment
    aligned_data = pd.concat([actual_returns, expected_returns], axis=1).dropna()
    aligned_data.columns = ["actual", "expected"]

    if aligned_data.empty:
        print(f"⚠️ No data available for {ticker} during the event window. Skipping event.")
        return None

    abnormal_returns = aligned_data["actual"] - aligned_data["expected"]

    # Debugging abnormal returns
    print(f"Abnormal Returns for {ticker}:\n{abnormal_returns.head()}")

    # Check for zero variance
    if abnormal_returns.var() == 0 or abnormal_returns.isnull().all():
        print(f"⚠️ Zero variance or NaN abnormal returns for {ticker}. Skipping event.")
        return None

    CAR = abnormal_returns.sum()
    return CAR
```

```python
# Store CAR results
car_results = {}

for index, row in events_df.iterrows():
    acquirer = row["Acquirer"]
    event_date = row["Date"]

    car = calculate_car(acquirer, event_date)
    if car is not None:
        car_results.setdefault(acquirer, []).append(car)
```

```python
# Aggregate CAR Results
average_car_results = []
for acquirer, car_list in car_results.items():
    if car_list:
        car_mean = np.mean(car_list)
        t_stat, p_value = ttest_1samp(car_list, 0)
        significant = p_value < alpha_level

        average_car_results.append({
            "Acquirer": acquirer,
            "Number of Events": len(car_list),
            "Average CAR": car_mean,
            "t_stat": t_stat,
            "p_value": p_value,
            "Significant": significant
        })

# Export Results

average_car_df = pd.DataFrame(average_car_results)
average_car_df.to_csv('output.csv', index=False)
print(average_car_df)

# Plotting
plt.figure(figsize=(10, 6))
plt.bar(average_car_df["Acquirer"], average_car_df["Average CAR"], color='skyblue', edgecolor='black')
plt.axhline(0, color="red", linestyle="--", label="CAR = 0")
plt.title("Average CAR by Acquirer", fontsize=16)
plt.xlabel("Acquirer", fontsize=12)
plt.ylabel("Average CAR", fontsize=12)
plt.xticks(rotation=45)
plt.grid(alpha=0.3)
plt.legend()
plt.tight_layout()
plt.show()
```

Python codes of the ROIC Performance Model

```python
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import scipy.stats as stats
import statsmodels.api as sm
from sklearn.preprocessing import StandardScaler

# Upload dataset
file_path = "/Users/davidebardozzo/Downloads/DatasetA.csv"

dataset = pd.read_csv(file_path, sep=";")
dataset = dataset.drop(columns=["Acquirer", "Target"])

dataset["log(AUM)"] = dataset["log(AUM)"].str.replace(',', '.').astype(float)
columns_to_standardize = ["DROIC", "log(AUM)", "DEBITDAm"]


# StandardScaler initialization
scaler = StandardScaler()
# Standardization of selected columns
dataset[columns_to_standardize] = scaler.fit_transform(dataset[columns_to_standardize])


# Define independent and dependent variables
dependent_var = "DROIC"
independent_vars = ["log(AUM)", "DEBITDAm", "Geo", "CBA", "SectorA",
                    "SectorT1", "SectorT2", "SectorT3", "SectorT4", "SectorT5"]

Y = dataset[dependent_var]
X = dataset[independent_vars]
X = sm.add_constant(X)  # Add intercept



# Identification of observation with high residual

# Calculation of residuals
residuals = model.resid

# Suppose I want to find the observation with a specific residual
residual_target = 0.049265  # Replace with the value I'm interested in

# Find the index of the observation with that residual
index = np.where(np.isclose(residuals, residual_target, atol=1e-6))[0]

# Check whether the observation with the target residual is present in the dataset:
if len(index) > 0:
    print(f"The observation with residual {residual_target} is at index {index[0]}")
    print("Observation data:", dataset.iloc[index[0]])  # Retrieval of identified observation data
else:
    print(f"No observation with a residual exactly equal to {residual_target}")
```

```python
# Compute the correlation matrix
dataset.corr()


# VIF calculation
from statsmodels.stats.outliers_influence import variance_inflation_factor

# Select only numeric columns for VIF calculation
X = dataset.select_dtypes(include=[np.number]).dropna()

# Create the dataframe for VIF
vif_data = pd.DataFrame()
vif_data["Variable"] = X.columns
vif_data["VIF"] = [variance_inflation_factor(X.values, i) for i in range(X.shape[1])]

# Print results
print(vif_data)



# Plot residual distribution

# Set random seed
np.random.seed(42)
# Extract residuals
x = model.resid

# Create histogram
plt.hist(x, density=True, bins=300)  # density=False would make counts
plt.ylabel('Probability')
plt.xlabel('Data')
plt.title("Residual Distribution")

# Sort residuals
model.resid.sort_values(ascending=False)



# Plot histogram with normal distribution

# Set random seed
np.random.seed(42)
# Extract residuals
x = model.resid

# Compute mean and standard deviation
data_mean = np.mean(x)
data_std = np.std(x)

# Generate normal distribution curve
xmin, xmax = min(x), max(x)
x_vals = np.linspace(xmin, xmax, 1000)
y_vals = stats.norm.pdf(x_vals, data_mean, data_std)

# Create histogram and overlay normal distribution
plt.hist(x, density=True, bins=30, alpha=0.6, color='g')  # Istogramma
plt.plot(x_vals, y_vals, 'r', linewidth=2)  # Distribuzione normale

plt.ylabel('Probability')
plt.xlabel('Data')
plt.title('Histogram With Normal Distribution')
plt.show()
```

```
# Scatterplot for model validation

y_pred = model.fittedvalues
Y = Y  # Assuming Y is already defined

plt.scatter(y_pred, Y, label="Dati")

# Add reference line x = y
min_val = min(min(y_pred), min(Y))
max_val = max(max(y_pred), max(Y))
plt.plot([min_val, max_val], [min_val, max_val], color='red', linestyle='--')

# Create histogram
plt.xlabel('Predicted Values')
plt.ylabel('Real Values')
plt.title('Validation Scatterplot')
plt.legend()
plt.show()



# Delta ROIC distribution

# Set random seed
np.random.seed(42)
# Extract data
x = Y

# Create histogram
plt.hist(x, density=True, bins=300)  # density=False would make counts
plt.ylabel('Probability')
plt.xlabel('Data')
plt.title("Delta ROIC Distribution")



# Regression with all variables

# Perform OLS regression
model = sm.OLS(Y, X).fit()

# Print regression results
print(model.summary())



# Regression considering VIF

# Define independent and dependent variables
dependent_var = "DROIC"
independent_vars = ["log(AUM)", "DEBITDAm", "Geo", "CBA", "SectorA"]

Y = dataset[dependent_var]
X = dataset[independent_vars]
X = sm.add_constant(X)  # Add intercept

# Perform OLS regression
model = sm.OLS(Y, X).fit()

# Print regression results
print(model.summary())
```

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