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The Influence of Institutional Investor Ownership on Corporate Performance and the Critical Role of Equity Capital Markets

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Contents

Abstract 7

Introduction 8

1. The Perimeter of the Dissertation: The General Framework 9

2. Understanding the emerging trends in institutional investor research: the contextual role of Chapter 1 study. 13

3. The role of SPACs and the impact on investment performance: transitioning to Chapter 2 study. 14

4. The impact of institutional investors holdings on a firm's investment intensity activity: closing Chapter 3 study. 17

Chapter 1: The Role of Equity Capital Markets in Institutional Investors' Holdings and Performance Impact: A Bibliometric Review 19

1. Introduction 19

2. Theoretical framework 20

3. Methodology 23

3.1 Inclusion criteria and search strategy 24

4. Bibliometric performance 25

4.1 Influential papers 26

4.2 Leading authors 29

4.3 The most productive and influential institutions 29

4.5 Thematic evolution 35

4.6 Trend topics, research frontier and future directions 40

5. Conclusions 42

6. Limitations and further improvements 44

Chapter 2: Are SPACs a good investment deal for investors? A performance comparison between SPACs vs. IPOs 45

1. Introduction 45

2. Literature review and hypotheses development 47

2.1 SPACs phenomenon, a theoretical background 47

2.2 SPACs performance 48

3. Sample selection 50

4. Methodology 51

4.1 Dependent and independent variables 51

4.2 Empirical model 54

5. Results of the research 55

5.1 Univariate regression 55

5.2 Multivariate analysis 56

6. Discussion 61

7. Conclusion 62

Chapter 3: The Impact of Pressure-Insensitive Institutional Ownership on Corporate Investment Intensity: An Empirical Investigation 64
1. Introduction 64
2. Literature review and hypothesis development 66
2.1 the Influence of Institutional Investors on Corporate Strategy and Innovation 66
2.2 Ownership structure and corporate investments 67
3, Data and sample selection 69
4. Methodology 70
4.1. Measures of investment intensity 70
4.2. Measures of pressure-insensitive institutional ownership 71
4.4. Base Model 73
4.5 Additional Analysis 73
5. Results 75
5.1. Descriptive statistics of sample and correlation 75
5.2 The influence of institutional ownership on investment intensity 78
5.2. Additional Robustness Analysis 80
6. Conclusions 86
Conclusions 88
References 90

List of Figures

Figure 1 Institutional investor's equity holdings (left graph) and institutional investors' share of market capitalisation evolution (right graph) from 2007 to 2020 (Source: OECD; Bas et al., 2023) 8
Figure 2 The Fundamental Principles of Corporate Finance 10
Figure 3 The Perimeter of Chapter 1 11
Figure 4 The Perimeter of Chapter 2 12
Figure 5 The Perimeter of Chapter 3 13
Figure 6 Proceeds (left graph) and number of SPACs (right graph) in the U.S. from 2003 to August 2023 (Source: Statista) 15
Figure 7 Distribution of traditional IPOs and SPAC IPOs in the United States from 2016 to 2021 (Source: Statista) 15
Figure 8 Amount of funds raised by SPACs seeking acquisitions in the United States in 2020, by sector (in million U.S. dollars) (Source: Author's elaboration on Statista data) 16
Figure 9 Number of SPAC IPOs completed in the United States and Europe between 2015 and 2021 (Source: Statista) 16
Figure 10 Literature Search Strategy 25
Figure 11 Annual number of papers published by year (right axes) and mean total citations per year (left axes) 26
Figure 12 Leading authors in the analysed field from 2008 to 2024 (end of April) by citations. 29
Figure 13 Leading institutions in the analysed field from 2008 to 2024 (end of April) by citations 31
Figure 14 Co-occurrence map of keywords 31
Figure 15 Thematic map 32
Figure 16 Thematic evolutions 35

List of Tables

Table 1 The most cited articles overall and by period 28
Table 2 The most productive and influential institutions. 30
Table 3 Top keywords by cluster (per occurrence) and exemplary studies by TC per year. 32
Table 4 Top keywords by cluster and exemplary studies by period of analysis. 36
Table 5 Trend topics 41
Table 6 Set of variables. Description of dependent and independent variables 53
Table 7 Descriptive statistics 53
Table 8 T-test results 55
Table 9 Cross-sectional OLS regression – Model 1 56
Table 10 Cross-sectional OLS regression for buy and hold strategy, EBITDA% and ROA% in t+1 and t+2 (Model 2) 59
Table 11 Cross-sectional OLS regression for buy and hold strategy adjusted, EBITDA% adjusted and ROA% adjusted in t+1 and t+2 (Model 2) 60
Table 12 Sample Distribution 69
Table 13 Descriptive statistics of the sample 76
Table 14 Correlations 77
Table 15 Fixed-effect regressions for change in institutional ownership proportion – baseline results 79
Table 16 Fixed-effect regressions for change in institutional ownership proportion including constitutional constraints 80
Table 17 Fixed-effect regressions for institutional ownership by investor type on investment intensity 82
Table 18 Fixed-effect regressions for institutional ownership on investment intensity by industry investment policy characteristics. 84

List of Acronyms

- ABS – Chartered Association of Business Schools
- AI – Artificial Intelligence
- CSR – Corporate Social Responsibility
- Capex – Capital Expenditures
- DB – Database
- EBITDA – Earnings Before Interest, Taxes, Depreciation, and Amortization
- ESG – Environmental, Social, and Governance
- ETFs – Exchange-Traded Funds
- IPO – Initial Public Offering
- M&A – Mergers and Acquisitions
- OECD – Organisation for Economic Co-operation and Development
- OLS – Ordinary Least Squares
- QS - Quacquarelli Symonds World University Rankings
- R&D – Research and Development
- ROA – Return on Assets
- RQ – Research Question
- SEC – Securities and Exchange Commission
- SEO – Seasoned Equity Offering
- SMEs – Small and Medium-sized Enterprises
- SPAC – Special Purpose Acquisition Company
- TC – Total Citations
- U.S. – United States

Abstract

Over the past two decades, the landscape of institutional investor holdings has undergone significant transformation on a global scale. This PhD thesis meticulously dissects the evolving role of institutional investors in equity capital markets and their consequential impact on firm performance.

Chapter 1 employs a bibliometric analysis to delineate the theoretical connections between institutional investors and equity capital markets and their consequential impact on firm performance. Performance is explored broadly, from operating performance to financial performance (such as stock risk and return) and non-financial performance. Building on the findings from Chapter 1 and situated within the broader framework of Agency Theory, Chapter 2 evaluates the viability of Special Purpose Acquisition Companies (SPACs) as investment opportunities compared to Initial Public Offerings (IPOs). This analysis will examine whether SPACs offer a superior alternative strategy for investors within equity capital markets. Finally, Chapter 3 scrutinizes the impact of institutional ownership on a firm's investment intensity.

The research reveals several key findings. Firstly, the field of institutional investor research is burgeoning, with Corporate Social Responsibility (CSR) serving as a foundational theme for impactful research over the past two decades. However, within the constant theme, emerging niche topics within entrepreneurial finance and innovation suggest potential new research avenues. Secondly, SPACs underperform relative to a matched group of IPOs in operating and stock market performance, particularly under a buy-and-hold strategy. The duration required to execute a business combination negatively correlates with SPAC performance, and transactions close to the 80% deal threshold are negatively related to the share price performance and EBITDA margin. These findings underscore critical elements institutional investors should evaluate before investing in equity capital markets. Thirdly, institutional investors, particularly pressure-insensitive ones, significantly bolster organic investment levels, especially in industries necessitating substantial infrastructural investments, such as communications, energy, materials, and utilities. However, the influence of these pressure-insensitive investors on inorganic capital expenditures and research and development (R&D) investments is less pronounced, with variations observed based on investor type (such as private equity, hedge funds and investment advisors) and governance constraints.

This PhD thesis provides a comprehensive overview of the latest trends in institutional investor research within the management field, discussing its evolution and the development of emerging topics.

Introduction

The role of institutional investors has undergone a profound transformation over time, both in terms of the volume of assets under management and the proportion of equity market capitalisation they hold. The percentage of shares held by the top 50 institutional investors witnessed a substantial rise, approximately 70%, from 2007-2019, reshaping the equity market landscape and the market for corporate control (Bas et al., 2023). At the onset of 2020, institutional investors' holding represented around 43% of global market capitalisation (Figure *1*, figure on the right), more than four times higher than the equity held by corporations (about 11%) and by the public sector (about 10%) and even by strategic individuals (about 9%) in the same period. Notably, in major markets like the United States and the United Kingdom, the top three institutional investors collectively own approximately 23% of the equity market (Medina et al., 2022).

Figure 1 Institutional investor's equity holdings (left graph) and institutional investors' share of market capitalisation evolution (right graph) from 2007 to 2020 (Source: OECD; Bas et al., 2023)

Furthermore, global savings funnelled through institutional owners have fostered the growth of passive portfolio management. Associated with this rise in passive investment is the burgeoning prevalence of joint ownership, defined as the tendency of institutional investors to maintain significant holdings in multiple companies, either within the same industry or across different industries (Bas et al., 2023).

The recent rise of institutional investors' holdings can reshape firms' growth trajectory. Previous research has demonstrated that institutional investor ownership could have significant implications for the firm's governance, such as providing new guidance and specialised industry knowledge and influencing decision-making processes (Bas et al., 2023). Institutional investors could also steer the firm towards adopting innovative managerial practices and facilitate access to additional funds (Bushee, 1998).

Nevertheless, institutional owners' business models have recently been the subject of intense debate due to their heterogeneity in terms of time horizon and investment style. The investment horizon of equity holders can significantly influence the type of investments a firm undertakes. Long-term investors will likely support investments in innovative activities and human capital-intensive projects, whose benefits materialise over time (Bas et al., 2023). However, on average, portfolio turnover tends to be higher for institutional owners compared

to corporate owners; hence, the rise of institutional investors with shorter time horizons might result in a reduced emphasis on long-term outcomes (Davies et al., 2014), thus fostering a culture of short-termism that supports "quarterly capitalism" (Stein, 1989).

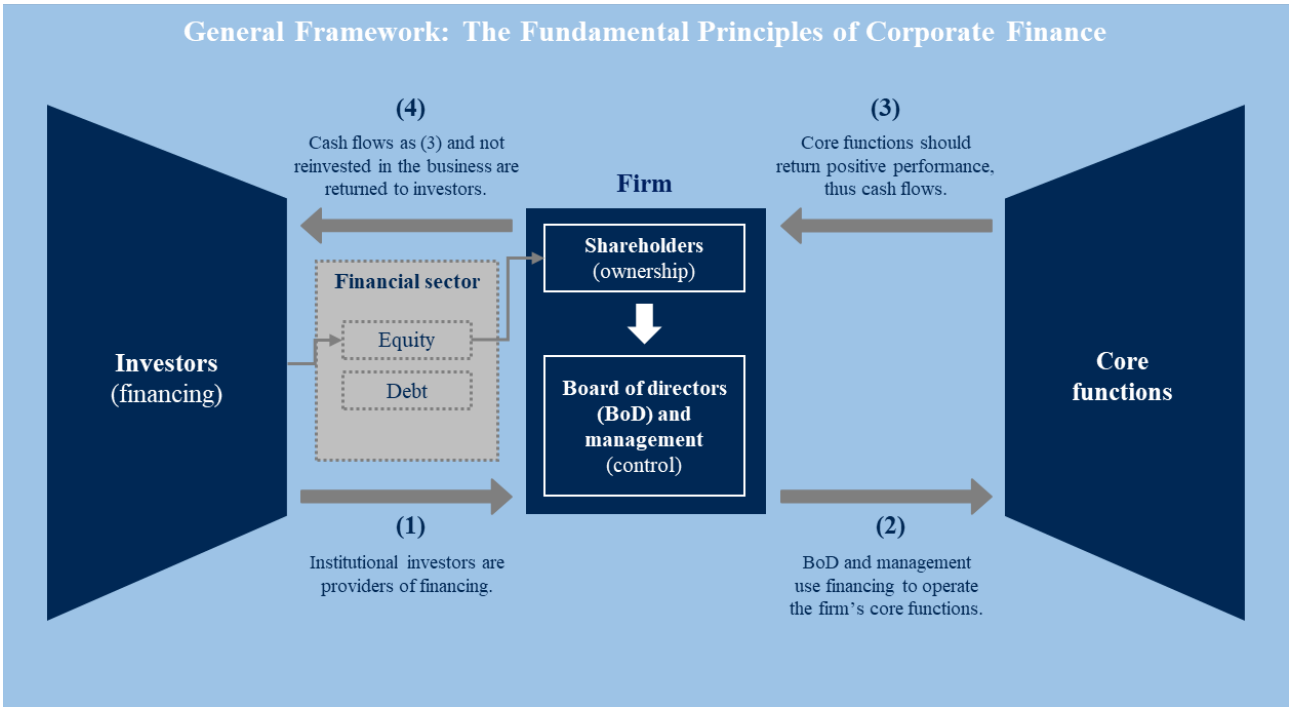
The impact of investor heterogeneity on this issue is significant, as the degree of pressure investors exert can vary markedly. Specifically, some institutional investors, such as insurance companies and banks, through their trust departments, often maintain or seek business affiliations with firms. They may be reluctant to challenge managerial decisions, thus categorising them as pressure-sensitive. Conversely, investment firms and independent investment advisors, lacking direct business ties with the firms they invest in, are typically viewed as pressure-insensitive. These investors are more likely to enforce stringent oversight and discipline on corporate management, inclining them toward short-termism (Batra et al., 2023; Cornett et al., 2007; Sakaki & Jory, 2019). This distinction is pivotal in understanding the diverse impacts of institutional investors on innovation and corporate governance.

1. The Perimeter of the Dissertation: The General Framework

The overarching framework for this discussion is anchored in the fundamental principles of Corporate Finance, explicitly examining the crucial relationship between a firm and its investors. Initially, a firm determines its financing strategy (financing decision) by raising capital by selling financial assets to investors (1). Subsequently, this capital is deployed into the firm's operations to acquire tangible assets (investment decisions) (2). When these decisions are aimed at value creation (Dallocchio & Salvi, 2021), the firm is

anticipated to achieve positive performance and generate positive cash flows from its core activities (3). These cash flows can then be reinvested in the business or distributed to the investors (4).

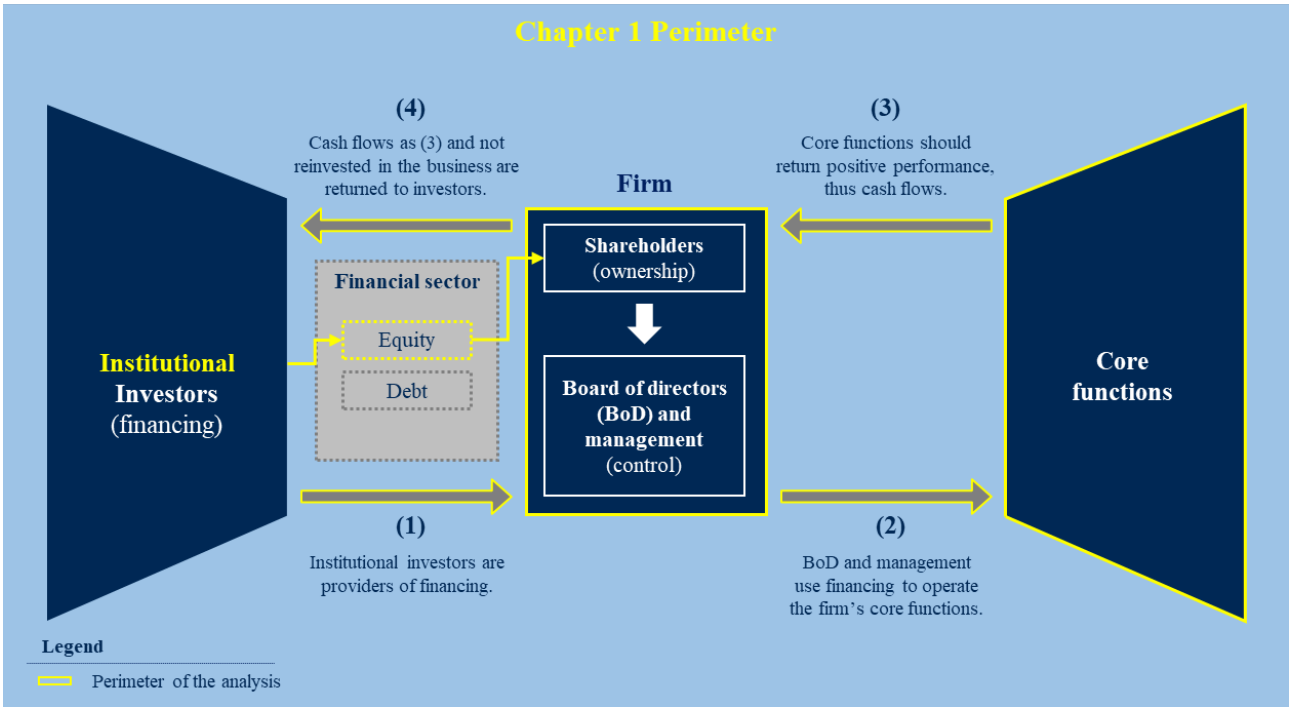
Figure 2 The Fundamental Principles of Corporate Finance



From this overarching framework, three main chapters of this dissertation are developed. Specifically, Chapter 1 narrows the scope of the general context illustrated in Figure 2 by focusing on a specific group of investors: institutional investors. As the introduction mentions, their significance has changed over the past two decades. Equity capital markets have influenced institutional investors' holdings, which, in turn, can affect firm performance through their monitoring activities and pressure. Accordingly, the primary theoretical connections between the equity capital markets, institutional investors' holdings, and their consequent impacts on firm performance are at the core of Chapter 1's study, titled "*The Role of Equity Capital Markets in Institutional*

Investors' Holdings and Performance Impact: A Bibliometric Review." The linkage with the broader theoretical framework is highlighted in *Figure 3*.

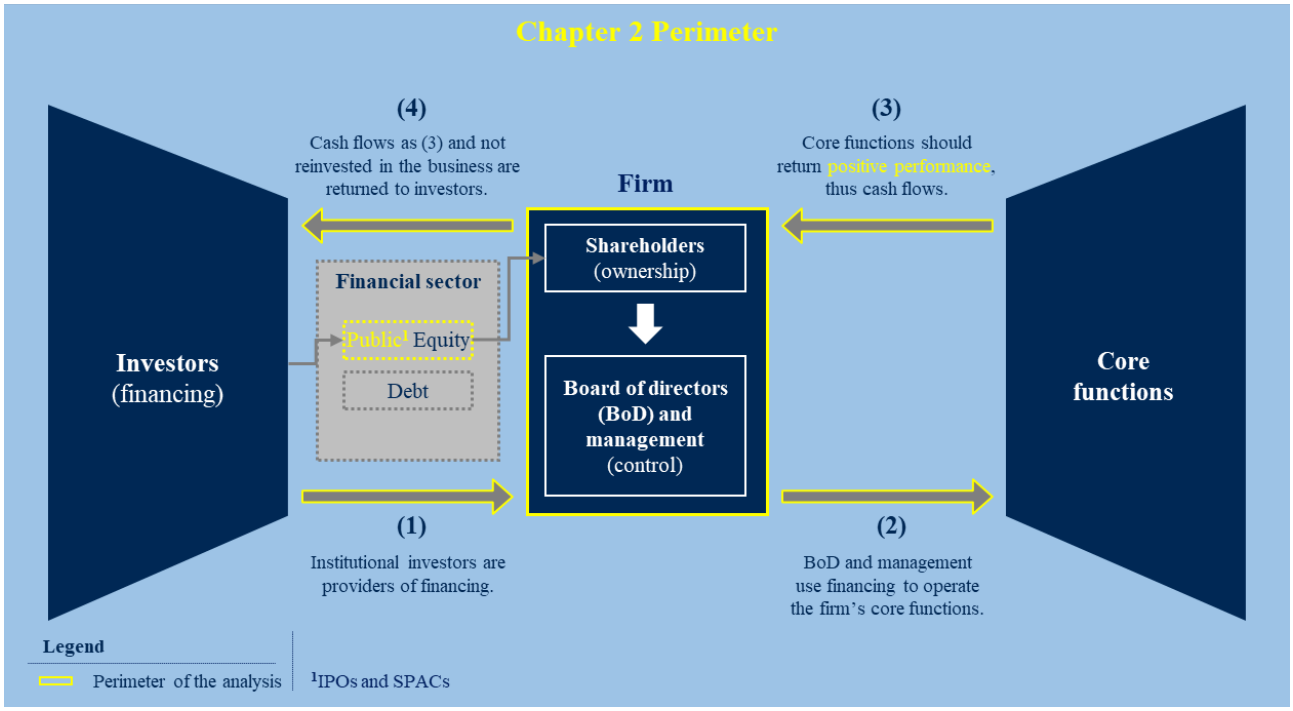
Figure 3 The Perimeter of Chapter 1



The study conducted in Chapter 1 establishes the theoretical linkage with Chapter 2. The Chapter 2 paper titled "*Are SPACs a Good Investment Deal for Investors? A Performance Comparison between SPACs and IPOs*," investigates which approach may be more advantageous from the investor's perspective, based on the impact on the financial and operating performance of two mechanisms that allow companies to enter the public equity market: Initial Public Offerings (IPOs) and Special Purpose Acquisition Companies (SPACs). Thus, the second

chapter focuses on a specific moment in a firm's life: its entry into the public market. The contextual perimeter of the second chapter is summarized in Figure 4.

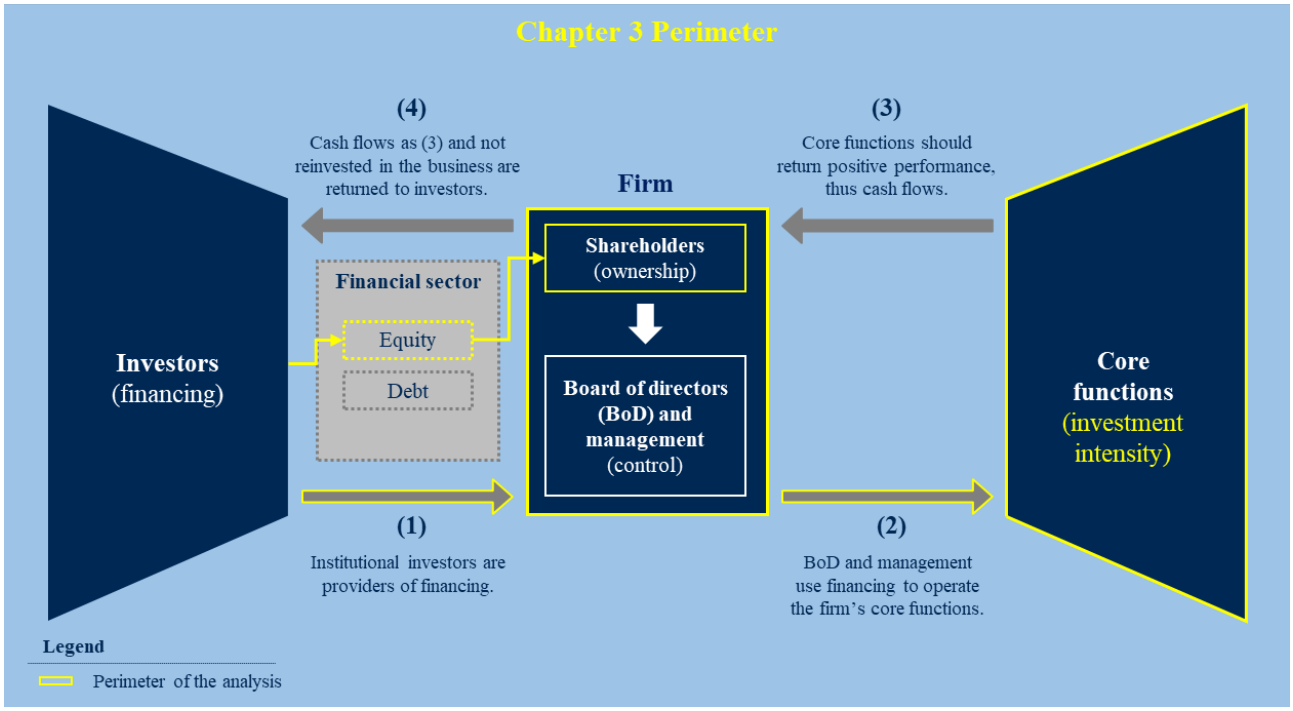
Figure 4 The Perimeter of Chapter 2



Finally, Chapter 3, titled " *The Impact of Pressure-Insensitive Institutional Ownership on Corporate Investment Intensity: An Empirical Investigation*," focuses on the connection between institutional investors and one of a company's core functions: investment decisions. As institutional investors exert pressure on the company's governance bodies (such as the Board of Directors), the question arises whether the investment horizon of these institutional investors might conflict with core activities, which are fundamental to the value

creation process of companies but sometimes require a longer-term perspective. The boundaries of the third chapter are summarized in Figure 5.

Figure 5 The Perimeter of Chapter 3



In concluding remarks, it is essential to highlight that the fundamental theoretical connection between these three studies is the lens of Agency Theory. Agency theory is frequently cited in studies on institutional investors (Jensen & Meckling, 1976). This theory addresses information asymmetries and conflicts of interest between management and shareholders due to the separation of ownership and control, which can lead to potential moral hazards and self-serving actions. Agency conflicts can be mitigated through robust internal and external monitoring mechanisms by the board of directors and shareholders (Shleifer & Vishny, 1997).

2. Understanding the emerging trends in institutional investor research: the contextual role of Chapter 1 study.

The rise in institutional ownership is closely linked to a firm's equity issuance activities and processes, including IPOs or Seasoned Equity Offerings (SEOs). Previous research demonstrated how IPOs are crucial in augmenting institutional holdings (Michel et al., 2020). Michel et al. (2020) have demonstrated that institutional holdings typically increase from 24% pre-IPO to approximately 42% by the end of the second year Post-IPO. Similarly, institutional investors often increase their stakes in companies undergoing SEOs, especially those firms with favourable long-term stock returns (Chemmanur et al., 2009).

The transition in ownership structure guaranteed by equity issuance procedures is frequently linked to improvements in the firm's operating performance during its early years as a public company (Michel et al., 2020). For example, firms with more concentrated institutional ownership often demonstrate superior

performance and governance standards post-IPO, stressing the positive influence of institutional investors (Chung & Zhang, 2011a).

Accordingly, in light of the recent changes in the ownership structure and the potential implications institutional owners may have on firm governance and performance inspired the investigations of the first paper, the first chapter of the dissertation. The aim of the bibliometric analysis conducted in the study "*The Role of Equity Capital Markets in Institutional Investors' Holdings and Performance Impact: A Bibliometric Review*" is to address two pivotal research questions:

1. *What are the theoretical connection points among equity capital markets, institutional investors holding and firm performance over the past 15 years in high-impact factor journals?*
2. *How has theoretical research on the role of institutional investors in equity capital markets and firm performance evolved in high-impact factor journals?*

The analysis developed in the first study employs bibliometric techniques to explore the development and current state of research in this field. The bibliometric analysis encompasses 1,049 studies published between 2008 and the end of April 2024.

As mentioned, the first study's findings represented a primary benchmark for the subsequent papers developed in Chapters 2 and 3 of this PhD Dissertation.

Within the widespread interest in Corporate Social Responsibility (CSR) and Environmental, Social, and Governance (ESG) topics that emerge from the bibliometric analysis, the study found interesting research niche insights that would be subject to further discussion in the Chapter 2 and Chapter 3 of the current paper collection. Firstly, there is a growing interest in novel mechanisms of entrepreneurial finance. Funding ventures based on innovative technologies is becoming a primary focus, attracting significant attention from both theoretical and practical perspectives (Block et al., 2018; Fisch & Momtaz, 2020). While traditional equity capital markets have been extensively studied (Gomber et al., 2017), innovative financing approaches are now garnering increased interest (Bertoni et al., 2022).

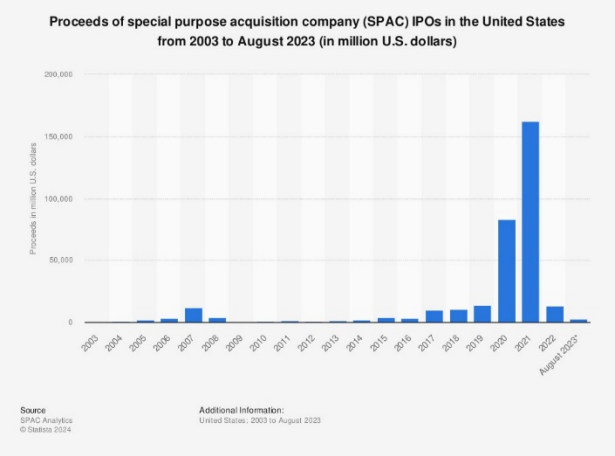
Secondly, an emerging focus is on keywords that are fundamental growth drivers for companies, such as "Innovation." This keyword transcends its status as a mere buzzword, representing a practical and crucial aspect for companies. Innovation is essential for companies to survive, stay competitive, expand, and enter new markets, ultimately generating wealth for investors.

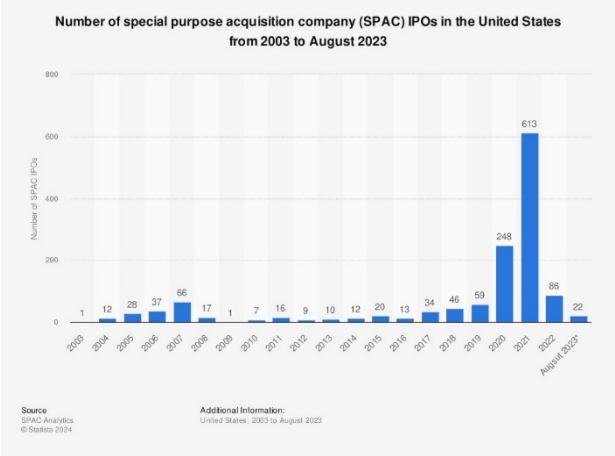
3. The role of SPACs and the impact on investment performance: transitioning to Chapter 2 study.

Building upon the insights derived from bibliometric analysis, we have identified a significant research opportunity within entrepreneurial finance, explicitly focusing on SPACs. SPACs have rapidly evolved from a niche market to a significant phenomenon in public equity markets, as shown in Figure 6. These entities are

"blank check companies" created solely to raise capital through public stock offerings to acquire one or more unspecified businesses (Fadil & St-Pierre, 2021).

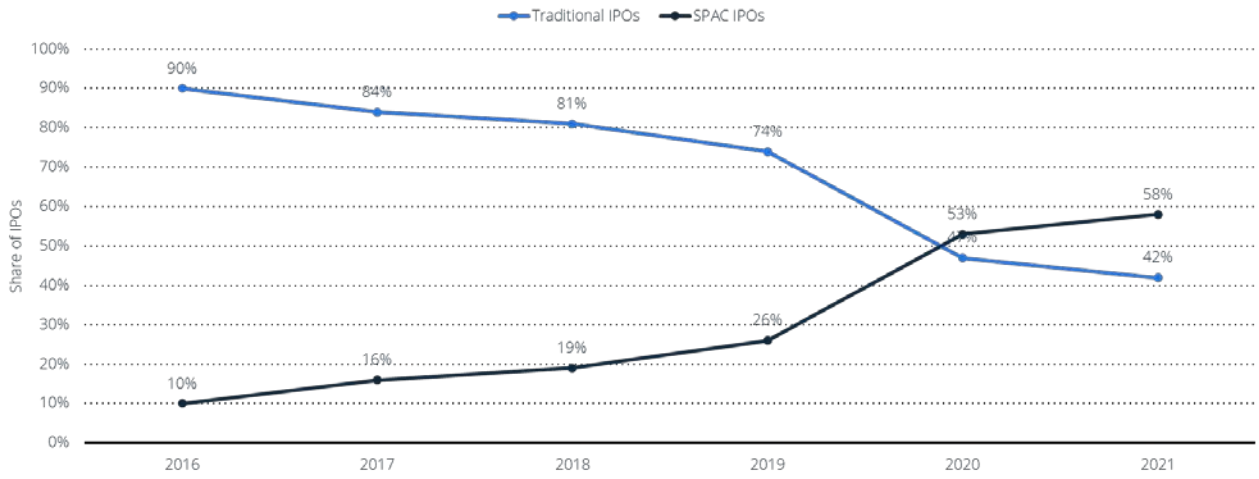
Figure 6 Proceeds (left graph) and number of SPACs (right graph) in the U.S. from 2003 to August 2023 (Source: Statista[1])





In 2021, most initial public offerings (IPOs) in the United States were SPAC IPOs, representing a significant shift from previous years. Traditional IPOs accounted for only 42% of the total IPOs in 2021, down from 74% in 2019, as depicted in Figure 7.

Figure 7 Distribution of traditional IPOs and SPAC IPOs in the United States from 2016 to 2021 (Source: Statista[2])



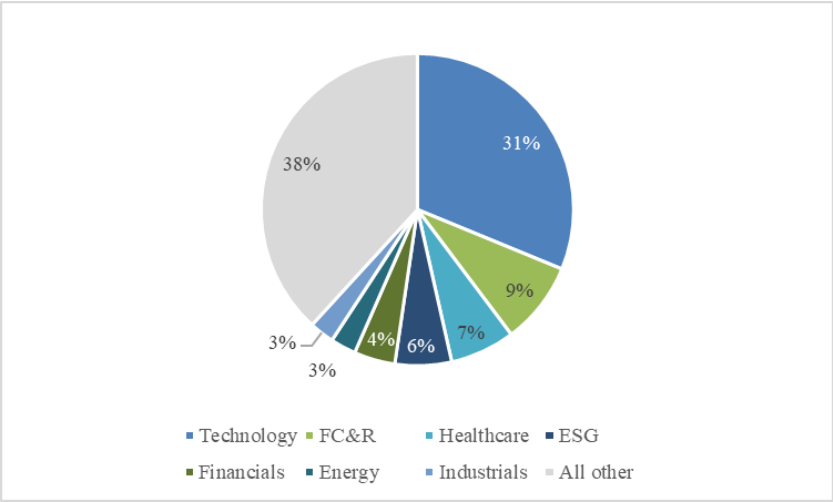
SPACs offer a faster route to capital markets by reducing legal requirements and protecting companies from market uncertainties during fundraising. This feature is particularly beneficial for firms with less established

[1] SPAC Analytics. (August 21, 2023). Proceeds of special purpose acquisition company (SPAC) IPOs in the United States from 2003 to August 2023 (in million U.S. dollars). In Statista. Retrieved June 13, 2024, from https://www.statista.com/statistics/1178273/size-spac-ipo-usa/ and SPAC Analytics. (August 21, 2023). Number of special purpose acquisition company (SPAC) IPOs in the United States from 2003 to August 2023. In Statista. Retrieved June 13, 2024, from https://www.statista.com/statistics/1178249/spac-ipo-usa/

[2] EY. (December 15, 2021). Distribution of traditional IPOs and special purpose acquisition company (SPAC) IPOs in the United States from 2016 to 2021. In Statista. Retrieved June 13, 2024, from https://www.statista.com/statistics/1234111/number-traditional-spac-ipo-usa/

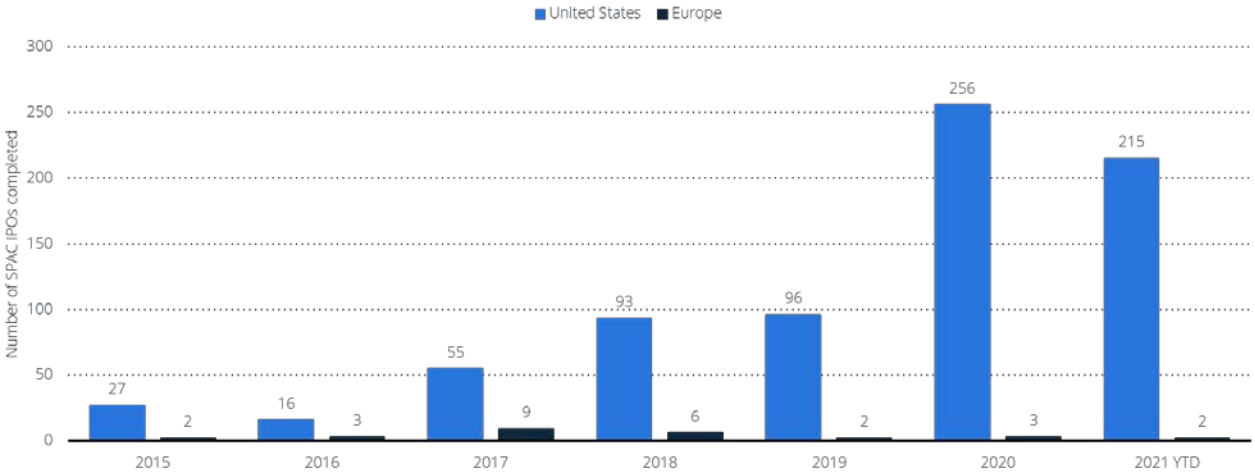
financial metrics. Speed and flexibility are crucial in the fast-paced digital economy; SPACs provide an alternative pathway to public markets that better suit certain companies and investors. Notably, in 2020, SPACs predominantly targeted technology sector companies, representing over 30% of the total funds raised through SPACs in the U.S., as illustrated in Figure 8.

Figure 8 Amount of funds raised by SPACs seeking acquisitions in the United States in 2020, by sector (in million U.S. dollars) (Source: Author's elaboration on Statista[3] data)



Despite their growing popularity, the U.S. remains one of the largest markets for SPACs, as shown in Figure 9.

Figure 9 Number of SPAC IPOs completed in the United States and Europe between 2015 and 2021 (Source: Statista[4])



[3] Mayer Brown. (December 1, 2020). Number of special purpose acquisition companies (SPACs) seeking acquisitions in the United States in 2020, by sector. In Statista. Retrieved June 13, 2024, from https://www.statista.com/statistics/1232122/number-spacs-usa-by-sector/

[4] Fortune. (March 4, 2021). Number of special purpose acquisition company (SPAC) IPOs completed in the United States and Europe between 2015 and 2021. In Statista. Retrieved June 13, 2024, from https://www.statista.com/statistics/1222250/number-spac-ipo-usa-europe/

However, SPACs have historically delivered disappointing long-term returns for investors post-merger (Dimitrova, 2017; Kolb & Tykvová, 2016) and have high failure rates (Blomkvist & Vulanovic, 2020; Vulanovic, 2017).

Given the evolving landscape of SPACs and their potential impact on the investment market, the second research paper, " *Are SPACs a good investment deal for investors? A performance comparison between SPACs vs. IPOs,*" investigates whether SPACs offer investors a superior investment option compared to traditional IPOs, considering firm-specific and deal-specific characteristics and external market uncertainties.

4. The impact of institutional investors holdings on a firm's investment intensity activity: closing Chapter 3 study.

The bibliometric analysis presented in the first chapter of this PhD dissertation highlights the growing importance of "*Innovation*" within the theoretical framework of institutional investor research. The existing literature extensively examines the relationship between institutional ownership and corporate innovation, generally recognising a positive correlation (Aghion et al., 2013; Sakaki & Jory, 2019). However, the generalizability of these findings remains debated (DesJardine & Durand, 2020) as sometimes investors may focus more on short-term shareholder returns, potentially at the expense of long-term, capital-intensive projects (Brav et al., 2014). Moreover, most prior research has focused on the U.S. context (Aghion et al., 2013; DesJardine & Durand, 2020; Sakaki & Jory, 2019), highlighting the need for more European research.

Given the significant influence institutional investors exert on innovation and firms' investment decision processes, as well as the increasing prominence of "Innovation" as a critical research keyword, the third paper titled " *The Impact of Pressure-Insensitive Institutional Ownership on Corporate Investment Intensity: An Empirical Investigation,*" aims to clarify the relationship between institutional investors and the investment intensity of companies, namely organic capital expenditure (capex), inorganic capex, and R&D. It also provides practical insights for companies and investors. Since previous research has primarily focused on the U.S., the study in Chapter 3 focuses on Europe, analysing a sample of 228 European entities from the Euro Stoxx Index.

Two additional contextual factors drive the decision to concentrate on European entities. First, the institutional ownership landscape in Europe differs from that in the U.S. While institutional ownership in the U.S. has surpassed 60% of market capitalisation (Bas et al., 2023), in Europe, this ownership type is significant but not a consolidated majority, as it ranges between 20% and 30% of market capitalisation in large European economies such as France, Germany, Italy, and Spain (Bas et al., 2023); accordingly, their influence degree can vary significantly.

Second, the European Commission has recently emphasised the critical importance of industrial innovation in promoting competitive sustainability across the European Union (E.U.). This focus is pivotal in Europe's comprehensive recovery strategy, which includes the dual objectives of green and digital transitions, aligning

with the global sustainability agenda. Given the substantial growth in institutional investor holdings within firms, these investors are well-positioned to drive European companies toward more innovative practices.

Despite the growing prominence of institutional investors, Europe's role in the global innovation landscape is often perceived as sluggish compared to that of the U.S. and China. As an ageing economic region, Europe significantly trails the United States regarding capital expenditure and R&D spending. Between 2014 and 2019, large European companies were 20% less profitable, grew revenues 40% more slowly, invested 8% less in capital expenditures relative to their stock of invested capital, and spent 40% less on R&D than U.S. companies (Smith et al., 2022).

Given the premises, the current PhD thesis is structured as follows: Chapter 1 conducts a bibliometric analysis to delineate the theoretical boundaries of the research. Chapter 2 examines the viability of SPACs as investment opportunities for investors. Chapter 3 investigates the impact of institutional ownership on a firm’s investment intensity. The thesis concludes with a synthesis of findings and final remarks.

Chapter 1: The Role of Equity Capital Markets in Institutional Investors' Holdings and Performance Impact: A Bibliometric Review

1. Introduction

The role of institutional investors in the global financial landscape has undergone a profound transformation over the past two decades. The top 50 institutional investors managed assets worth USD 24 trillion by 2019, a 100% increase from 2007 (Bas et al., 2023). This surge in assets under management has significantly reshaped the equity market. Between 2007 and 2019, these top 50 investors witnessed their equity holdings rise by approximately 70%. Furthermore, by the end of 2019, institutional investors holdings accounted for about 43% of global market capitalisation, underscoring their growing influence (Bas et al., 2023).

The rise in institutional ownership is closely linked to equity issuance, including IPOs, SEOs or other equity issuance techniques such as SPACs. For example, research on IPOs suggests that institutional holdings typically increase from 24% pre-IPO to around 42% by the end of the second year (Michel et al., 2020). Similarly, institutional investors also increase their stakes during SEOs (Chemmanur et al., 2009). This shift in ownership structure is often associated with improvements in the firm's governance and operating performance (Chung & Zhang, 2011b; Michel et al., 2020). Indeed, the impact of institutional investors spans various corporate domains, from enhancing stock market efficiency to mitigating agency conflicts (Boehmer & Kelley, 2009; Carleton et al., 1998; Gillan & Starks, 2000; Hartzell & Starks, 2003) by employing diverse mechanisms to achieve these objectives, such as securities litigation and campaigns advocating for responsible voting (Guercio et al., 2008).

Given institutional investors' burgeoning significance, a comprehensive research survey on this topic is of utmost importance for scholars and practitioners. The current analysis aims to delve into the evolution of academic research on institutional investor ownership over the past 15 years, from 2008 to April 2024, focusing on its fundamental links with equity capital markets and the consequential impacts on a firm's performance.

As evidenced by Ding et al. (2022), there has been a dramatic surge in the number of articles published on institutional investors in the aftermath of the global financial crisis. The published papers maintained steady levels from 1990 to 2007, but after 2008, institutional investor research experienced rapid development. This exponential growth in the research on institutional investors underscores the increasing interest of academics in the field. Therefore, the research objective is to explore the theoretical connection points on the role of institutional investors in equity capital markets, the firm's performance over the past 15 years, and their temporal evolution, providing a comprehensive understanding of this evolving field and identifying potential future research streams.

This analysis leverages bibliometric techniques to address the research objective and to provide insights into the field's development and current state. The bibliometric analysis is applied to a sample of 1049 studies published in the analysed period. Over the past decades, numerous bibliometric studies have emerged, focusing

on the governance role of institutional investors (Aren et al., 2016; Chang & Ho, 2018; Costa et al., 2017; Ding et al., 2022; Garel, 2017; Johnson et al., 2010; Xu et al., 2018; Zhang et al., 2019). Despite the increasing research volume in this area, current retrospective reviews remain insufficient due to the wide-ranging nature of institutional investor research, which includes studies on shareholder engagement and voting patterns, among others, that traditional document review methods fail to integrate comprehensively (Ding et al., 2022).

Previous research, particularly those with a broad scope of analysis (Ding et al., 2022), presents limitations in terms of focus. The present study aims to address these limitations by refining the research topic to analyse precisely the relationship between institutional investor ownership, equity issuance, and firm performance. Moreover, this study only considers top-tier journals with the highest impact factors to identify a more precise research frontier and provide more explicit directions for future inquiries (Ding et al., 2022).

This study offers several key contributions. Firstly, it summarizes and visualizes the extant literature on institutional investors, focusing on the most recent period from 2008 onward. It integrates prior research with the latest academic studies to capture significant new research5.

Secondly, unlike previous studies (Ding et al., 2022), this research focuses on the connections between institutional investors, equity capital markets, and performance, thereby identifying specific research streams within the broader institutional investor domain. Furthermore, it enhances the existing literature by conducting a deep-dive analysis of its evolution, mainly through two significant turning points: the aftermath of the global financial crisis and the outbreak of the COVID-19 pandemic.

Therefore, our objective is to conduct a comprehensive bibliometric analysis, using advance bibliometric software, to map the knowledge landscape of this research stream, identifying emerging research topics to develop a thorough guide for academia and practitioners in this field.

2. Theoretical framework

Institutional investors play a pivotal role in the equity issuance process, adjusting their ownership stakes in firms following significant financial events such as SEOs or IPOs. Extensive research has demonstrated that institutional ownership typically increases following these events due to the enhanced market confidence and liquidity that these investors bring (R. K. Aggarwal et al., 2002; Chemmanur et al., 2009; Michel et al., 2020).

Management and economic theories can analyse the relationship between equity capital markets, institutional investor holdings, and performance. Direct corporate governance impacts often mediate this relationship. Each theory provides different incentives for institutional investors, responsibilities in corporate governance, and behavioural outcomes in the shareholder-manager relationship (Klettner, 2021).

Agency theory is commonly cited in studies on institutional investors (Jensen & Meckling, 1976). This theory addresses information asymmetries and conflicts of interest between management and shareholders due to the separation of ownership and control, leading to potential moral hazards and self-serving actions. Agency

[5] Ding et al. (2022) captured studies up to 2020. In 2021, 2022 and 2023, additional 400 articles were published in top-ranked journals.

conflicts can be mitigated through robust internal and external monitoring mechanisms by the board of directors and shareholders (Shleifer & Vishny, 1997).

An effective corporate governance should align a firm performance with shareholders' interests. In this context, the positive correlation between institutional investment and enhanced corporate performance is rooted in investors' significant equity stakes, which confer considerable voting power, enabling them to influence corporate decisions and to engage in rigorous monitoring and governance activities (Jensen, 1996). Firms with more concentrated institutional ownership often display superior performance and governance standards (Gaspar et al., 2013), thus leading to an increase in the institutional investors ownership (Chung & Zhang, 2011b). The magnitude of institutional investors' holdings is pivotal; Shleifer and Vishny (1986) illustrate that the propensity of shareholders to intervene in corporate governance increases with the size of their holdings, thereby enhancing value creation through such interventions (Shleifer & Vishny, 1986).

In the context of agency theory, institutional investors enhance stock market efficiency, mitigate agency conflicts, and impact various facets of decision-making processes (Boehmer & Kelley, 2009; Carleton et al., 1998; Gillan & Starks, 2000; Hartzell & Starks, 2003), guiding managerial decisions toward shareholder wealth maximization (Cornett et al., 2007). They reduce information asymmetry in capital markets (Shiri et al., 2016) and enhance financial flexibility and performance (Salameh et al., 2023; Salehi et al., 2016) and management oversight (R. Aggarwal et al., 2015; Cornett et al., 2007), also reducing managerial risk-taking behaviours (Cheng et al., 2015). However, some researchers report a negative impact of institutional investors on firm valuation due to the increased cost of equity (Faysal et al., 2020). In contrast, Cornett et al. (2007) identify a positive relationship between Tobin's Q and institutional holdings, indicating that institutional investors contribute to improved operating performance. These results suggest that institutional investors' monitoring activities have positive and negative financial performance implications.

The approaches institutional investors may use to influence a corporation are a centrepiece of new theoretical streams, such as agency capitalism theory, and they are typically classified as exit and voice options. The exit option involves selling shares if institutional investors are dissatisfied with company performance, a strategy often favoured due to the high costs of closely monitoring a vast portfolio (A. Keay, 2014). This approach, described as a trading mentality, contrasts with the owner mentality (Klettner, 2021), where investors actively engage with company management (Hendry et al., 2006; McNulty & Nordberg, 2016). According to previous studies, developing hedge funds, index funds, and derivatives markets has further distanced investors from the underlying equities, fostering a trading mentality (Davis, 2008; Gilson & Gordon, 2013), thus connecting with the agency capitalism theory.

Agency capitalism theory highlights new agency relationships along the investment chain, such as between institutional investors and fund beneficiaries, which may pose more significant governance challenges than traditional manager-shareholder relationships (Gilson & Gordon, 2013). These relationships can reduce the incentives of investment intermediaries to engage with companies, leading to a preference for exit over voice (Barker & Chiu, 2017).

Conversely, universal ownership theory posits that investors holding large and well-diversified portfolios cannot avoid market impacts by leveraging an exit strategy and thus have a vested interest in broad market stability and performance (Hawley, 2002; Hawley & Williams, 2000). This theory predicts that large institutional investors will find it more efficient to engage in universal monitoring rather than exit. The popularity of index investing (Bas et al., 2023) supports this theory, as it prevents investors from using the exit strategy and encourages collective action to enhance their influence (L. A. Bebchuk et al., 2017). Accordingly, the voice option, a characteristic often associated with the owner mentality (Klettner, 2021), is at the forefront of shareholder activism and monitoring (Cornett et al., 2007; Gillan & Starks, 2000); such option can be employed via various mechanisms such as securities litigation (S. Chen et al., 2010) and "just vote no" campaigns (Guercio et al., 2008) to align managerial behaviour with shareholder interests (R. Aggarwal et al., 2015; McCahery et al., 2016).

Agency theory traditionally treats shareholders as a homogeneous group interested in monitoring corporate management through the board of directors to ensure their financial interests are met (Gillan & Starks, 2000; Velte, 2023). However, this assumption conflicts with business practices and empirical results (Klettner, 2021), as principal-principal conflicts can arise between investors, such as active versus passive, long-term versus short-term, or financial versus sustainable-oriented investors.

In light of a more heterogeneous institutional investors context, research has started to identify a new theoretical foundation in stakeholder theory. Stakeholder theory, applied primarily to corporate decision-making, now has a parallel at the investor level. In recent years, socially responsible investing (SRIs) have increasingly considered corporate sustainability in their investment decisions (Velte, 2023). Some institutional investors focus on quarterly earnings and act as traders, while others incorporate also non-financial aspects, influencing the risk-return profile in the long term (Johnson & Greening, 1999; Stein, 1989). Evidence suggests that SRI funds lead to improved environmental performance and targeted corporate social responsibility (CSR) engagements (T. Chen et al., 2020; H. Kim et al., 2019; Kordsachia et al., 2022). Institutional investors globally advocate for more robust firm-level environmental and social performance (E&S), using their voice to prompt firms to enhance their E&S efforts in response to investor demands (Dyck et al., 2019). This approach supports companies' CSR efforts and suggests it is in the shareholders' long-term interests to consider broader stakeholder impacts (A. R. Keay, 2010). In this context, investors act as stewards of society, encouraging companies to balance the interests of various stakeholders.

Furthermore, in the classical principal-agent theory assumes rational and opportunistic management behaviour overall (Jensen & Meckling, 1976) without focusing on the individual characteristics of top management team members. However, behavioural agency theory extends the standard agency framework by considering the influence of cognitive characteristics and individual values on decision-making, thus placing agent performance at the centre of the agency model (Pepper & Gore, 2015), which can significantly impact firm performance.

Finally, Hambrick and Mason's (1984) upper echelons theory suggests that business actors' behaviour is influenced by demographic factors such as age and gender. This theory assumes that a CEO's influence within a top management team and the firm is intensive, affecting strategic and operational decisions that impact financial performance (Hambrick & Mason, 1984). Thus, institutional investors' monitoring activities are linked to the board of directors and the specific characteristics of the CEO, which enhances board governance quality and reduces agency conflicts.

In conclusion, institutional investors are crucial in shaping corporate governance and influencing firm performance through their significant equity stakes, monitoring activities, and engagement in shareholder activism. Such relationships are explained by using several economic theories that set the boundaries of the research on this topic, emphasising different incentives for institutional investors, responsibilities in corporate governance, and behavioural outcomes in the shareholder-manager relationship.

3. Methodology

Following the three-stage framework set out by (Öztürk et al., 2024), we first defined the aim of the research. We continued with data collection phase (stage 2), and finally, in stage 3, we proceeded with the analysis and visualization of the results.

A literature review necessitates formulating straightforward research questions at the outset of the process (Nguyen et al., 2018; Vrontis & Christofi, 2021). In developing our research questions, we focused on the relationship between equity capital markets and institutional investor holdings to understand how shifts in ownership structure, also following access to equity capital markets, impact a firm’s performance. Based on this premise, we aimed to conduct a comprehensive survey of research on institutional investors to address the following two research questions:

RQ1. *What are the theoretical connection points among equity capital markets, institutional investors holding and firm performance over the past 15 years in high-impact factor journals?*

RQ2. *How has theoretical research on the role of institutional investors in equity capital markets and firm performance evolved in high-impact factor journals?*

To answer our research questions, we followed the methodology used in prior systematic reviews to survey the role of institutional investors in equity capital markets and firm performance. We utilized the Bibliometrix software and visualisation tools (e.g. VOSviewer and Biblioshiny) for bibliometric and data analyses (Aria & Cuccurullo, 2017; Öztürk et al., 2024).

Bibliometrics is a valuable tool for illustrating the advancements in a specific research field to uncover research patterns and developmental trends by using citation-based analysis (Hoang & Antoncic, 2003) or to reveal the knowledge structure in a particular field, such as sustainable development (Zhu & Hua, 2017) or in the broader institutional investor domain (Ding et al., 2022) by using keyword networks analysis .

3.1 Inclusion criteria and search strategy

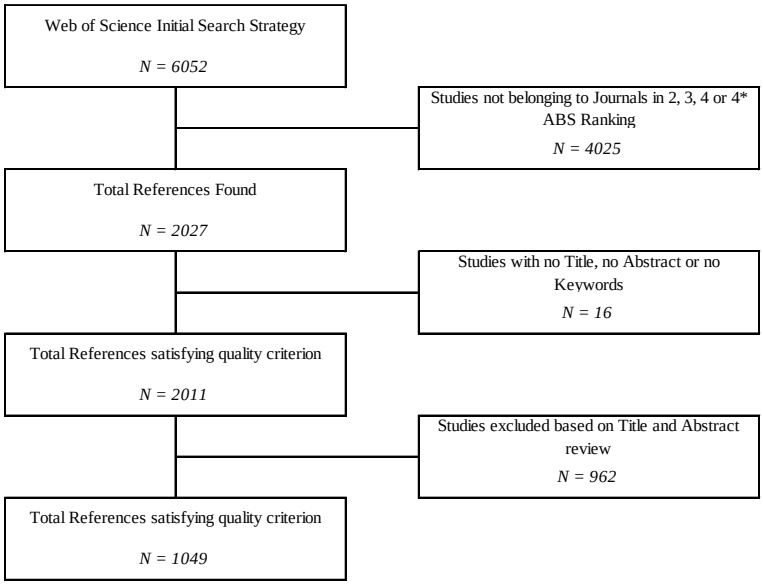
The international research data on institutional investors were primarily acquired from the Web of Science (WoS) database. The WoS database is a globally influential journal citation index, widely utilized in bibliometric analyses (Xu et al., 2018; Zhu & Hua, 2017). Following Ding et al. (2022), we constructed the research dataset for bibliometric analysis using the following procedure. First, we searched the "Web of Science Core Collection" using the "Advanced Search" tab. We employed specific search keywords in the Abstract, Title, or Author's Keywords fields, as these typically contain the search terms (Vrontis & Christofi, 2021): "*Institutional investor**", "*Institutional shareholder**", or "*Institutional**" (Ding et al., 2022), to encompass most of the studies within the research scope. While the inclusion of the keyword "Institutional" may have broadened the scope to include studies referring to the higher institutional contexts, this issue is addressed in section 3.3, when we conducted a deeper evaluation of the resulting studies.

In line with previous studies (Carbone et al., 2022), we further refined the search by including the following keywords in the Abstract, Title, or Author's Keywords: "*Equity Issuance**", "*Equity Offering**", "*IPO**", "*Initial Public Offering**", "*SPAC**", "*Special Purpose Acquisition Company**", "*Going public*", "*Specified Purpose Acquisition Company**", "*Blank Check**", and "*Performance**". These keywords were integrated to cover IPOs and other equity instruments and investments, such as SPACs and SEOs, to effectively narrow our search to studies directly relevant to the dynamics of equity capital markets. This targeted approach ensures that our research remains focused on the intended topics while leveraging existing studies, such as Carbone et al. (2022), to build a robust foundation for analysis.

We included only "Article" in the "Document Types" section to align with previous academic researches (Dada, 2018; Nguyen et al., 2018). The search focused on peer-reviewed academic journal publications with full texts, excluding non-academic articles such as book chapters, editorials, conference papers, extended abstracts, and book reviews. We also included only articles with "English" specified in the "Languages" category (Follmer & Jones, 2018) and with "Management", "Economics", "Business", or "Business Finance" in the "Web of Science Categories". Lastly, we considered articles published from January 1st, 2008, to April 30th, 2024, to align with the research questions' scope and focus on the research evolution post financial crisis. The decision to start the analysis in 2008 is supported by the evidence presented by Ding et al. (2022). Their study indicates that while the volume of published papers remained consistent from 1990 to 2007, there was a marked acceleration in research on institutional investors post-2008. This shift underscores the relevance of beginning the analysis in 2008 to capture this pivotal turning point in the field.

From this preliminary search, we obtained 6,052 records. To capture relevant literature, we applied exclusion criteria, detailed in the following search strategy (*Figure 10*), resulting in a final dataset comprising 1,049 studies.

Figure 10 Literature Search Strategy.



3.2 Exclusion criteria

The initial sample of 6,052 articles was refined by focusing exclusively on studies published in journals ranked 2, 3, 4, or 4* according to the ABS 2021 journal list (Vrontis & Christofi, 2021). This approach aligns with the widely accepted methodology of incorporating only top-tier academic journals to accurately identify research trends in literature reviews (Atewologun et al., 2017). Furthermore, we excluded all studies lacking a Title, Abstract, or Keywords, as these elements are essential for keyword analysis. This stringent selection process resulted in a final sample of 2,011 articles, which were evaluated within this review's defined scope.

3.3 Selecting relevant studies

Following the methodology outlined by Vrontis and Christofi (2021), we reviewed the sample of 2,011 articles by assessing their titles and abstracts and, in some instances, the introduction sections. Given the expansive nature of our bibliometric analysis, we excluded articles that discussed the concept of institutional factors in contexts unrelated to investors, such as macroeconomic, governmental, or political environments. For example, studies on labour productivity or innovation within a specific geography were excluded. Our inclusion criteria focused solely on studies that enhance understanding of the role of institutional investors in equity capital markets and their impact on firms' performance and decision-making processes. This rigorous selection process ultimately yielded 1,049 articles for further analysis.

4. Bibliometric performance

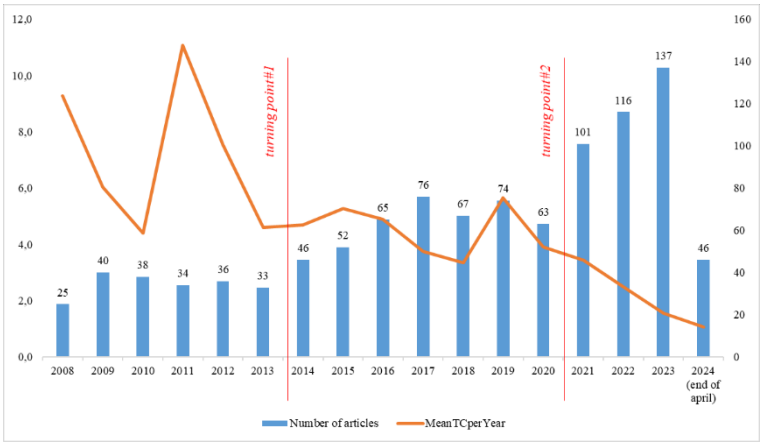
Since the onset of the global financial crisis, an average of 62 articles have been published per year. Notably, in 2023, the number of annual publications was 5.48 times higher than in 2008, with 137 articles published in 2023 compared to 25 in 2008. However, this increase in quantity has been accompanied by a consistent decline in the average number of citations per manuscript per year (*MeanTCperYear*). In 2023, the average number of citations per manuscript was 0.17 times that observed in 2008.Figure *11* illustrates two turning points: the first

occurring in 2013, coinciding with the end of the global financial crisis following the Lehman Brothers bankruptcy, and the second aligning with the outbreak of COVID-19. These turning points warrant further investigation to address Research Question 2 (RQ2).

Analysing the citation trends, it is evident that articles published between 2008 and 2011 have garnered more recognition from the scientific community, indicating the high practical relevance of these early works. Despite the reduced citation flow since 2013, significant contributions continue to emerge. For instance, Dyck et al. (2019) produced an influential article with 694 citations to date. Moreover, of the top 10 most cited papers, seven were published between 2008 and 2013. This trend suggests that while the number of publications on this subject is increasing over time, the impact of individual papers has diminished since 2013. Nonetheless, the growing interest in this field is evident in the number of publications.

Figure 11 Annual number of papers published by year (right axes) and mean total citations per year (left axes).

The figure shows the annual number of papers published by year (Number of articles) and the average total citations per year (MeanTCperYear). It also shows two turning points highlighted by the most significant increase in articles per year post financial crisis: +39% between 2013 and 2014 and +60% between 2020 and 2021.



4.1 Influential papers

Numerous scholarly articles explore these concepts, making it essential to identify the most pertinent ones to advance research. Monitoring highly cited papers in institutional investment helps pinpoint foundational knowledge and identify emerging research trends (Ding et al., 2022). To address part of RQ1, Table 1 presents the ten most cited articles from the Web of Science Core Collection, as well as the top 10 most cited articles from each turning point: 2008-2013 (period 1), 2014-2020 (period 2), and 2021 to the end of April 2024 (period 3).

One of the most influential articles in the first period is "*Voluntary Nonfinancial Disclosure and the Cost of Equity Capital: The Initiation of Corporate Social Responsibility Reporting*" (Dhaliwal et al., 2011), with a staggering 1,827 citations. This article is a cornerstone in our understanding of the benefits of voluntary CSR disclosures, particularly the potential for firms to reduce their cost of equity capital. In the second period, the article "*Do institutional investors drive corporate social responsibility? International evidence*" (Dyck et al., 2019) stands out with the highest total and per-year citations. This study that demonstrates institutional

investors drive stronger firm-level E&S performance globally, suggesting that firms enhance their E&S performance in response to investor demands.

In the third period, the paper "*Institutional shareholders and corporate social responsibility*" (T. Chen et al., 2020) leads by total citations and citations per year. This research examines the influence of institutional holdings on corporate managers' investment decisions regarding socially responsible practices. In particular, they found that higher institutional ownership correlates with better CSR ratings, particularly in financially material CSR issues that affect firm values.

The three studies we have discussed represent a shift in our understanding of CSR's role. Initially, CSR was seen as a financial management tool (Dhaliwal et al., 2011), but its importance has since expanded to include firm performance (Dyck et al., 2019) and broader social norms (T. Chen et al., 2020). Notably, there is a consistent emphasis on CSR-oriented studies across all periods. Approximately 70% of the top 10 studies focus on CSR topics: 60% in period 1, 40% in period 2, and 70% in period 3. This trend indicates a significant yet volatile research interest in CSR within the institutional investor domain, partially addressing RQ1.

Table 1 The most cited articles overall and by period

The table indicates the top 10 articles collected overall and by analysed period. TC indicates the total citation of the article, and TC/Year indicates the total citation per year. ABS (2021) indicates the ABS ranking the publishing journal obtained in 2021.

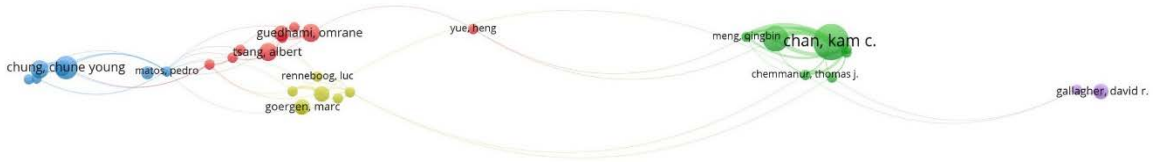
Rank	Title	Author/s	Year	TC	TC/Year	Journal
Overall						
1	Voluntary Nonfinancial Disclosure and the Cost of Equity Capital: The Initiation of Corporate Social Responsibility Reporting	Dhaliwal, DS; Li, OZ; Tsang, A; Yang, YG	2011	1827	131	Accounting Review
2	Do institutional investors drive corporate social responsibility? International evidence	Dyck, A; Lins, KV; Roth, L; Wagner, HF	2019	694	116	Journal of Financial Economics
3	Nonfinancial Disclosure and Analyst Forecast Accuracy: International Evidence on Corporate Social Responsibility Disclosure	Dhaliwal, DS; Radhakrishnan, S; Tsang, A; Yang, YG	2012	931	72	Accounting Review
4	Corporate social responsibility and stock price crash risk	Kim, Y; Li, HD; Li, SQ	2014	714	65	Journal of Banking & Finance
5	The Drivers of Greenwashing	Delmas, MA; Burbano, VC	2011	899	64	California Management Review
6	The colors of investors' money: The role of institutional investors around the world	Ferreira, MA; Matos, P	2008	930	55	Journal of Financial Economics
7	Inside the Black Box of Sell-Side Financial Analysts	Brown, LD; Call, AC; Clement, MB; Sharp, NY	2015	499	50	Journal of Accounting Research
8	Socially responsible investments: Institutional aspects, performance, and investor behavior	Renneboog, L; Ter Horst, J; Zhang, CD	2008	788	46	Journal of Banking & Finance
9	Corporate Governance and CSR Nexus	Harjoto, MA; Jo, H	2011	510	36	Journal of Business Ethics
10	Corporate governance in banking: The role of the board of directors	de Andres, P; Vallelado, E	2008	509	30	Journal of Banking & Finance
Period 1 2008-2013						
1	Voluntary Nonfinancial Disclosure and the Cost of Equity Capital: The Initiation of Corporate Social Responsibility Reporting	Dhaliwal, DS; Li, OZ; Tsang, A; Yang, YG	2011	1827	131	Accounting Review
2	Nonfinancial Disclosure and Analyst Forecast Accuracy: International Evidence on Corporate Social Responsibility Disclosure	Dhaliwal, DS; Radhakrishnan, S; Tsang, A; Yang, YG	2012	931	72	Accounting Review
3	The Drivers of Greenwashing	Delmas, MA; Burbano, VC	2011	899	64	California Management Review
4	The colors of investors' money: The role of institutional investors around the world	Ferreira, MA; Matos, P	2008	930	55	Journal of Financial Economics
5	Socially responsible investments: Institutional aspects, performance, and investor behavior	Renneboog, L; Ter Horst, J; Zhang, CD	2008	788	46	Journal of Banking & Finance
6	Corporate governance in the 2007-2008 financial crisis: Evidence from financial institutions worldwide	Erkens, DH; Hung, MY; Matos, P	2012	497	38	Journal of Corporate Finance
7	Corporate Governance and CSR Nexus	Harjoto, MA; Jo, H	2011	510	36	Journal of Business Ethics
8	Corporate governance in banking: The role of the board of directors	de Andres, P; Vallelado, E	2008	509	30	Journal of Banking & Finance
9	Just How Much Do Individual Investors Lose by Trading?	Barber, BM; Lee, YT; Liu, YJ; Odean, T	2009	465	29	Review of Financial Studies
10	Corporate social responsibility performance and information asymmetry	Cho, SY; Lee, C; Pfeiffer, RJ	2013	324	27	Journal of Accounting And Public Policy
Period 2 2014-2019						
1	Do institutional investors drive corporate social responsibility? International evidence	Dyck, A; Lins, KV; Roth, L; Wagner, HF	2019	694	116	Journal of Financial Economics
2	Corporate social responsibility and stock price crash risk	Kim, Y; Li, HD; Li, SQ	2014	714	65	Journal of Banking & Finance
3	Big Data and Predictive Analytics and Manufacturing Performance: Integrating Institutional Theory, Resource-Based View and Big Data Culture	Dubey, R; Gunasekaran, A; Childe, SJ; Blome, C; Papadopoulos, T	2019	383	64	British Journal of Management
4	The role of board gender and foreign ownership in the CSR performance of Chinese listed firms	McGuinness, PB; Vieito, JP; Wang, MZ	2017	470	59	Journal of Corporate Finance
5	Inside the Black Box of Sell-Side Financial Analysts	Brown, LD; Call, AC; Clement, MB; Sharp, NY	2015	499	50	Journal of Accounting Research
6	Active Ownership	Dimson, E; Karakas, O; Li, X	2015	404	40	Review of Financial Studies
7	Passive investors, not passive owners	Appel, IR; Gormley, TA; Keim, DB	2016	330	37	Journal of Financial Economics
8	A Model of Financialization of Commodities	Basak, S; Pavlova, A	2016	281	31	Journal of Finance
9	Corporate Governance and Investor's Perceptions of Foreign IPO Value: An Institutional Perspective	Bell, RG; Filatotchev, I; Aguilera, RV	2014	293	27	Academy of Management Journal
10	Board diversity and its effects on bank performance: An international analysis	García-Meca, E; García-Sánchez, IM; Martínez-Ferrero, J	2015	234	23	Journal of Banking & Finance
Period 3 2020-2024 (end of April)						
1	Institutional shareholders and corporate social responsibility	Chen, T; Dong, H; Lin, C	2020	277	55	Journal of Financial Economics
2	Green credit policy and firm performance: What we learn from China	Yao, SY; Pan, YY; Sensoy, A; Uddin, GS; Cheng, FY	2021	201	50	Energy Economics
3	Executive Compensation, Sustainable Compensation Policy, Carbon Performance and Market Value	Haque, F; Ntim, CG	2020	113	23	British Journal of Management
4	Corporate social responsibility (CSR) performance and green innovation: Evidence from China	Hao, J; He, F	2022	94	31	Finance Research Letters
5	When Is There a Sustainability Case for CSR? Pathways to Environmental and Social Performance Improvements	Halme, M; Rintamaki, J; Knudsen, JS; Lankoski, L; Kuisma, M	2020	81	16	Business & Society
6	The effect of entrepreneurial orientation on new venture performance: Contingency roles of entrepreneurial actions	Donbesuur, F; Boso, N; Hultman, M	2020	81	16	Journal of Business Research
7	Institutional investors and post-ICO performance: an empirical analysis of investor returns in initial coin offerings (ICOs)	Fisch, C; Momtaz, PP	2020	65	13	Journal of Corporate Finance
8	Varieties in state capitalism and corporate innovation: Evidence from an emerging economy	Lin, YJ; Fu, XQ; Fu, XL	2021	65	16	Journal of Corporate Finance
9	Do foreign institutional investors drive corporate social responsibility? Evidence from listed firms in China	Li, Z; Wang, P; Wu, TL	2021	59	15	Journal of Business Finance & Accounting
10	The impact of corporate governance on corporate social performance: Cases from listed firms in Taiwan	Shu, PG; Chiang, SJ	2020	47	9	Pacific-Basin Finance Journal

4.2 Leading authors

Expanding on RQ1, we investigated the centrality and influence of the leading authors in the field of institutional investors within Business, Finance, and Management (Figure 12). Albert Tsang, SUSTech Business School, emerged as the most cited author, with 2,850 citations. Pedro Matos, University of Virginia, also stands out with 1,648 citations. The network visualization reveals distinct clusters of authors, indicating collaborative groups.

Figure 12 Leading authors in the analysed field from 2008 to 2024 (end of April) by citations.

The figure shows the network visualisation of the leading authors in the analysed field between 2008 and 2024 (end of April). The analysis has been conducted using VOSviewer. The type of analysis is "Citation", while the unit of analysis is "Authors". We indicated a minimum number of documents of an author of 4 as threshold, resulting in 33 authors meeting the threshold. The figure representation includes 5 clusters, 33 nodes and 75 links.



4.3 The most productive and influential institutions

Institutions globally collaborate and study institutional investors, a significant research area spanning multiple disciplines. Table 2 presents a global representation of institutions, ranking the top 25 that have made the most contributions to these disciplines from 2008 onward. This allows for assessing whether influential institutions invest time and effort in research within the analysed area.

The Renmin University of China emerges as the leading institution, contributing 19 articles, followed by Peking University and Southwestern University of Finance and Economics, each with 17 published articles. However, regarding total citations, The Chinese University of Hong Kong stands out with approximately 3552 citations and an average of 273.2 citations per paper.

Table 2 The most productive and influential institutions.

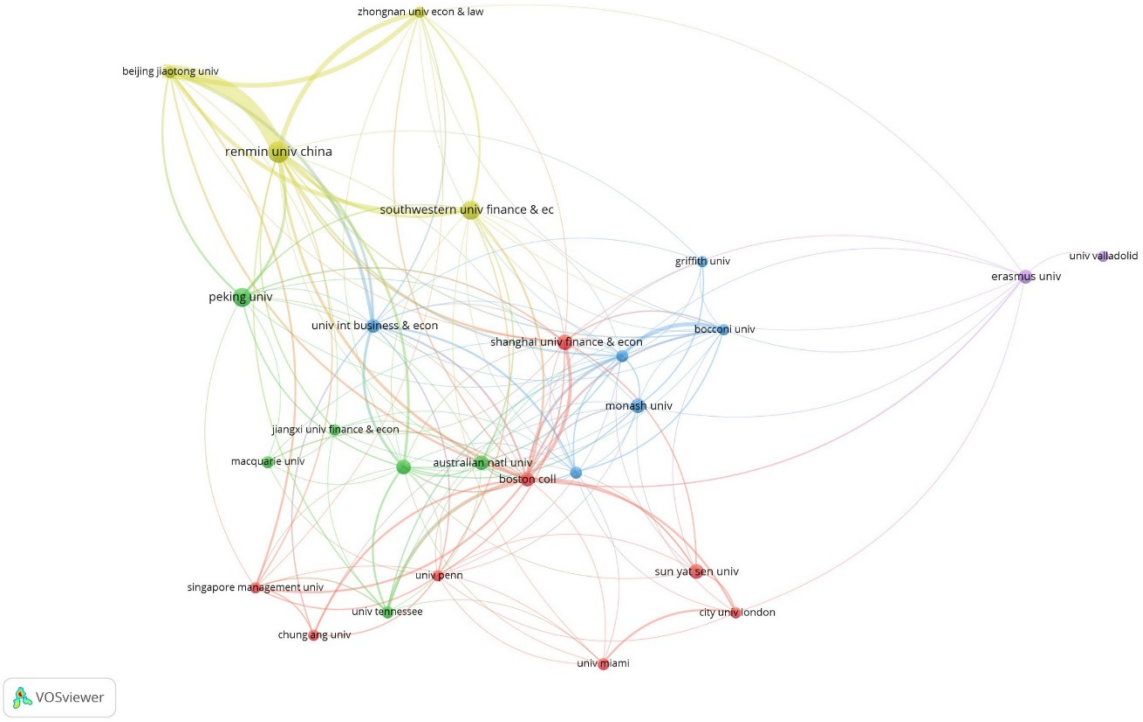
This table includes different indicators: the total papers (TP), the total citations (TC), and the ratio of total citations by total articles (TC/TP). Furthermore, ranking has been provided for each of the key columns subject to analysis. Finally, the evaluations of the institutions have been taken according to the Quacquarelli Symonds World University Ranking (QS).

Organization	Country	QS Ranking (2024)	TP	Ranking by TP	TC	Ranking by TC	TC/TP	Ranking by TC/TP
Renmin University of China	China	556	19	1	610	11	32,1	15
Peking University	China	17	17	2	952	6	56,0	11
Southwestern University of Finance and Economics	China	n.a.	17	2	167	21	9,8	24
Shanghai University of Finance and Economics	China	1201-1400	14	4	573	13	40,9	13
Australian National University	Australia	34	13	5	226	18	17,4	19
The Chinese University of Hong Kong	Hong Kong	47	13	5	3552	1	273,2	1
Monash University Clayton Campus	Australia	42	13	5	206	20	15,8	20
Sun Yat-sen University	China	323	13	5	97	25	7,5	25
Boston College	United States	631-640	12	9	1533	3	127,8	4
Erasmus University Rotterdam	Netherlands	176	12	9	526	14	43,8	12
University of International Business and Economics	China	1201-1400	12	9	364	16	30,3	17
Beijing Jiaotong University	China	901-950	11	12	167	21	15,2	21
Macquarie University	Australia	130	11	12	381	15	34,6	14
Tilburg University	Netherlands	371	11	12	1461	4	132,8	3
University of Alberta	Canada	111	11	12	1563	2	142,1	2
University of Miami	United States	278	11	12	882	7	80,2	6
University of Tennessee	United States	446	11	12	731	9	66,5	9
Bocconi University	Italy	n.a.	10	18	1250	5	125,0	5
Chung-Ang University	South Korea	494	10	18	101	24	10,1	23
City, University of London	England	328	10	18	583	12	58,3	10
Griffith University	Australia	243	10	18	212	19	21,2	18
Jiangxi University of Finance and Economics	China	n.a.	10	18	132	23	13,2	22
Singapore Management University	Singapore	545	10	18	310	17	31,0	16
University of Pennsylvania	United States	12	10	18	729	10	72,9	8
Valladolid University	Spain	951-1000	10	18	755	8	75,5	7

The data reveal that Chinese institutions dominate the top 25 ranking, with eight institutions, followed by the United States and Australia, each with four institutions, and the Netherlands with two institutions. Notably, 20% of the top 25 institutions are within the top 50 of the 2024 Quacquarelli Symonds World University Rankings in 2024, underscoring the importance and relevance of this research area. Additionally, Figure 13 illustrates the network values, consisting of 26 nodes and 146 links.

Figure 13 Leading institutions in the analysed field from 2008 to 2024 (end of April) by citations

The figure shows the network visualisation of the leading organisation in the analysed field between 2008 and 2024 (end of April). The analysis has been conducted using VOSviewer. The type of analysis is "Citation", while the unit of analysis is "Organisations". We indicated a minimum number of documents for an organisation of 10 as threshold, resulting in 26 organisations meeting the threshold. The figure representation includes 5 clusters, 26 nodes and 146 links.



4.4 Conceptual structure analysis

A conceptual structure analysis is crucial for identifying the primary themes and trends within the analysed field (Aria & Cuccurullo, 2017). The cluster network in the institutional investor field is illustrated in

Figure *14* and Figure 15. Each cluster is represented on a thematic map, where centrality indicates the theme's importance in the research field, and density measures its development (Cobo et al., 2011).

Figure *14* and Figure 15 identify five clusters.

Figure 14 Co-occurrence map of keywords

This analysis is performed on the author's keywords using specific parameters: 200 words and a minimum cluster frequency of 7 per thousand documents. The Louvain clustering algorithm is employed and recognized as one of the best clustering methods (Lancichinetti et al., 2009).

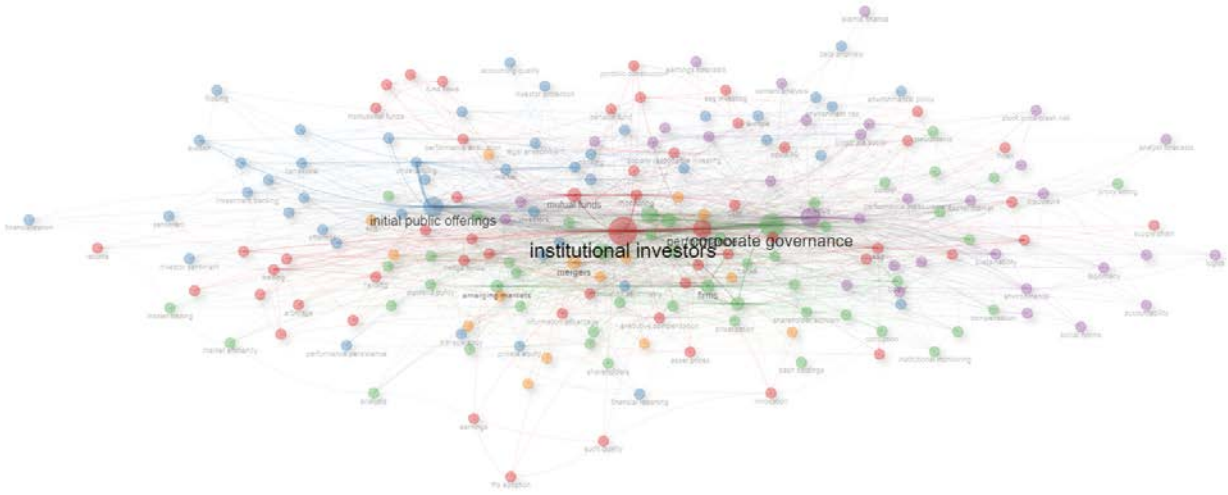


Figure 15 Thematic map

This analysis is performed on the author's keywords using specific parameters: 200 words and a minimum cluster frequency of 7 per thousand documents. The Louvain clustering algorithm is employed and recognized as one of the best clustering methods (Lancichinetti et al., 2009).

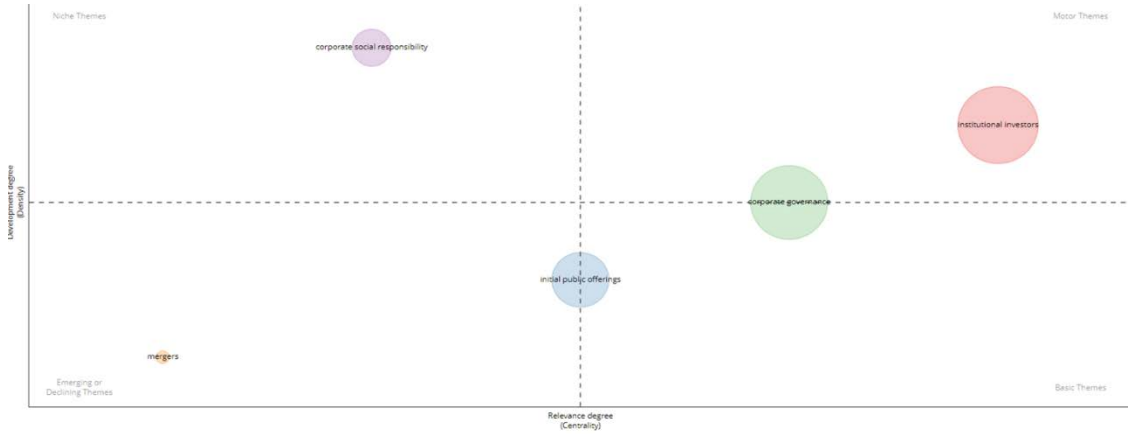


Table 3 presents the top keywords by occurrence within specific clusters and the top studies by total citations per year.

Table 3 Top keywords by cluster (per occurrence) and exemplary studies by TC per year

This table includes the top keywords by number of word occurrences - in brackets - and the top studies by number of citations as indicated in the “Exemplary study” column.

Cluster#	Cluster	Top keywords	Exemplary studies
1	Institutional Investors	institutional investors (214); performance (61); mutual funds (43); executive compensation (26); monitoring (26).	Renneboog L et al. (2008); Erkens Dh et al. (2012); Appel Ir et al. (2016); Shu & Tan (2015); Cornett Mm et al. (2008);
2	Initial Public Offerings	initial public offerings (132); investors (25); earnings management (24); underpricing (24); information asymmetry (21).	Kumar A et al. (2011); Cumming Dj et al. (2017); Fisch C et al. (2020); Vismara S et al. (2012); Bajo E et al. (2016);
3	Corporate Governance	corporate governance (141); firm performance (59); ownership (55); china (47); agency costs (36).	Chen T et al. (2020); Yao S et al. (2021); Brown Ld et al. (2015); Harjoto Ma and Jo H (2011); Lourenco et al. (2012);
4	Corporate Social Responsibility	corporate social responsibility (83); sustainability (18); environmental (17); environmental performance (16); capital market (14).	Dhaliwal Ds et al. (2011); Dyck A et al. (2019); Dhaliwal Ds et al. (2012); Kim Y et al. (2014); Delmas Ma and Burbano Vc (2011);
5	Mergers	mergers (44); institutions (21); emerging economies (17); cross-border acquisitions (12); family ownership (12).	Su W et al. (2016); Oeztekin O and Flannery Mj (2012); El Ghoul S et al. (2016); Brooks C et al. (2018); Li Jj and Zhou Kz (2010);

Regarding the institutional investors' domain (*cluster #1 – motor theme*), the articles highlight the significant impact of institutional investors on corporate governance and firm performance. Appel et al. (2016) demonstrate that passive funds influence governance decisions and improve long-term operating performance through active voting and large voting blocs, enhancing firm value without significant costly interventions (Appel et al., 2016). The research highlights the fundamental governance role of passive institutional investors, whose relevance has recently grown exponentially due to three main factors (Bas et al., 2023). Firstly, the growth of retirement assets has increased the demand for diversified, long-term-oriented portfolios. Secondly, introducing index funds and ETFs provides options for reducing firm-specific risk at low cost. Thirdly, the debate over the ability of active fund management to outperform passive benchmarks has driven incentives for passive investment (Fama & French, 2010).

In earlier research, Renneboog et al. (2008) focused on the fiduciary duty of institutional investors towards socially responsible investing. They critically reviewed the literature from the preceding decade and identified opportunities for future research in this growing field (Renneboog et al., 2008). Their work is highly cited, indicating that the authors accurately captured the potential for research and future trends at the onset of the global crisis. Despite the positive impact of institutional investors on various operating performance metrics, their impact can be negative, particularly concerning ESG activities. Shu and Tan (2023) demonstrate that carbon control policy risks negatively affect corporate ESG performance, especially in firms with high institutional investor ownership. They argue that institutional investors perceive ESG activities as potentially diverting firm resources, leading to short-termism (Shu & Tan, 2023).

Erkens et al. (2012) analyse the role of institutional investors during financial crises, revealing that firms with higher institutional ownership and board independence faced more significant risks. Their findings suggest that institutional investors may encourage greater risk-taking. Institutional investors significantly impacted corporate governance and performance during the crisis, often resulting in wealth transfers from shareholders to debtholders due to equity capital raises (Erkens et al., 2012). Cornett et al. (2008), on the other hand, found that earnings management is lower with more institutional ownership, pointing to the beneficial impact of external monitoring on corporate performance (Cornett et al., 2007).

Research on initial public offerings (*cluster #2 – basic theme*) reveals the linkages between various factors influencing IPO performance and institutional investors' roles. Bajo et al. (2016) highlight the critical role of underwriter networks and investor attention in determining IPO success. In particular, they found that more central lead IPO underwriters are associated with greater institutional investor equity holdings (Bajo et al., 2016), further corroborating on the linkage between the growth in institutional holdings and capital market activities, such as IPOs. Cumming et al. (2017) find that independent venture capital investors are more effective than governmental ones in achieving positive exits. Fisch and Momtaz (2020) report that institutional investors' involvement in ICOs enhances post-ICO performance through better governance structures (Fisch & Momtaz, 2020). Kumar et al. (2011) and Vismara et al. (2012) explore the contextual and external influences - i.e., religious belief, gambling attitudes (Kumar et al., 2011) or the presence of second markets for small

companies (Vismara et al., 2012) - on IPO performance, emphasizing the role of institutional investors on market volatility (Kumar et al., 2011), capital access and stability (Vismara et al., 2012).

Studies on corporate governance (*cluster #3 – basic theme*) reveal how institutional investors shape corporate decisions, including CSR and acquisitions, sometimes conflicting with *cluster#1* results, especially regarding CSR impact. If, from the top cited articles of cluster #1, the spectre of institutional investor short-termism emerged (Shu & Tan, 2023), in *cluster #3*, the articles' tone became positive. Chen et al. (2020) show that institutional investors drive firms toward financially material CSR engagements (T. Chen et al., 2020). Interestingly, the mainstream research that has started by Chen et al. (2020) finds roots in Harjoto and Jo's (2011) study, which already ten years earlier proposed the governance-CSR nexus, where effective governance mechanisms – including institutional ownership - encourage CSR activities, thus enhancing firm performance and value (Harjoto & Garen, 2005). Yao et al. (2021) examine the effects of green credit policies, emphasizing the role of institutional investors in advocating for policies that align with long-term financial goals (Yao et al., 2021). Brown et al. (2015) highlight the influence of sell-side financial analysts on stock recommendations and, thus, institutional investors' actions (Brown et al., 2015). Lourenço et al. (2012) highlight the intertwined connection between institutional investors and corporate sustainability performance. They found that the market investors reward high levels of corporate sustainability performance (CSP) while penalising those firms with low levels of CSP (Lourenco et al., 2012).

Research on corporate social responsibility (*cluster #4 – niche theme*) underscores how CSR practices influence corporate behaviour and outcomes. Dhaliwal et al. (2011) show that initiating CSR reporting can reduce the cost of equity capital and attract institutional investors (Dhaliwal et al., 2011). Increasing CSR disclosure can enhance transparency and reduce information asymmetry, increasing the company's attractiveness (Dhaliwal et al., 2012). Dyck et al. (2019) found that institutional investors drive CSR practices within firms, underscoring the role of institutional investors not only as passive recipients of CSR benefits but also as active proponents of CSR policies, aligning their investment strategies with ethical and social considerations (Dyck et al., 2019). Kim et al. (2014) link robust CSR practices to lower stock price crash risks (Y. Kim et al., 2014). Finally, Delmas and Burbano (2011) highlight the issue of greenwashing, where firms might engage in misleading CSR practices under investor pressure (Delmas & Burbano, 2011).

The relationship between institutional investors and mergers and acquisitions (*cluster #5 - declining*) highlights several outcomes. Institutional cross-ownership aligns managerial interests with long-term shareholders, leading to strategic M&A decisions due to enhanced oversight and performance pressure from institutional investors (Brooks et al., 2018). Short sellers constrain managerial acquisitiveness, preventing value-destroying acquisitions (Shi et al., 2021). Institutional investors strongly influence post-acquisition integration and control strategies, particularly cross-border M&As (Yue et al., 2021), as they advocate for practices ensuring smoother integration and value creation. Finally, some studies focused on family-owned firms (Cucculelli & Micucci, 2008), advocating for a better functioning market for corporate control.

In conclusion, answering *RQ1*, a comprehensive analysis of the institutional investor cluster reveals that the most prominent research has concentrated on the fundamental positive impact institutional investors can have on a company's financial and operational performance. Previous studies highlight how institutional investors enhance performance (Appel et al., 2016), partly due to their role in external monitoring (Cornett et al., 2007). However, the literature also identifies potential downsides, such as encouraging risk-taking behaviour (Erkens et al., 2012), and a lack of consistent support for expected ESG activities, potentially due to short-termism (Delmas & Burbano, 2011; Shu & Tan, 2023). Furthermore, IPOs are critical in determining institutional investor holdings (Bajo et al., 2016). Additionally, the characteristics of institutional investors (D. J. Cumming et al., 2017), along with the context and structure of financial markets where the IPOs occur, profoundly affect the impact of these investors on firm performance (Fisch & Momtaz, 2020; Kumar et al., 2011; Vismara et al., 2012).

The third cluster of analysis extends the discussion on institutional investors by focusing on their relationship with CSR practices. When viewed within the broader corporate governance framework, studies generally adopt a positive tone regarding the influence of institutional investors on CSR outcomes. This body of research suggests a bidirectional relationship: institutional investors influence CSR performance but also they are attracted to firms with strong CSR records, enhancing investor confidence and holdings (Dhaliwal et al., 2011, 2012; Dyck et al., 2019; Y. Kim et al., 2014).

Despite institutional investors' significant role in mergers and acquisitions (M&A), recent trends indicate a declining focus on this topic. This shift suggests a need for further exploration to understand the evolving dynamics and long-term implications of institutional investor activities in the broader context of equity capital markets and firm performance.

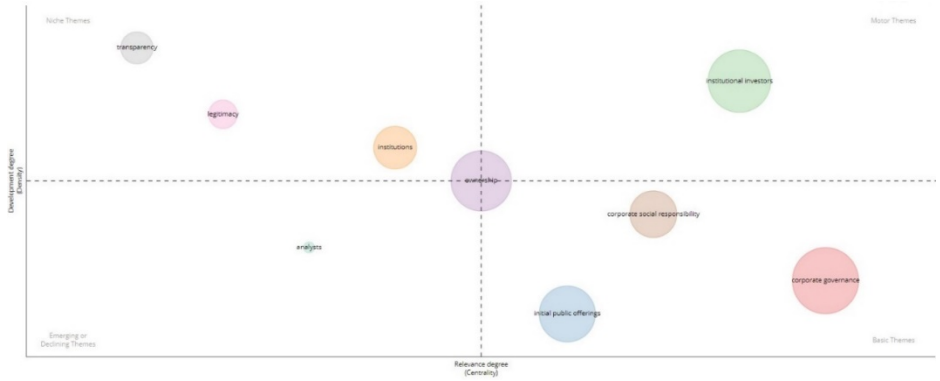
4.5 Thematic evolution

As indicated in section 3.1, we identified two turning points associated with the spike in the number of articles produced: the first in 2013, coinciding with the end of the global financial crisis, and the second the post-COVID-19 outbreak. Accordingly, based on the preliminary evidence, we address RQ2, investigating how the research evolved in the three resulting periods. In particular, our analysis concentrated on research evolutions across the previously identified clusters. The analysis excludes the M&A cluster (cluster#5) as it was identified as a declining trend. The analysis uses the author's keywords to identify potential emerging topics (see *Figure 16*)

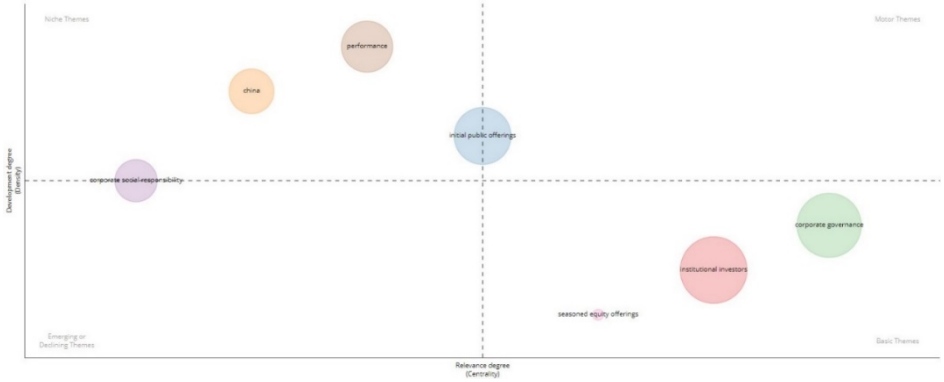
Figure 16 Thematic evolutions

This analysis is performed on the author's keywords using specific parameters: 200 words, a minimum cluster frequency of 7 per thousand documents, and two cutting points (2013 and 2020). The Louvain clustering algorithm is employed and recognized as one of the best clustering methods (Lancichinetti et al., 2009).

Panel A | Thematic period n.1 (2008-2013)



Panel B | Thematic period n.2 (2014-2020)



Panel C | Thematic period n.3 (2021-2024 – end of April)

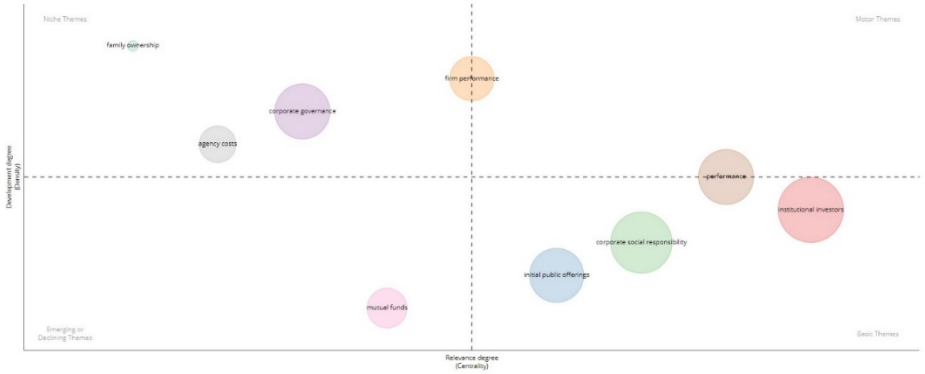


Table 4 Top keywords by cluster and exemplary studies by period of analysis.

This table includes the top keywords by number of word occurrences – in brackets - and the top studies by number of citations as indicated in the "Exemplary study" column. It shows three periods: Period 1 collects studies published between 2008 and 2013; Period 2 collects studies published between 2014 and 2020; Period 3 collects studies published between 2021 and 2024 (end of April).

Cluster 1 - Institutional investors			
	Period 1	**Period 2**	**Period 3**
Top Keywords	Institutional Investors (26); Mutual Funds (8); Trading (5)	Institutional Investors (95); Agency Costs (23); Monitoring (13)	Institutional Investors (93); Esg (23); Financial Performance (14)
Exemplary studies	Ferreira & Matos (2008); Renneboog et al. (2008); Choi Bb et al. (2013).	Cumming Dj et al. (2017); Firth M et al. (2016); Fisch C and Momtaz Pp (2020).	Aluchna M et al. (2022); Kordsachia O et al. (2022); Jiang Y et al. (2022).

Cluster 2 - Initial public offering			
	Period 1	**Period 2**	**Period 3**
Top Keywords	Initial Public Offerings (23); Underpricing (7); Regulation (4)	Initial Public Offerings (59); Underpricing (10); Market (8)	Initial Public Offerings (50); Investors (9); Information Asymmetry (7)
Exemplary studies	Kumar A et al. (2011); Tian L (2011); Engelen Pj and Van Essen M (2010).	Kim Y et al. (2014); Bajo E et al. (2016); Chen Y et al. (2015).	Kang Jk et al. (2021); Duong Hn et al. (2022); Han L et al. (2022).

Cluster 3 - Corporate governance			
	Period 1	**Period 2**	**Period 3**
Top Keywords	Corporate Governance (32); Firm Performance (8); Shareholder Activism (6)	Corporate Governance (67); Ownership (25); Firm Performance (23)	Corporate Governance (42); Earnings Management (11); Covid-19 (8)
Exemplary studies	Dhaliwal Ds et al. (2011); Erkens Dh;Hung M;Matos P (2012); Guest Pm (2009).	Mcguinness Pb et al. (2017); Garcia-Meca E et al. (2015); Su W et al. (2016).	Liu Ph et al. (2022); El Ghoul S et al. (2021); Liu J et al. (2023).

Cluster 4 - Corporate social responsibility			
	Period 1	**Period 2**	**Period 3**
Top Keywords	Corporate Social Responsibility (7); Emerging Markets (5); Market (4)	Corporate Social Responsibility (31); Investors (14); Environmental (8)	Corporate Social Responsibility (45); China (16); Mergers (14)
Exemplary studies	Dhaliwal Ds et al. (2012); Delmas Ma and Burbano Vc (2011); Prado-Lorenzo Jm and Garcia-Sanchez Im (2010).	Dyck A et al. (2019); Nofsinger Jr et al. (2019); Halme M et al. (2020).	Hao J and He F (2022); Shu H and Tan W (2023); Deb Bc et al. (2023).

4.5.1 Institutional investors (cluster #1)

The evolution of institutional investor research over the past decade illustrates a significant shift in focus and methodology. Initially, studies concentrated on the role of institutional investors in firm governance and shareholder value creation. A pivotal study by Ferreira and Matos (2008) explored the influence of institutional investors on firm management and their potential to enhance shareholder value through active monitoring and engagement. This foundational work underscored the growing importance of institutional holdings in global capital markets and highlighted their capability to impact corporate governance practices significantly (Ferreira & Matos, 2008).

Subsequent research studied the corporate governance drivers behind CSR use (or abuse). Choi et al. (2013) found that managers' incentives to engage in CSR driven by managerial opportunism weaken with increasing institutional investor holdings, suggesting that long-term institutional investors act as active monitors, positively influencing corporate governance (Choi et al., 2013).

Academic interest in ESG practices has been a constant throughout the analysed periods, but the focus has expanded to consider the impact of investors also on environmental and social performance. Aluchna et al. (2022) investigated whether institutional investors encourage firms to adopt socially responsible practices, finding a positive correlation between institutional ownership and a firm's commitment to ESG criteria (Aluchna et al., 2022). This result is further supported by Kordsachia et al. (2022), who analysed the

contribution of institutional investors to the environmental performance of firms, reinforcing the notion that institutional investors are increasingly prioritizing sustainability in their investment decisions (Kordsachia et al., 2022).

The involvement of institutional investors in emerging financial markets, including initial coin offerings (ICOs), has become a topic of growing interest. Financing ventures via innovative entrepreneurial finance techniques attracts significant research attention (Block et al., 2018). Building on influential studies, Fisch and Momtaz (2020) investigated the post-ICO performance of ventures supported by institutional investors. Their findings indicate that the presence of institutional investors substantially improves the performance of ICO ventures (Fisch & Momtaz, 2020).

This body of research demonstrates a clear evolution from traditional governance and financial performance studies to a broader consideration of ESG factors and institutional investors' contributions to developing new financial markets and entrepreneurial finance approaches. Each study builds upon previous findings, offering a comprehensive view of how institutional investor research has adapted to changing market dynamics and societal expectations. While CSR is a constant theme across the analysed periods, more recent papers such as Fisch and Momtaz (2020) create a compelling bridge towards novel mechanisms of entrepreneurial finance and the institutional investors' impact on performance.

4.5.2 Initial Public Offering (cluster #2)

The IPO analysis has evolved significantly, reflecting changes in market dynamics, regulatory environments, and investor behaviours. Early studies laid a solid foundation by focusing on firm-, issue-, and country-specific factors that influence IPO underpricing. Some researches indicated that the quality of a country's legal framework significantly reduces the level of IPO underpricing and sets the context for the complexities of market environments across different regions (Engelen & Van Essen, 2010). As the field progressed, Kumar et al. (2011) introduced the impact of cultural factors, such as religious beliefs and gambling attitudes, on financial behaviours, extending the understanding of investor psychology and its effect on IPO pricing (Kumar et al., 2011). Additionally, Tian (2011) demonstrated how government interventions, such as pricing regulations, can lead to extreme IPO underpricing in emerging markets; the regulatory impact finds further corroboration in the prominence of the "Regulation" keywords in early studies (Tian, 2011) as indicated in *Table 4*).

In recent years, Bajo et al. (2016) delved into the role of underwriter networks and their influence on IPO outcomes, exploring how the centrality of underwriters within investor networks can affect investor attention and subsequent IPO pricing. This research indicated a shift towards understanding the micro-level dynamics of financial intermediaries (Bajo et al., 2016).

Kim et al. (2014) expanded the discourse by linking CSR practices to stock price crashes, suggesting that the reputational aspects of a firm can significantly influence its market valuation during and after the IPO process (Y. Kim et al., 2014). The socio-political themes continued with Duong et al. (2022), who investigated the

relationship between democracy and IPO underpricing across 45 countries, finding that democratic environments reduce information asymmetry and thus IPO underpricing, thereby reconnecting the discourse to the broader macroeconomic context (Duong et al., 2022). Furthermore, Han et al. (2022) explored the environmental aspects, examining the effect of air pollution on seasoned equity offerings and indicating a broader consideration of external factors in financial markets, thus integrating a behavioural aspect within quantitative analysis (Han et al., 2022).

These studies illustrate the multifaceted nature of IPO analysis, encompassing regulatory, cultural and social dimensions, and highlight the field's ongoing evolution in response to changing global market conditions. Although CSR-oriented practices remain a common element in many studies within this field, recent analyses have emphasised interesting external factors - such as pollution - influencing behavioural elements, reflecting the dynamic nature of IPO research.

4.5.3 Corporate Governance (cluster #3)

Earlier research, such as Dhaliwal et al. (2011), investigated voluntary nonfinancial disclosure's impact on the cost of equity capital, suggesting that improved transparency and disclosure could reduce information asymmetry and lower capital costs (Dhaliwal et al., 2011). The global financial crisis prompted further scrutiny, with Erkens et al. (2012) analysing corporate governance's role during the crisis. They found that firms with stronger governance structures were better positioned to weather financial turmoil, thereby underscoring the protective value of robust governance practices (Erkens et al., 2012).

García-Meca et al. (2015) explored the effects of board diversity on bank performance. They found that diverse boards could enhance decision-making processes and improve financial outcomes (García-Meca et al., 2015). McGuinness et al. (2017) further explored the role of gender diversity and foreign ownership in corporate governance, finding that these factors positively impacted firm performance (McGuinness et al., 2017). More recent research by El Ghoul et al. (2021) highlighted the influence of policy uncertainty on accounting quality, showing that firms with robust governance frameworks could better navigate regulatory changes and maintain high accounting standards (El Ghoul et al., 2021).

Liu et al. (2022) contributed to this discourse by investigating the impact of green commitments on stock price crash risk. They showed how environmentally responsible governance enhances financial resilience (P. H. Liu et al., 2022). Furthermore, Liu et al. (2023) explored the impact of institutional investors on corporate governance practices in China, showing that increased institutional ownership could lead to more stringent governance and improved firm performance (J. Liu et al., 2023).

Institutional investors are often associated with corporate governance practices, and the evolutionary perspective of the studies focusing on this field suggests a fundamental shift from traditional governance structures to a more integrated approach incorporating ESG factors, diversity, and external influences.

4.5.4 Corporate Social Responsibility (cluster #4)

Over the past decade, the evolution of research on CSR and institutional investors has reflected significant shifts in focus, methodology, and insights. Early studies, such as Delmas and Burbano (2011), have brought to light the pervasive issue of greenwashing. This research underscores the critical need for stringent regulatory frameworks and increased transparency to combat greenwashing and emphasises the importance of restoring investor confidence (Delmas & Burbano, 2011).

Transitioning to the early 2010s, Dhaliwal et al. (2012) introduced a new dimension to the discussion by linking nonfinancial disclosure to improved analyst forecast accuracy. They suggest that voluntary CSR disclosures can enhance a firm's informational environment, thus attracting more accurate and favourable evaluations from financial analysts (Dhaliwal et al., 2012), which, in turn, affects institutional ownership involvement.

Later research by Dyck et al. (2019) marks a significant development in understanding the role of institutional investors in driving CSR. Their study reveals that foreign investors from countries with strong social norms positively influence firms' environmental and social performance, thus indicating that institutional investors can be powerful change agents in promoting CSR (Dyck et al., 2019). Similarly, Nofsinger et al. (2019) explore the selective preferences of investors, noting a tendency for investors to avoid stocks with negative environmental and social performance. This finding suggests that investors prioritise risk aversion over the potential benefits of positive CSR practices (Nofsinger et al., 2019).

Later, Hao and He (2022), focused on the impact of CSR performance on green innovation. They demonstrate that CSR initiatives significantly promote green innovation, especially in firms with greater institutional ownership. This study highlights the influence of institutional investors in fostering sustainable business practices through their investment choices and emphasises transparency as a critical factor in enhancing CSR effectiveness (Hao & He, 2022). Finally, the most recent study by Shu and Tan (2023) examines the impact of carbon control policies on corporate environmental performance. Their research reflects the latest regulatory and market pressures influencing CSR strategies, showing how contemporary policies shape corporate behaviour towards more sustainable practices (Shu & Tan, 2023).

Overall, the literature on CSR and institutional investors has undergone significant evolution. From earlier studies, which concerned greenwashing and the need for transparency, the CSR research has transitioned into analysing how social norms, regulatory environments, and investment strategies collectively drive sustainable corporate practices. The transition from focusing on the risks of misleading CSR practices to leveraging CSR for innovation and regulatory compliance underscores the dynamic and ever-changing nature of this field of research.

4.6 Trend topics, research frontier and future directions

Following Ding et al. (2022), Table 5 illustrates the keywords with the highest frequency and their periodic occurrences to reveal further trends and evolving research areas in management and finance.

Table 5 Trend topics

This table represents the top keywords that emerged among the analysed studies. Year (median) is the reference year, and it is identified using the median of the distribution of occurrences over the period considered. The Frequency indicates the number of word occurrences.

Term	Year (Q1)	Year (Median)	Year (Q3)	Frequency
esg	2022	2023	2023	25
financial performance	2020	2022	2023	19
information	2019	2022	2023	13
cross-border acquisitions	2021	2022	2023	12
investment	2019	2022	2022	11
innovation	2020	2022	2023	10
foreign direct-investment	2019	2022	2022	9
responsibility	2021	2022	2022	9
information advantage	2020	2022	2022	8
shareholders	2019	2022	2022	8
corporate social responsibility	2018	2021	2022	91
sustainability	2020	2021	2023	19
stakeholder theory	2016	2021	2022	7
returns	2016	2021	2022	6
institutional investors	2016	2020	2022	218
firm performance	2017	2020	2022	59
executive compensation	2014	2020	2022	26
investors	2017	2020	2022	25
earnings management	2017	2020	2022	24
environmental performance	2018	2020	2023	16
capital market	2019	2020	2021	14
monitoring	2016	2019	2022	26
information asymmetry	2016	2019	2021	21
emerging economies	2016	2019	2023	17
firm value	2018	2019	2022	13
disclosure	2015	2019	2022	12
ceo turnover	2017	2019	2022	9
asset prices	2013	2019	2019	7
initial public offerings	2015	2018	2022	158
mergers	2015	2018	2021	55
agency costs	2016	2018	2020	36
emerging markets	2015	2018	2022	21
seasoned equity offerings	2014	2018	2020	21
government ownership	2014	2018	2020	16
shareholder activism	2011	2018	2022	16
venture capital	2016	2018	2020	15
corporate governance	2015	2017	2022	145
performance	2015	2017	2021	61
ownership	2013	2017	2021	56
hedge funds	2016	2017	2020	15
legitimacy	2012	2017	2022	9
investor sentiment	2015	2017	2020	7
mutual funds	2014	2016	2021	46
underpricing	2012	2016	2021	24
bookbuilding	2012	2016	2018	10
performance evaluation	2014	2016	2019	9
analysts	2014	2016	2020	8
socially responsible investing	2010	2015	2020	11
investment banking	2014	2015	2018	7
investment performance	2010	2015	2018	7
pension fund	2014	2015	2022	7
regulation	2011	2014	2021	9
legal environment	2010	2010	2018	6

Notably, ESG is a prominent topic, reflecting the global interest in sustainability practices. However, based on the author's keyword analysis, we can further identify the following dynamics in the research:

- Emerging trends. With a median year of 2023 and high recent activity, ESG has become a central focus in institutional investor research. This trend aligns with the increasing global emphasis on sustainable and ethical investing and practices. Financial performance has resurged as a critical keyword, underscoring its importance in evaluating investment strategies. Emerging topics such as "I*nformation, Cross-Border Acquisitions, Innovation, and Foreign Direct Investment*" are also gaining attention. In particular, "*Innovation*" is not just a buzzword but a practical and crucial aspect for companies. Companies need innovation to survive and stay competitive, expand, and enter new markets, ultimately generating wealth for investors.

- Consistently significant topics. "*Initial Public Offerings*" remain critical, reflecting ongoing interest in capital raising and market entry strategies. The steady interest in "*Corporate Governance"* underscores its

importance in ensuring company accountability and performance. These areas have consistently attracted scholarly attention, emphasizing their fundamental role in the financial landscape.

The analysis of these trends suggests several future research directions. While CSR remains a constant focus, niche trends are emerging, driven by the growing emphasis on sustainable development. Research on institutional investors is likely to remain popular, particularly concerning CSR-relevant themes related to internal governance and the external environment. Socially responsible investing has also gained attention, especially around climate change, highlighting the need to further explore green finance development and environmental protection in firm investments (Ding et al., 2022).

Additionally, there is a rising interest in novel mechanisms of entrepreneurial finance. Funding ventures based on innovative technologies is a prime focus, attracting significant attention from both theory and practice (Block et al., 2018; Fisch & Momtaz, 2020). While traditional equity capital markets have been extensively studied (Gomber et al., 2017), innovative financing approaches are now garnering increased interest (Bertoni et al., 2022).

Behavioural finance is experiencing a resurgence, with renewed interest in the intersection of behavioural elements and investment decisions. Future research may delve deeper into external factors affecting personal emotions, such as pollution (Che Hassan et al., 2023; Han et al., 2022).

In conclusion, the current landscape of management and finance research is characterized by new trends, the evolution of established areas, and the enduring significance of fundamental topics. As the field evolves, these insights provide a roadmap for future research, highlighting potential growth areas and continued relevance.

5. Conclusions

Over the past fifteen years, 1049 journal articles published in high-ranked ABS journals have explored the role of institutional investors in equity capital markets and their impact on firm performance. The publication trend during this period exhibits exponential growth, particularly following two pivotal moments: the post-financial crisis era and the aftermath of the COVID-19 pandemic.

This study aimed to explore the theoretical connection points between the role of institutional investors in equity capital markets, the firm's performance over the past 15 years, and their temporal evolution. This aim was expanded into two primary research questions: understanding the theoretical connection points (RQ1) and examining the temporal evolutions of the central cluster of analysis (RQ2).

Regarding RQ1, our analysis identifies significant theoretical connection points among equity capital markets, institutional investors' holdings, and firm performance. Our intellectual structure analysis highlights "institutional investors," "corporate governance," "initial public offerings," "corporate social responsibility," and "mergers and acquisitions" as the most significant knowledge clusters. The Co-occurrence map reveals that institutional investors play a central role, with CSR emerging as a prominent connecting theme among the

top-cited articles across various clusters. Interestingly, the fundamental theoretical framework links back to agency theory irrespective of the cluster or period (Appel et al., 2016; Dhaliwal et al., 2011).

Furthermore, the research spans a broad spectrum of keywords, including "performance," "mutual funds," "executive compensation," and "monitoring," to cite a few examples. A deeper analysis of these keywords could yield novel insights into institutional investor research. Over the past fifteen years, the most cited authors in this domain include Albert Tsang of SUSTech Business School and Pedro Matos of the University of Virginia. Notably, Chinese universities have significantly grown in this field, ranking among the top institutions in publications and total citations from 2008 to 2024.

Addressing RQ2, the study highlights the evolution of research themes over the past fifteen years. The analysis shows a marked shift in focus post-global financial crisis and post-COVID-19 pandemic, with increased emphasis on ESG factors and innovative financial instruments, underscoring the dynamic interplay between institutional investor activities and external market conditions. The study finds that institutional investors have progressively prioritized ESG considerations, driving firms toward more sustainable practices and influencing firm performance positively. Furthermore, institutional investors have become more active in advocating for responsible corporate behaviour, utilizing their significant equity stakes to influence corporate decisions and improve governance standards. This shift has paved the way for the research expansion to appreciate theories, such as stakeholder theory (Deb et al., 2023), historically used within the firm context and now also included within the research of institutional investors to analyse how shareholders prioritize long-term value over immediate financial gains, mainly when investing on behalf of other (Klettner, 2021).

Several niche topics have also emerged alongside "CSR," including the relationship between institutional investors and entrepreneurial finance. Funding ventures based on innovative technologies is a critical area in entrepreneurial finance, attracting significant attention from theoretical and practical perspectives (Block et al., 2018). Emerging keywords such as "ESG" or," "innovation" have gained prominence around 2022-2023, underscoring their recent relevance. These theoretical foundations and emerging keywords provide a valuable reference for identifying future research opportunities. For example, as highlighted by Lin et al. (2023), there are novel topics that may emerge from the combination of these two key factors, "Eco-innovation" and "digital innovation", that only recently started to be investigated (Lin et al., 2024).

In conclusion, this study offers a comprehensive bibliometric analysis of the theoretical connections among equity capital markets, institutional investors' holdings, and firm performance, addressing the two primary research questions. This bibliometric review provides valuable insights into the theoretical foundations and diverse developments in institutional investor research within equity capital markets. It underscores the importance of institutional investors in shaping corporate governance and performance, offering a comprehensive understanding of this evolving field. These findings serve as a reference for scholars and practitioners, guiding future research directions and practical applications in management and finance.

6. Limitations and further improvements

This study acknowledges several limitations. Firstly, despite our efforts to delimit the scope of institutional investor research, the field remains broad. Future studies could benefit from narrowing the research focus to specific performance or equity issuance categories, emphasizing particular clusters of analysis or vertical pillars, such as emerging keywords like "ESG" or "innovation." Additionally, focusing on defined geographical areas or specific characteristics of institutional investors, such as passive versus active investors, could provide more nuanced insights. Secondly, our choice of keywords— "Institutional investor*," "Institutional shareholder*," and "Institutional*"—for literature retrieval, while reasoned, may have excluded relevant studies without these terms, potentially leading to biased conclusions.

Future research directions on bibliometric review papers on institutional investors are multifaceted. Future research should explore institutional investors within different theoretical frameworks beyond the predominantly analysed agency theory. Identifying research streams within frameworks like upper-echelon theory or stakeholder theory, reframed to consider the role of institutional investors, could provide valuable insights. Additionally, given the unequal global distribution of institutional investor holdings, with a marked prevalence in the U.S., comparative cross-country analyses could uncover fundamental differences in investment behaviours. Furthermore, focusing on areas where institutional investor ownership is rising, such as emerging countries, could yield essential findings (Bas et al., 2023). Finally, with the rise of technical innovations and breakthroughs, future bibliometric reviews in this field could leverage advanced algorithms. These algorithms could enhance the precision of keyword identification and search strings, thereby improving the accuracy and comprehensiveness of literature screening for bibliometric analysis (Lin et al., 2024). These directions address current limitations and pave the way for a more robust and comprehensive understanding of institutional investor behaviour and impact.

Chapter 2: Are SPACs a good investment deal for investors? A performance comparison between SPACs vs. IPOs

1. Introduction

Equity capital markets are constantly evolving with their myriad financing options. Ownership structures often shift as companies navigate these markets, introducing institutional investors within a firm's holdings, thus, fundamental changes in the corporate governance structure. While traditional financing routes have been extensively studied (Battisti et al., 2022; Beltrame et al., 2023; Gomber et al., 2017), there is a growing interest in innovative financing mechanisms (Bertoni et al., 2022). This study aims to shed light on a specific segment within cash shells, highlighting SPACs as a transformative element in the ever-evolving landscape of digital entrepreneurial finance.

SPACs, with their unique organizational structures and operational roles, are reshaping the digital finance landscape. Despite the various funding avenues available to startups in the digital asset domain, accessing public markets remains a crucial step for long-term competitiveness (Dezi et al., 2018). The access to equity capital markets is particularly significant for disruptive tech firms, for which early funding is critical to rapid market penetration. For these companies, SPAC mergers offer a promising route for these companies to amass capital and transition to public ownership more swiftly than traditional IPOs[6]. According to Statista, in 2020, more than one-quarter of all special purpose acquisition companies (SPACs) in the United States seeking acquisitions focused on the technology sector[7].

SPACs, essentially blank check entities without operational activities, are explicitly created to raise capital through public stock offerings to acquire one or more unidentified businesses (Fadil & St-Pierre, 2021). These innovative financial instruments have emerged as a popular and legitimate alternative to traditional IPOs, playing a significant role in entrepreneurial finance (Barth et al., 2023; Bertoni et al., 2022). Their prominence has surged, particularly in the United States, where they constitute a considerable portion of the IPO market. For example, 2020 and 2021 marked unprecedented highs for SPAC IPO filings, representing 53% and 58% of total IPOs of the respective years[8].

SPACs have transitioned from a niche market into a significant phenomenon in public equity markets due to their unique benefits. They facilitate quicker access to capital markets by reducing legal requirements and

[6] Deloitte (2022). Digital asset companies and SPACs: What emerging companies should know. Deloitte. Retrieved June 12, 2024, from https://www2.deloitte.com/us/en/pages/audit/articles/spac-cryptocurrency.html

[7] Brown, M. (2020). Number of special purpose acquisition companies (SPACs) seeking acquisitions in the United States in 2020, by sector. In Statista. Retrieved June 10, 2024, from https://www.statista.com/statistics/1232122/number-spacs-usa-by-sector/

[8] EY. (December 15, 2021). Distribution of proceeds from traditional IPOs and special purpose acquisition company (SPAC) IPOs in the United States from 2016 to 2021. In Statista. Retrieved June 12, 2024, from https://www.statista.com/statistics/1234501/size-traditional-spac-ipo-usa/

shield companies against market uncertainties during the capital-raising process, allowing even firms with less robust metrics to secure funding. These advantages have profound implications for entrepreneurial finance, offering an alternative route to public markets that better suits certain companies and investors, especially in a fast-paced digital economy where speed and flexibility are of paramount importance. This study's originality is underscored by its comprehensive evaluation of SPACs' performance relative to traditional IPOs, considering firm-specific and deal-specific characteristics and external market uncertainties.

Historically, SPACs have yielded disappointing long-term post-merger returns for investors (Kolb & Tykvová, 2016) and have exhibited high failure rates (Dimitrova, 2017; Vulanovic, 2017). The surge in their popularity has prompted debates and concerns about a potential SPAC bubble (Naumovska, 2021). Following a peak in 2021, the number of SPAC IPOs plummeted in 2022, with factors such as sponsor compensation schemes and misaligned incentives being cited as potential causes (Del Giudice & Signori, 2024).

The mixed sentiment on the SPAC phenomenon and outcomes from prior research prompts a crucial question: *Do SPACs offer a superior investment avenue to traditional IPOs?* Within the perimeter set out by this research question, it is fundamental to acknowledge that SPACs are generally less impacted by market uncertainties during the fundraising phase (Schill, 2004); these uncertainties significantly affect the size and share of the SPAC market (Blomkvist & Vulanovic, 2020). Therefore, this study seeks to integrate firm-specific characteristics—such as size or gearing ratio, to cite a few examples—and deal-specific characteristics of SPACs—such as the time to acquisition and proximity to the 80% threshold—with factors that capture external market uncertainties to evaluate post-merger performance relative to IPOs. This approach expands upon previous research by extending the analysed timeframe (to include SPACs up to 2019) and contextualizing the SPACs within the broader market environment to provide a comprehensive insight into the determinants of SPAC performance post-business combination.

Consistent with prior studies (Dimitrova, 2017; Gahng et al., 2023), we employ univariate and multivariate cross-sectional OLS regressions to analyse a sample of 96 US SPACs that completed a business combination between 2010 and the end of 2019. Our findings indicate that SPACs generally underperform compared to matched IPO counterparts in terms of both operating and financial performance. Deal-specific characteristics negatively impact SPAC performance, potentially driven by the "perverse" sponsor's compensation mechanism (Dimitrova, 2017), such as the time to the acquisition and the proximity to the 80% threshold, which could stress out the potential agency conflicts between sponsors and investors. Additionally, our research highlights significant disparities in returns generated by the buy-and-hold strategy. Consequently, despite expert investors' meticulous selection of SPAC targets, the operating performance of SPACs seems to remain closely tied to the quality of targets acquired through the SPAC process.

This study brings a novel perspective to the dynamic field of entrepreneurial finance by juxtaposing the performance of SPACs to that of traditional IPOs over a period in which SPACs in the U.S. have been living with strong positive momentum. While SPACs offer unique advantages, particularly for companies in sectors

where speed is a crucial competitive edge, such as disruptive technology firms[9], they may also foster misaligned incentives that lead to poorer performance than traditional IPOs. This analysis not only broadens the theoretical understanding of SPACs within the context of market dynamics but also provides practical investment insights crucial for institutional investors and policymakers aiming to optimize financing strategies in an increasingly volatile market environment.

Therefore, this paper has significant theoretical and practical implications. Theoretically, it enriches the ongoing debate on SPACs by extending the analysis to include a more recent timeframe, capturing the significant uptake the SPAC market has experienced in the aftermath of the financial crisis and incorporating market uncertainty factors into the analysis. Empirically, it shows potential drawbacks that limit the performance effectiveness of SPACs as an alternative to traditional IPOs, offering investment insights to institutional investors actively involved in the SPAC process. Finally, it also has policy implications within the broader agency theory context; the analysis results underscore the need to develop a regulatory framework capable of aligning the interests of SPAC sponsors with those of shareholders to maintain the popularity of SPACs within the digital entrepreneurial context.

2. Literature review and hypotheses development

2.1 SPACs phenomenon, a theoretical background

Cutting-edge technologies are transforming the entrepreneurial landscape (Schiavone, Pietronudo, Sabetta, & Bernhard, 2022). This transformation fosters a departure from traditional value propositions toward more flexible approaches that employ digital technologies. These technologies potentiate business innovation, ushering in a novel business paradigm (Schiavone, Pietronudo, Sabetta, & Ferretti, 2022). Consequently, there is a growing imperative to secure funding to support the adoption and implementation of digitalization, particularly for companies pioneering disruptive technologies. While digital asset startups might secure initial funding through alternative avenues, long-term competitiveness often necessitates accessing public markets[10]. This approach is prevalent among disruptive technology firms, where initial investment is crucial for rapid market share expansion. In this context, SPACs represent a viable and quick strategy for raising capital and achieving public listing. Various studies have examined their features (Castellani et al., 2024; Del Giudice & Signori, 2024; Lakicevic et al., 2014), while others have explored factors influencing SPAC returns (Chatterjee et al., 2016; Klausner & Ohlrogge, 2020), such as the size of the offering (Okutan Nilsson, 2018), board characteristics (D. Cumming et al., 2014), and acquisition-related information (Dimitrova, 2017; Jenkinson & Jones, 2009). Boyer and Baigent (2008) pioneered collecting structural data on SPACs and identified features that make them attractive investments. They found that SPACs offer investors a quicker and cheaper market entry than private equity investments. This characteristic makes SPACs cost-effective for raising capital (Boyer & Baigent, 2008; Jog & Sun, 2007). Moreover, SPACs offer distinct advantages over traditional IPOs for privately held firms. They provide immediate access to capital, enabling firms to secure funding even in

[9] Ref. 6
[10] Ref. 6

challenging market contexts, optimize capital structures and offer exit opportunities without strategic acquirers. SPACs contribute to reshaping the ownership structure by blending private equity and public offering characteristics, typically involving institutional investors from the onset. This structure – in particular, the presence of institutional investors - could ensure better monitoring and reduce information asymmetry between company insiders and public shareholders (Lakicevic et al., 2014; Lakicevic & Vulanovic, 2013). Despite these benefits, SPAC performance results are mixed. Some studies report that investors gained a 2 per cent return post-acquisition, while the return at the investment date was -2 per cent (Lewellen, 2009). Additionally, many business combinations result in value destruction, with the six-month post-acquisition cumulative return averaging -24 per cent (Jenkinson & Sousa, 2009).

Another strand of research has focused on identifying the characteristics that can help overcome some of the drawbacks of SPACs, such as agency problems and investor confidence. Empirical evidence has shown that imposing a time restriction for completing an acquisition is a significant benefit that helps to reduce agency problems. Consistently, the theoretical framework of agency theory is often used (Panda & Leepsa, 2017). Despite the management's preferences, the shareholders' voting mechanism inspires confidence among investors. Applying specific practices attracts investors' attention and raises the theoretical framework of signal theory (Blomkvist & Vulanovic, 2020; Tran, 2012).

2.2 SPACs performance

Previous research by Dimitrova (2017) offers critical insights into the financial performance of SPACs across short- and long-term horizons. Dimitrova's findings highlight a significant trend: Although market reactions to SPAC acquisition announcements are generally positive, these entities tend to underperform compared to relevant benchmarks in the long run. Furthermore, the study underscores substantial cross-sectional variations in SPAC performance, primarily attributed to the misaligned incentives embedded within SPAC contracts. In contrast, Gahng et al. (2023) concluded that investing in SPAC IPOs is relatively secure, akin to investing in underpriced, default-free convertible bonds with additional warrants.

As indicated in previous sections, SPACs offer several advantages over traditional IPOs, making them a viable option for companies that want to go public. Therefore, understanding the effectiveness of SPACs as a means for private firms to achieve public status and whether they represent a profitable investment for institutional investors, which have a long-term investment horizon, requires an analysis of their post-merger performance. This evaluation can be effectively conducted through the lens of agency theory, which posits that a contract between principal and agent exists for either a finite or indefinite duration in an uncertain future (Panda & Leepsa, 2017).

Building on Dimitrova's (2017) research, four hypotheses have been formulated to examine the relationship between SPACs' contractual incentives and the financial and operational performance of the targeted companies. Despite the various benefits SPACs provide to investors, they are also subject to several disadvantages. A primary concern is the sponsor's compensation mechanism, which can introduce conflicts of

interest into the transaction. Specifically, this mechanism might incentivize SPAC sponsors to pursue acquisitions irrespective of their value-generating potential, thus raising the issue of agency costs.

Since 2010, the risk associated with investing in a value-destroying merger has increased due to changes in the vote-redemption mechanism. These changes, coupled with the potential worthlessness of warrants if the SPAC is liquidated, incentivize shareholders to support value-diminishing mergers while redeeming their shares (Gahng et al., 2023). Moreover, the SEC's 2010 introduction of a safe harbour provision shields issuers from liability for manipulation when repurchasing outstanding common shares, further influencing SPAC dynamics. With hedge funds often being the principal shareholders in SPACs, the ownership structure can significantly impact SPAC performance. This is particularly relevant when these majority voters engage in short-term trading strategies, potentially undermining the long-term success of the SPAC. These insights form the basis for our initial two hypotheses:

H1: *The buy-and-hold price returns of SPACs are significantly lower than those of matched IPO peers during the two years following the acquisition.*

H2: *The operating performance (ROA and EBITDA margin) of SPACs are significantly lower than those of matched IPO peers during the two years following the acquisition.*

Beyond firm-specific factors, it is crucial to consider deal-specific factors such as the 80 per cent rule, which mandates that the target must hold a fair market value of at least 80 per cent of the SPAC's value (Dimitrova, 2017). This condition can potentially prompt sponsors to overpay for targets, viewing the threshold as a benchmark and prioritizing it over the best interests of external shareholders—a compelling case of agency problem. Consequently, sponsors might overpay for smaller targets to meet the threshold rather than assessing the target's intrinsic value. Given that 20 per cent of equity stake sponsors receive post-business combination, significant dilution can result.

Evidence indicates a negative trend when a SPAC completes a business combination with a target near the 80 per cent threshold (Dimitrova, 2017). Overpaying for targets not only impacts short-term market performance but also has adverse effects on the SPAC's long-term performance. Additionally, Dimitrova (2017) emphasized that the timing of a business combination announcement significantly impacts share performance. Longer durations often lead to better share performance, reflecting more informed decision-making by the SPAC, supported by thorough due diligence and careful target selection. Conversely, premature or delayed announcements may signal low-quality investments to potential investors, resulting in poorer long-term performance—consistent with signalling theory (Blomkvist & Vulanovic, 2020).

Sponsors face strong incentives to finalize acquisitions within the two-year deadline imposed by SPAC regulations, leading to premature or last-minute deals. Dimitrova's (2017) research, which employed a buy-and-hold strategy, examined the four-year post-IPO performance. To explore these agency problems and issues of information asymmetry further, two additional hypotheses have been formulated:

H3: *The buy-and-hold price returns of SPACs are significantly lower for business combinations close to the 80 per cent threshold or executed towards the two-year deadline during the two years following the acquisition.*

H4: *The operating performance (ROA and EBITDA margin) of SPACs are significantly lower for business combinations close to the 80 per cent threshold or executed towards the two-year deadline during the two years following the acquisition.*

3. Sample selection

The primary dataset employed for this study was sourced from Refinitiv and included 129 exchange-listed SPACs that went public in the United States between 2010 and 2019. The selection of 2010 as the starting year was intentional to ensure a homogeneous regulatory environment, as this year marked significant regulatory changes by the SEC affecting the SPAC market - such as Rule 18-10b -. The end date of December 2019 was chosen to provide at least two years of post-business combination data. The United States was selected as the focal country due to its status as the largest market for SPACs and one of the earliest adopters of this financial instrument (Dimitrova, 2017), thereby allowing for an extensive period of analysis.

The initial sample underwent adjustments to exclude SPACs lacking available accounting or acquisition-related information, SPACs whose acquired target companies filed for bankruptcy within two years of the business combination, and SPACs whose acquired target companies were sold to strategic investors and ceased operations within two years post-combination. These adjustments resulted in a final sample comprising 96 SPACs. The sample size aligns with previous research on the post-acquisition performance of SPACs (Dimitrova, 2017; Gahng et al., 2023). Furthermore, no empirical evidence suggests that the initial sample reduction significantly impacts the overall analysis outcomes (Gahng et al., 2023).

To compare the post-acquisition performance of SPACs with other investment vehicles, we employed a control group methodology (Ferretti & Meles, 2011). This approach involved constructing a peer group for each SPAC, comprising the SPAC and the median of five comparable IPOs. The selection criteria for these comparable companies included the availability of financial data for at least two years following the business combination and a comparable equity value to the reference SPAC at the time of the business combination.

Furthermore, given the tendency of SPAC targets to exhibit lower-quality financials and higher leverage than IPO targets (Gahng et al., 2023; Klausner & Ohlrogge, 2020), the final sample was refined to consider financial and economic similarities. For each SPAC we identified five comparable companies closely aligned with fundamental operating metrics, including ROA, EBITDA margin, leverage ratio, and size (measured by total sales). This approach was designed to create peer groups that closely resembled the reference SPACs financially, thereby enhancing the accuracy and precision of the research.

4. Methodology

4.1 Dependent and independent variables

To delve into the long-term performance comparison between SPACs and comparable IPOs, we examine the selected sample of SPAC acquisitions, evaluating, as dependent variables, the financial performance and operating performance over a two-year post-business combination, following the methodology outlined by Dimitrova (2017). Share price performance is assessed using the dependent variable buy-and-hold performance throughout the entire period of analysis constructed as for the formula below:

$$Buy - and - hold_{\,i,t} = \frac{P_{i,t} - P_{i,j}}{P_{i,j}}$$

Where *t* denotes the period following the completion (one- or two-years post-business combination) of the business combination date, *i* represents each firm in the dataset and *j* indicates the date of the business combination.

Regarding the operating performance, in line with previous research (Dimitrova, 2017), we investigated the relationship between ROA and EBITDA margin and SPAC-specific characteristics. Both operating indicators were calculated with an annual frequency using the following baseline formulas:

$$\boldsymbol{EBITDA\,\%_{i,t}} = \frac{\boldsymbol{EBITDA_{i,t}}}{\boldsymbol{Revenues_{i,t}}}$$

$$\boldsymbol{ROA_{i,t}} = \frac{\boldsymbol{EBIT_{i,t}}}{\boldsymbol{Total\ asset_{i,t}}}$$

Where *t* denotes the period following the completion (one- or two-years post-business combination) of the business combination date and *i* represents each firm in the dataset.

Furthermore, in line with previous research, we employ an adjustment methodology to investigate the unique factors impacting SPAC acquisitions (Dimitrova, 2017; Ghosh, 2001; Healy et al., 1992). In particular, we deployed an IPO firm-adjusted measure by deducting the median ratio of a matched IPO group from that of each SPAC. Consequently, the following set of adjusted dependent variables has been calculated:

$$Buy - and - \ hold\ performance\ adj_{i,t} = Buy - and - \ hold\ perf_{i,t} - \ Buy - and - \ hold\ perf_{k,t}$$

$$\boldsymbol{EBITDA\,\%\ adj_{i,t}} = \boldsymbol{EBITDA\,\%_{i,t}} - \boldsymbol{EBITDA\,\%_{k,t}}$$

$$\boldsymbol{ROA\ adj_{i,t}} = \boldsymbol{ROA_{i,t}} - \ \boldsymbol{ROA_{k,t}}$$

Also, for the adjusted version of the performance, *t* denotes a period of one or two years following the completion of the business combination, *i* represents each firm in the dataset, and *k* represents the matched IPO group corresponding to each SPAC.

The independent variables that capture SPAC-specific characteristics have been included: Dummy SPAC, Time, 80% Threshold, Relative Size, and Deal Value. The Dummy SPAC variable distinguishes between companies that have undergone a SPAC transaction and those that have pursued a traditional IPO process, serving as a fundamental variable to test H1 and H2. The Time variable measures the period from the IPO to the acquisition announcement, a characteristic that is expected to impact SPAC returns in line with H3 and H4. Given that SPACs have a maximum of two years from their IPO to acquire another company, failing which they must liquidate and return the funds to investors, sponsors might feel pressured under the two-year constraint. This pressure can lead to unsuitable acquisitions, perceived by the market as last-minute opportunistic deals (Dimitrova, 2017), potentially reflecting a negative trend in the share price.

The 80% Threshold variable is a dummy that takes the value of 1 if the deal value is within an upward threshold of 10% of the compulsory 80% minimum limit at the time of the business combination. According to SPAC contractual characteristics, the initial target business that the SPAC acquires must have a fair market value equal to at least 80% of the SPAC's net assets at the time of acquisition. If the SPAC involves a smaller target, sponsors may be incentivized to overpay to meet this threshold. Therefore, to include the dimensional feature of the acquired company, we also integrated the Relative Size and Deal Value variables to adequately account for the target size.

In addition to these variables, several control variables have been included, considering additional financial and economic characteristics and governance factors that previous research has found to significantly influence post-business combination SPAC performance. SPAC acquisitions may be more leveraged and have higher financial distress costs, affecting their operating performance; thus, the Gearing Ratio is included in the analysis.

Further aspects relevant to corporate governance that influence post-business combination performance include the direct involvement of SPAC sponsors in governance post-combination. Previous research suggests that SPAC sponsor involvement can be beneficial due to their substantial industry and target-specific knowledge (Dimitrova, 2017). Consequently, dummy variables capturing the direct involvement of SPAC sponsors in decision-making bodies, such as Directors from Sponsors, Chairman from Sponsor, and CEO from Sponsor, are included.

In addition, smaller boards tend to be more effective because they facilitate better communication and quicker decision-making processes (Merendino & Melville, 2019). Therefore, board size is an important variable to consider.

Institutional investor holdings and their involvement in firm decision-making are crucial in monitoring corporate governance mechanisms, increasing transparency, and minimizing conflicts of interest (Merendino

& Melville, 2019). As a result, the percentage of independent directors (% Independent Directors) is included as a control variable. Both board size and % independent directors are essential for addressing the agency problem between shareholders and management (Jensen & Meckling, 1976).

The complete list of independent and control variables used in this study is summarized in Table 6.

Table 6 Set of variables. Description of dependent and independent variables

The table includes the description of the dependent variables, independent variables and control variables used in the cross-sectional OLS regressions (Model 1 and Model 2).

Variable	Description
Dependent Variables	
Buy and hold	Share price performance of a buy and hold strategy.
EBITDA %	EBITDA margin.
ROA	Return on assets.
Buy and hold adjusted	Share price performance of a buy and hold strategy net of median ratio of a matched IPO group.
EBITDA % adjusted	EBITDA margin net of median ratio of matched IPO group.
ROA adjusted	Return on assets net of median ratio of a matched IPO group.
Independent Variables	
Dummy SPAC	Dummy variable that equals 1 if the company is a SPAC (Mikkelson et al., 1997; Rindermann, 2003).
Time	Natural logarithm of the days between IPO and acquisition date (Dimitrova, 2017).
80% Threshold	Dummy variable that equals 1 if the deal values is within 10% of the compulsory 80% threshold at the time of business combination.
Relative size	Target market capitalization divided by acquirer market capitalization.
Deal value	Natural logarithm of deal value (i.e., Moeller et al., 2004, 2007; Travos, 1987; and Schlingemann et al., 2002).
Control Variables	
Size	Natural logarithm of revenues (Lewellen, 2009; Chancharat et al., 2012).
Gearing ratio	Total financial liabilities divided by total assets (Lewellen, 2009).
Growth	Revenues' growth rate.
Directors from sponsors	Number of BoD members of the sponsor after the operation (i.e., Moeller et al., 2004, 2007; Travos, 1987; and Schlingemann et al., 2002).
Chairman from sponsor	Dummy variable that equals 1 if the Sponsor sits as chairman after the operation.
CEO from sponsor	Dummy variable that equals 1 if the Sponsor sits as CEO after the operation.
Board size	Number of BoD members.
% independent directors	% BoD independent members.
Market uncertainty	VIX volatility index (Blomkvist and Vulanovic, 2020)

The descriptive statistics is shown in Table 7.

Table 7 Descriptive statistics

The table includes the descriptive statistics of the dependent variables, independent variables and control variables.

Variable	P1	P50	MEAN	P99
Buy and hold	-0,3	0,1	0,1	0,7
EBITDA %	-5,4	5,4	2,6	11,0
ROA	-1,7	0,5	2,9	10,0
Buy and hold adjusted	-0,6	-0,1	-0,2	0,4
EBITDA % adjusted	-5,0	2,0	2,0	3,8
ROA adjusted	-6,9	4,2	4,6	5,8
Dummy SPAC	0,0	1,0	1,0	1,0
Time	343,0	617,5	624,4	1257,3
80% Threshold	0,0	1,0	1,0	1,0
Relative size	1,5	3,2	4,3	15,4
Deal value	5,2	6,7	6,6	8,6
Size	16,7	19,9	20,9	30,5
Gearing ratio	0,0	0,4	0,4	1,6
Growth	-0,1	0,1	3,9	58,8
Directors from sponsors	1,0	2,0	2,0	4,0
Chairman from sponsor	0,0	0,0	0,5	1,0
CEO from sponsor	0,0	1,0	0,5	1,0
Board size	5,0	7,0	6,4	7,0
% independent directors	0,1	0,2	0,2	0,4
Market uncertainty	9,5	17,7	19,3	37,6

4.2 Empirical model

Following prior research (Dimitrova, 2017; Gahng et al., 2023), we employ cross-sectional OLS models to test the four research hypotheses outlined in previous sections. The suitability of the models has been confirmed through tests conducted to assess for heteroscedasticity and multicollinearity issues. In particular, we performed VIF and Breusch-Pagan tests to ascertain the models' absence of multicollinearity and heteroscedasticity. Additionally, we employed a Durbin–Wu–Hausman test to control for endogeneity.

To incorporate SPAC and deal-specific variables, we use two distinct econometric models (Model 1 and Model 2) for conducting multivariate regressions. In particular, Model 1 aims to compare the operating and financial performance of SPACs vis-à-vis IPO, thus answering the research hypotheses *H1* and *H2*. In contrast, deal-specific characteristics in Model 2 aim to understand SPAC-specific characteristics, thus answering the research hypotheses *H3* and *H4*.

Model 1:

$$Y_{k,t+1} = a + \beta Dummy\ SPAC_k + \gamma Control\ Variables_{k+1} + \varepsilon\mu_{k+1}$$

Model 2:

$$Y_{k,t+1} = a + \beta_1 Time_k + \beta_2 80\%\ Threshold_k + \beta_3 Relative\ size_k + \beta_4 Deal\ Value_k + \gamma Control\ Variables_{k+1} + \varepsilon\mu_{k+1}$$

5. Results of the research

5.1 Univariate regression

We conducted univariate regressions to assess general differences in terms of performance between IPOs and SPACs. The findings presented in Table 8 show an interesting trend: SPACs consistently lag behind the matched group across all analyzed metrics, including share price performance, ROA, and EBITDA margin.

Table 8 T-test results

The table shows the results of the univariate regression analysis focusing on the performance in terms of buy-and-hold, EBITDA% and ROA in one year after the merger and two year after the business combination. The observation for SPAC and IPOs (Peers) is 96 respectively.

Panel A - Performance one year after the merger

	SPAC (N. obs = 96)	**Peers (N. obs = 96)**	**T-test**
	median	*median*	
Buy-and-hold	(16.6%)	9.5%	***
EBITDA %	0.7%	12.4%	*
ROA	(5.0%)	3.2%	***

Panel B - Performance two years after the merger

	SPAC (N. obs = 96)	**Peers (N. obs = 96)**	**T-test**
	median	*median*	
Buy-and-hold	(30.1%)	0.4%	***
EBITDA %	0.4%	12.8%	**
ROA	(8.0%)	3.5%	***

, **, * refers to the statistical significance at the 10%, 5%, and 1%, respectively*

Notably, the analysis reveals significant value destruction from an investor's perspective. Specifically, the one-year buy-and-hold strategy yields a median negative performance of 16.6%. In contrast, the matched IPO group exhibits a positive abnormal return of 9.5% over a one-year horizon, as shown in Table 8 - Panel A. Furthermore, the performance deteriorates over two years, with the buy-and-hold strategy yielding a negative abnormal return of -30.1%, substantially lower than the matched peers (Table 8 - Panel B). The significance levels of the t-tests anticipate a confirmation of H1.

Similar results are also observed in terms of operating metrics (both ROA and EBITDA%), despite ROA seeming to have much more marked negative results than EBITDA%, showing -5.0% 1-year post-business combination (Table 8 - Panel A) and -8.0% 2-years post-business combination (Table 8 - Panel B). These results demonstrate a high level of significance, being accepted at the 1% level for ROA analysis and at the 5% and 10% levels for EBITDA margin analysis.

5.2 Multivariate analysis

Model 1 is applied to each dependent variable and period to demonstrate whether the observed relationship between SPAC characteristics and performance persists in the first and second years following the business combination. Results of model 1 are shown in the following Table 9.

Table 9 Cross-sectional OLS regression – Model 1

The following table shows the results of Model 1. t+1 and t+2 indicates respectively one year after the business combination and two years after the business combination. Each equation includes the control variables indicated in the methodology section, which for readability purpose are not explicitly shown in the below table.

	Buy and hold		**EBITDA %**		**ROA**	
Variables	t+1	t+2	t+1	t+2	t+1	t+2
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
Dummy SPAC	-0,245**	-0,382***	-82,711**	-122,14***	-20,22***	-38,90***
	(-2,53)	(-2,93)	(-1,65)	(-2,84)	(-3,00)	(-3,38)
Control Variables	YES	YES	YES	YES	YES	YES
costant	0.220	-0.234	-34,23**	-44,55**	-5,68*	-6,543*
N	192	192	192	192	192	192
R square	5.32%	10.45%	4.53%	5.32%	10.42%	9.53%

, **, * refers to the statistical significance at the 10%, 5%, and 1%, respectively*

The dummy variable SPAC emerges as a significant explanatory factor, displaying a negative coefficient of 1% or 5% significance for both t+1 and t+2. These results show that the buy-and-hold strategy, as represented by regressions (1) and (2) in Table 9, consistently yields negative returns in both periods with a declining trend; this result is consistent with previous research (Dimitrova, 2017; Gahng et al., 2023; Kolb & Tykvová, 2016). Furthermore, the dummy variable SPAC continues to show a negative influence on the operating performance - EBITDA% and ROA - of the SPAC sample, with a significance level of 1% or 5% - as shown by regressions (3), (4), (5) and (6) in Table 9. The SPACs target shows a pattern of deteriorating performance, with the coefficient becoming increasingly negative in t+2, showing a worsening trend at the same confidence level. The inability to improve results over time compared to peers may depend on several factors, including selecting low-quality targets and the negative incentive prompting sponsors to favour relatively higher-risk targets with more leverage and lower growth (Del Giudice & Signori, 2024; Dimitrova, 2017). In summary, Model 1 underscores that SPACs consistently lag behind the matched group of IPOs in terms of both share price and operating performance throughout the post-acquisition period, with a tendency to deteriorate over more extended timeframes. These findings support both H1 and H2; thus, the buy-and-hold price returns and operating performance of SPACs are significantly lower than those of matched IPO peers during the two years following the acquisition.

Table 10 presents the regression results of Model 2, focusing on the baseline (thus unadjusted) dependent variables, specifically buy-and-hold, EBITDA %, and ROA. Equations (1), (3), (5), (7), (9), and (11) in Table 10 test the Time variable independently. In contrast, the other equations in Table 10 also factor in the *80% Threshold*, the *Relative size*, and the *Deal Value*, thus presenting the full specification of Model 2.

The results of Model 2 demonstrate a significant negative trend between Time and buy-and-hold performance, with statistical significance at the 5% level. This result indicates that a more extended timeframe between the SPAC constitution and the final business combination announcement correlates with poorer share price performance, partly confirming our H3.

Interestingly, the Time variable maintains significance even after including deal-specific factors, such as the nearness to the *80% Threshold*, the *Relative size* and the *Deal Value*. Furthermore, Table 10 (2) shows a significant negative relationship between the buy-and-hold performance of SPACs and business combinations executed near the 80% Threshold, thus fully confirming H3, which stated that the buy-and-hold price returns of SPACs are significantly lower for business combinations close to the 80 per cent threshold or executed towards the two-year deadline during the two years following the acquisition.

The relevance of the *80% Threshold* variable suggests that sponsors may be inclined to acquire suboptimal targets, potentially smaller and lower-quality companies, to expedite a business combination and secure their compensation. Consequently, such targets may contribute to inferior long-term performance, negatively impacting the SPAC's stock price performance.

The results in terms of EBITDA% align with the buy-and-hold performance and indicate that SPACs' operating profitability tends to deteriorate over time, highlighting potential challenges in sustaining post-acquisition operating results. Moreover, the analysis reveals a significant negative relationship between the proximity to the 80% threshold and operating profitability, particularly at t+1. Accordingly, this outcome suggests that SPACs executing business combinations close to the threshold may experience lower operating profitability. However, this relationship loses significance at t+2, indicating potential variations in performance dynamics over time.

Regarding ROA, the results confirm a negative trend between the duration required to complete a business combination and the operating profitability of SPACs, aligning with the findings of previous research (Axelson et al., 2009; Degeorge et al., 2016). The coefficients follow a worsening trend in SPACs' operating performance as time progresses. This finding underscores the importance of the timing of acquisitions as a signal of potentially value-eroding transactions being pursued. Accordingly, *Time* can be a red flag that investors should check when funding SPACs. The significance of *Time* and 80% Threshold variables confirm our H4; thus, the operating performance (ROA and EBITDA margins) of SPACs are significantly lower for business combinations close to the 80% threshold or executed towards the two-year deadline during the two years following the acquisition.

Table 11 shows the adjusted financial and operating results with a matched group of IPOs. In terms of the buy-and-hold strategy, the adjusted performance also shows a significant negative relationship with *Time* and the *80% Threshold*, with a more pronounced effect observed over time, as evidenced by equations (1), (2), (3), and (4) of Table 11.

The significance of the *80% Threshold* supports the notion that SPACs executing business combinations close to the threshold tend to exhibit inferior operating profitability performance.

In terms of EBITDA% adjusted, the results presented in Table 11, evidenced by equations (5), (6), (7), and (8), confirm the negative relationship between time to acquisition and operating profitability, in line with H4. Interestingly, adding deal-specific variables in the regression model mitigates the negative performance trend associated with time. This outcome suggests that proximity to the 80% threshold, relative size, and deal value influence SPACs' operating performance dynamics, offering insights into potential avenues for improving performance over time.

Finally, equations (9), (10), (11), and (12) in Table 11 display the ROA results adjusted to the performance of the matched group.

The results confirm the negative trend between time and ROA, which is consistent with previous findings. This result reaffirms the notion that the longer it takes for SPACs to execute a business combination, the lower their operating profitability tends to be. Furthermore, the observed negative relationship between the proximity to the 80% threshold and ROA supports H4, indicating that SPACs executing business combinations close to the threshold tend to exhibit inferior operating profitability compared to those with more significant deals or executed earlier.

Table 10 Cross-sectional OLS regression for buy and hold strategy, EBITDA% and ROA% in t+1 and t+2 (Model 2)

The following table shows the results of Model 2. t+1 and t+2 indicates respectively one year after the business combination and two years after the business combination. Each equation includes the control variables indicated in the methodology section, which for readability purpose are not explicitly shown in the below table.

	Panel A | Cross-sectional OLS regression results for buy and hold strategy in t+1 and t+2				**Panel B | Cross-sectional OLS regression results for EBITDA % in t+1 and t+2**				**Panel C | Cross-sectional OLS regression results for ROA in t+1 and t+2**			
Independent variable	**Buy and hold**		**Buy and hold**		**EBITDA %**		**EBITDA %**		**ROA**		**ROA**	
	t+1	t+1	t+2	t+2	t+1	t+1	t+2	t+2	t+1	t+1	t+2	t+2
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*	*(11)*	*(12)*
Time	-0,345**	-0,422**	-0,352**	-0,005***	-28,756***	-54,283**	-45,372**	-44,719**	-4,789*	-8,404*	-31,201**	-44,365**
	(-2,43)	(4,32)	(-4,53)	(2,10)	(2,77)	(-2,19)	(-2,82)	(-2,77)	(-2,54)	(-1,92)	(-2,45)	(-2,14)
80% Threshold		-0,643*		-0,043*		-21,473**		174.123		-8,245*		-69,540*
		(2,54)		(1,35)		(-2,25)		(1,50)		(-2,48)		(-1,66)
Relative size		0.534		-0,433**		-3.256		3.347		-0.596		-8,341***
		(-2,45)		(-3,53)		(-0,54)		(0,43)		(-0,49)		(-2,99)
Deal Value		0.643		0,154**		-34.272		-35.297		-3.744		5.284
		(3,453)		(2,255)		(-1,56)		(-1,29)		(-0,85)		(0,54)
Control variables	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
costant	−0,453	−0.342	−0.432	−0.244	58.912	488.562	83.589	116.621	7.820	67.062	141.725	320.179
N	96	96	96	96	96	96	96	96	96	96	96	96
R square	4.35%	11.53%	6.43%	15.42%	10.47%	17.43%	5.06%	8.42%	3.74%	7.39%	5.08%	20.74%

, **, * refers to the statistical significance at the 10%, 5%, and 1%, respectively*

Table 11 Cross-sectional OLS regression for buy and hold strategy adjusted, EBITDA% adjusted and ROA% adjusted in t+1 and t+2 (Model 2)

The following table shows the results of Model 2. t+1 and t+2 indicates respectively one year after the business combination and two years after the business combination. Each equation includes the control variables indicated in the methodology section, which for readability purpose are not explicitly shown in the below table.

	Panel A | Cross-sectional OLS regression results for buy and hold strategy adjusted in t+1 and t+2				**Panel B | Cross-sectional OLS regression results for EBITDA % adjusted in t+1 and t+2**				**Panel C | Cross-sectional OLS regression results for ROA adjusted in t+1 and t+2**			
Independent variable	**Buy and hold adjusted**		**Buy and hold adjusted**		**EBITDA % adjusted**		**EBITDA % adjusted**		**ROA adjusted**		**ROA adjusted**	
	t+1	t+1	t+2	t+2	t+1	t+1	t+2	t+2	t+1	t+1	t+2	t+2
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*	*(11)*	*(12)*
Time	-0,224**	-0,147**	-0,267**	-0,061**	-3,634*	-34,532*	-45,634**	-3,453*	-0,452**	-1,245*	-22,355**	-34,556**
	(-2,05)	(-2,67)	(-2,61)	(-2,56)	(-4,35)	(4,24)	(-34,5)	(-4,45)	(2,12)	(-2,34)	(-3,45)	(-2,63)
80% Threshold		-0,13**		-0,155**		24.520		24.450		-15,32*		-12,45*
		(-2,32)		(-2,71)		(0,45)		(1,47)		(-3,45)		(-1,35)
Relative size		-0.042		-0,048**		-45.532		0.845		1.240		-14,3*
		(-1,42)		(-3,29)		(-0,543)		(0,10)		(-0,22)		(-3,5)
Deal Value		0.153		0,117**		-84.553		-45.540		-4.560		5.430
		(1,44)		(2,25)		(-2,34)		(-1,13)		(-0,46)		(0,33)
Control variables	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
costant	0.823	-0.583	-0.014	-0.325	2.350	13.530	243.430	234.200	-34.550	46.540	124.220	234.320
N	96	96	96	96	96	96	96	96	96	96	96	96
R square	3.71%	6.80%	12.36%	22.31%	1.34%	5.30%	2.40%	5.42%	4.55%	6.54%	2.34%	15.43%

, **, * refers to the statistical significance at the 10%, 5%, and 1%, respectively*

6. Discussion

The univariate analysis anticipates the negative trend between SPACs, the operating and the buy-and-hold performance vis a vis matched-peers of IPOs, anticipating the results that find further confirmation in the subsequent cross-sectional OLS analysis. The negative trend in price performance is exacerbated over extended periods (after two years post-business combination), as shown in the significant decrease in stock market returns during the second year. Similarly, although to a lesser extent, this downward trajectory is mirrored in the operating profitability metrics. These findings corroborate H1 and H2 and are consistent with prior literature (Dimitrova, 2017). Therefore, validating these hypotheses underscores the consistent underperformance of SPACs relative to the chosen matched group, suggesting that SPAC targets generally exhibit lower quality than their peers.

Furthermore, our analysis reveals a negative association between the time it takes for a SPAC to complete a business combination and its subsequent performance, a trend that amplifies over time, in line with previous research (Axelson et al., 2009; Degeorge et al., 2016; Gahng et al., 2023). Additionally, examining the impact of the 80% threshold, we find a statistically significant negative relationship between buy-and-hold performance and ROA. This result suggests that overpaying for smaller targets to prevent SPAC liquidation or secure a controlling stake adversely affects these metrics, confirming our H3 and H4.

Several managerial implications stem from the abovementioned results. Firstly, the time required to complete business combinations is essential as prolonged acquisition periods (close to the two-year limit) generally relate to lower performance. The findings demonstrate how perverse incentives embedded in the SPAC contract may encourage some SPAC sponsors and underwriters to make bad acquisitions to collect their equity compensation and defer underwriting fees, respectively.

Secondly, overpayment risks must be managed carefully; the findings on the 80% threshold suggest that overpaying to avoid liquidation or to secure control can negatively impact share price performance and EBITDA margin. Therefore, it is crucial to negotiate terms that reflect actual market value. Lastly, management should stay updated on regulatory developments and advocate for policies that support the sustainable growth of SPACs, structuring deals that are compliant and beneficial in the long term. By focusing on these aspects, management can better navigate the complexities of acquisitions, improve performance outcomes, and enhance stakeholder value.

Overall, our findings demonstrate all hypotheses. They underscore a consistent pattern of underperformance by SPACs compared to matched peers, particularly evident in operating profitability and buy-and-hold returns, which deteriorate over time. The analysis highlights the significance of factors such as the duration of acquisition execution and proximity to the 80% threshold in influencing SPAC performance.

7. Conclusion

Amidst the ever-expanding domain of digital entrepreneurial finance, our study takes a unique approach to understanding the performance of SPACs. We delve into their distinctive structure and operational advantages, exploring their enduring performance through the lens of stock prices (buy-and-hold strategy) and operational profitability metrics—specifically, EBITDA% and ROA—over a two-year horizon. By extending the observation period beyond the timeframe provided by previous research, we add more years to assess whether SPAC performance exhibits temporal deterioration.

The research findings confirm a consistent pattern of underperformance by SPACs compared to matched peers of IPOs, particularly in terms of operating profitability and buy-and-hold returns over 1 and 2 years, which is in line with Dimitrova (2017). However, the research also reveals that this underperformance tends to worsen with time, shedding light on the dynamic nature of SPAC performance and confirming that their long-term results are still uncertain (Datar et al., 2023). Therefore, the paper contributes to the literature by exploring the impacts of intrinsic and extrinsic factors on the operating and market performance of SPACs post-combination (Vulanovic, 2016) and by highlighting potentially misaligned incentives within the broader agency theory framework within the inherent structure of SPACs, which could drive managers towards value-destroying acquisitions to unlock equity compensation. Moreover, the research emphasizes that while SPACs are generally less affected by market uncertainties during the fund-raising stage, these uncertainties significantly influence the size and share of the SPAC market (Schill, 2004).

The practical implications of our research are particularly pertinent in light of the increasing prominence of SPACs in the IPO market. While several investors highlight the advantages of SPAC mergers for digital asset companies, our research findings, which underscore the consistent underperformance of SPACs, hold crucial implications for investors and policymakers. Investors need to be aware of the potential risks associated with SPAC investments, considering the observed negative performance trends over 1 and 2 years. This aspect is especially relevant in the fast-paced digital economy, where companies seeking funding rely on speed and flexibility. Policymakers can use this information to reevaluate regulatory frameworks surrounding SPACs and ensure adequate institutional investor protection.

Furthermore, the insights gleaned from this study can address the conflict-of-interest conundrum sponsors face within SPACs. Despite regulatory interventions aimed at mitigating this conflict, the enduring poor long-term performance of SPACs relative to their peers underscores the persistent nature of this challenge. It is imperative to align the interests of sponsors with those of SPAC investors to sustain the appeal and adoption of SPACs as an alternative route to accessing the financial ecosystem. The relevance of this issue is underscored by recent regulatory actions, such as the SEC's 2022 regulation, signalling heightened scrutiny and potential reforms in this domain (Dimic et al., 2023). As such, the forthcoming outcomes of these regulatory measures bear significant implications for the future trajectory of SPACs, with the potential to ameliorate many of the prevailing challenges plaguing this investment vehicle, as posited by academic discourse.

While our study provides insights into the performance dynamics of SPACs and their implications for entrepreneurial finance, it is essential to acknowledge certain limitations. The methodology employed in our study exhibits strengths in terms of quantitative rigour, a focused timeframe, and a comparative analysis with matched IPOs. Our concentrated analysis of SPACs executing business combinations from 2010 to 2019 provides a deep understanding of this specific period while including a matched IPO group enhances the reliability of our assessments. However, the geographical focus on the U.S. SPAC market may limit the applicability of our findings to global contexts with different regulatory environments. Relying exclusively on quantitative methods may overlook qualitative factors influencing SPAC performance and external factors beyond SPACs' sponsors or investors' control, such as geopolitical events, which could, in turn, influence firm performance. These considerations highlight the importance of a balanced approach, incorporating both quantitative and qualitative methods, considering a broader timeframe, and exploring SPAC dynamics across global markets for a comprehensive understanding of the perverse contract incentive phenomenon. Moreover, our study concentrates on the post-business combination phase, leaving room for further exploration of the pre-merger stage and its influence on subsequent performance. Examining the negotiation and selection processes during this earlier phase could unveil critical insights into the drivers of SPAC's success or failure.

In conclusion, by outlining the impacts of intrinsic and extrinsic factors on their post-business combination phase, our findings underscore the importance of aligning sponsor interests with shareholder value, providing essential insights for investors, policymakers, and industry practitioners navigating the dynamic intersection of finance and digital evolution.

Chapter 3: The Impact of Pressure-Insensitive Institutional Ownership on Corporate Investment Intensity: An Empirical Investigation

1. Introduction

Institutional investors have significantly expanded their influence within global financial markets over the past few decades. By 2019, the top 50 institutional investors managed assets totalling USD 24 trillion, marking a twofold increase from 2007 (Medina et al., 2022). This growth in managed assets coincided with a substantial increase in their equity holdings, which rose by 70% during the same period (Medina et al., 2022). By the end of 2019, institutional investors accounted for approximately 43% of global market capitalization, with their holdings in major European economies - including France, Germany, Italy, and Spain - representing 20% to 30% of their respective market capitalizations (Bas et al., 2023). These statistics highlight institutional investors' critical role globally and within European financial markets.

Concurrent with the growing prominence of institutional investors, Europe's role within the global innovation landscape has been increasingly perceived as sluggish. Often viewed as an ageing economic region, Europe significantly trails behind the United States in terms of investment in capital expenditure and research and development (R&D) spending. Between 2014 and 2019, large European companies were 20 per cent less profitable, grew revenues 40 per cent more slowly, invested 8 per cent less (capital expenditure relative to the stock of invested capital), and spent 40 per cent less on R&D than the U.S. companies (Smith et al., 2022). The European Commission has recently emphasized the critical importance of industrial innovation in promoting competitive sustainability across the European Union (E.U.). This focus is pivotal in Europe's comprehensive recovery strategy, which includes the dual objectives of green and digital transitions, aligning with the global sustainability agenda. Given the substantial growth in institutional investors' holdings within firms, these investors are well-positioned to drive European companies toward more innovative practices.

The role of institutional investors extends beyond capital provision, influencing broader aspects of corporate governance and decision-making. Their impact is well-documented across various corporate domains, excluding innovations (Boehmer & Kelley, 2009; Carleton et al., 1998; Gillan & Starks, 2000; Hartzell & Starks, 2003). Institutional investors are known to enhance stock market efficiency, mitigate agency conflicts, and steer managerial decisions toward creating shareholder wealth (Cornett et al., 2007). They employ diverse mechanisms to align managerial behaviours with shareholder interests, such as securities litigation (S. Chen et al., 2010) and "just vote no" campaigns (Guercio et al., 2008). However, the extent to which institutional investors support corporate innovation in Europe remains an open question, particularly in light of the ongoing debate surrounding the role of institutional investors in corporate operations (Edmans et al., 2019).

Innovation is crucial for companies to remain competitive, expand, and penetrate new markets, ultimately generating wealth for investors. However, innovation involves considerable risk, as its commercial success

cannot be guaranteed (Bessler & Vendrasco, 2022b; Holmstrom, 1989; Sakaki & Jory, 2019). Central to this discourse is the issue of short-termism, which has faced increasing scrutiny since the rise of investor activism in the 1980s. This scrutiny stems from concerns that stock market pressures may discourage managers from pursuing potentially valuable innovations that are not immediately quantifiable by the market (Z. Chen et al., 2023; Schiereck et al., 2023; Singh & Yerramilli, 2014). Such pressures can lead to managerial myopia, fostering a culture of short-termism that supports "quarterly capitalism"(Stein, 1989). The impact of investor heterogeneity on this issue is significant, as the degree of pressure investors exert can vary markedly.

Specifically, some institutional investors, such as insurance companies and banks, through their trust departments, often maintain or seek business affiliations with firms. They may be reluctant to challenge managerial decisions, thus categorizing them as pressure-sensitive. Conversely, investment firms and independent investment advisors, lacking direct business ties with the firms they invest in, are typically viewed as pressure-insensitive. These investors are more likely to enforce stringent oversight and discipline on corporate management, inclining them toward short-termism (Batra et al., 2023; Cornett et al., 2007; Sakaki & Jory, 2019). This distinction is pivotal in understanding the diverse impacts of institutional investors on innovation and corporate governance.

Previous literature extensively explores the relationship between institutional ownership and corporate innovation, generally acknowledging a positive association (Aghion et al., 2013; Sakaki & Jory, 2019). However, the applicability of these findings remains contested (DesJardine & Durand, 2020). DesJardine and Durand (2020) argue that increased involvement from activist investors, notably hedge funds, leads to diminished operating budgets, reduced expenditures on research and development, and lower capital investments. This trend often results in an elevated focus on immediate shareholder returns, potentially at the expense of long-term, capital-intensive projects (Brav et al., 2014).

Moreover, while existing research provides insights into the effects of various institutional investors, particularly those classified as "pressure-insensitive," such studies predominantly focus on American companies and specific categories of investors like hedge funds (Sakaki & Jory, 2019). Consequently, there is an evident scarcity of research concerning the influence of institutional investors on investment intensity within European firms, both in terms of its direction and magnitude (Schiereck et al., 2023).

Therefore, to address this theoretical gap, the present study investigates the impact of pressure-insensitive institutional investors - encompassing investment advisors, private equity firms, and hedge funds sub-categories - on the investment intensity of listed firms across Europe. This research aims to deepen the understanding of how institutional investors' strategic decisions influence managerial actions and corporate investment practices on a sample of 228 European entities from the Euro Stoxx Index.

Diverging from methodologies that utilize patent filings or non-self-citations to gauge firm innovation (Sakaki & Jory, 2019), this paper adopts a novel approach by measuring investment intensity through the ratio of organic, inorganic capital expenditures and R&D expenses, scaled by employee count. This method provides a more consistent measure of organizational size and efficiency, and it is less susceptible to the fluctuations

and distortions that typically affect accounting-based metrics. Moreover, given our focus on European companies, it is fundamental to consider the relative stability in the workforce resulting from stricter European labour regulations compared to the U.S. "*employment-at-will*" doctrine, which allows U.S. employers greater flexibility to adjust their workforce without regulatory constraints in response to economic conditions.

The empirical findings of this research demonstrate a significant positive correlation between the degree of institutional investor ownership and the investment in organic capital expenditures per employee. Conversely, this study did not find a significant correlation between institutional ownership and other investments, such as inorganic investment and research and development expenditures per employee.

This paper contributes to the burgeoning literature that examines the link between institutional ownership and firm innovation by providing direct evidence of the influence of pressure-insensitive institutional investors on firm investment intensity. Hence, the contributions of this research are manifold. Primarily, it expands upon existing literature that largely concentrates on specific types of institutional investors, particularly hedge funds (Schiereck et al., 2023). This study widens the scope to include additional categories of investors, such as investment advisors, private equities, and hedge funds. It considers their broader effect, including the governance context within which they operate. Notably, the analysis examines the role of moderating governance provisions that may limit the influence of the investors under review, the moderating effects of governance, and anti-takeover provisions. Furthermore, it distinguishes between different types of investment, as the three most commonly recognized categories - R&D, organic capital expenditure (capex), and inorganic capex - have varying time lags to realize their impact on operational performance fully. Notably, organic capex is expected to influence operating performance more swiftly than R&D (Schimke & Brenner, 2014), thereby aligning differently with the investment horizons of each investor type.

This study contributes empirically by highlighting the significant role that institutional shareholders play in enhancing investment efficiency through effective monitoring. The evidence suggests that rigorous and consistent oversight by institutional investors can deter inefficient capital allocations, especially in terms of organic capex, and, consequently, augment firms' overall value. In light of these findings, policymakers should consider regulatory frameworks that promote stringent and active monitoring by institutional shareholders. Such policies serve as crucial mechanisms to safeguard against suboptimal investment decisions and to foster economic value within firms. This approach underscores the importance of institutional investor engagement in corporate governance and supports the development of policy measures to strengthen firms' accountability and performance through enhanced shareholder oversight.

2. Literature review and hypothesis development

2.1 the Influence of Institutional Investors on Corporate Strategy and Innovation

Investment decisions are pivotal for sustaining a firm's competitive advantage, driving corporate innovation that enables market penetration, growth, and wealth creation. However, innovation entails substantial risks and

costs, as its commercial success is uncertain and failures are common, potentially eroding shareholder value (Sakaki & Jory, 2019).

While long-term investors aim to maximize total returns, short-term investors prioritize immediate stock price gains (Derrien et al., 2013; Froot et al., 1992). According to the efficient market hypothesis, informationally efficient markets should harmonize the interests of both investor types by maximizing fundamental firm value.

However, the short-term pressure hypothesis suggests that short-term investors may influence managers to focus on immediate profits, potentially compromising long-term value (Bushee, 1999). Empirical evidence supports that short-term oriented investors might overvalue immediate earnings, pressuring managers to reduce long-term investments such as R&D to satisfy short-term earnings expectations (Brochet et al., 2015; Bushee, 1999).

On the other hand, large institutional ownership, also fostered by more liquid stock markets, might encourage longer holding periods and foster an environment conducive to innovation by promoting extensive investment activities (Maug, 1998). On this perspective, more recent studies indicate a positive relationship between institutional ownership and managerial efficiency, with institutional oversight driving management towards improving performance, while reducing opportunistic behaviours (Baghdadi et al., 2018; H. Kim et al., 2019; Wei & Chengshu, 2023).

However, it is crucial to recognize the diversity among institutional investors; their influence and governance approaches can vary significantly. For instance, entities like banks and insurance companies, through their trust departments, often have business affiliations with firms and are less likely to challenge managerial decisions, categorizing them as pressure-sensitive. Conversely, investment firms and independent advisors, without direct business ties, typically exert more rigorous oversight and discipline, characterizing them as pressure-insensitive investors (Almazan et al., 2005; Appel et al., 2018; Batra et al., 2023; Cornett et al., 2007; Sakaki & Jory, 2019). This diversity underscores the need for comprehensive research to understand the varying roles and impacts of different institutional investors within the corporate landscape.

2.2 Ownership structure and corporate investments

The extensive body of literature examining the relationship between institutional ownership and corporate innovation has found a positive correlation between these elements (Aghion et al., 2013; Eng & Shackell, 2001; Francis & Smith, 1995; Sakaki & Jory, 2019). Notably, Francis and Smith (1995) and Eng and Shackell (2001) have identified a positive association between concentrated institutional ownership and increased R&D expenditure. Similarly, Bushee (1999) observes that firms with substantial institutional ownership are less inclined to reduce R&D budgets. Further, Aghion et al. (2013) delve into the dynamics between institutional investors and innovation, introducing the lazy manager hypothesis, which suggests that managers favouring the status quo are less likely to innovate unless pressured by institutional investors. Nevertheless, these investigations primarily concentrate on specific types of investors, such as hedge funds, thus raising questions about the generalizability of these findings (DesJardine & Durand, 2020). DesJardine and Durand (2020)

contend that increased engagement from activist investors, particularly hedge funds, typically results in diminished operational budgets and lower R&D and capital investments, emphasizing short-term shareholder returns at the potential expense of long-term, capital-intensive initiatives (Brav et al., 2014).

Furthermore, the mechanisms by which institutional investors influence shareholder value still need to be adequately explained. Prior research associates share price increases with enhanced dividends, share buybacks, increased leverage, and reductions in cash holdings and investments, including mergers and acquisitions (M&As) and capital expenditures (capex), after institutional interventions (Bessler & Vendrasco, 2022a; Boyson & Mooradian, 2011; Brav et al., 2015; Gantchev et al., 2020). Activist hedge funds are posited to encourage significant cost reductions, scaled-back investments, asset restructuring, redistribution of cash to shareholders, and board modifications to boost financial performance (L. A. Bebchuk et al., 2015; S. Chen & Feldman, 2018; Gantchev, 2013).

In the investment analysis, it is fundamental to appreciate the varying time lag required to extract value from capex versus R&D investments. Schimke and Brenner (2014) propose that R&D, as a proxy for intangible investments, often demonstrates delayed value effects longer than those associated with tangible capital expenditures. This complexity underscores the need for further research and understanding in this area. The presence of short-term-oriented institutional investors, like hedge funds, may prompt firms to curtail or delay long-term investments - such as R&D - favouring investments that are beneficial for sustained growth in the short term - such as tangible capital expenditure - (Brav et al., 2008).

From an inorganic investment perspective, the conspiracy tort hypothesis argues that institutional owners, motivated by maximizing returns across industry-wide portfolios, may overlook single unfavourable M&A transactions as they are interested in intercepting the broad spillover effects of firms' M&As on industry peers returns (Fathollahi et al., 2022; Servaes & Tamayo, 2014; Song & Walkling, 2000). In contrast, the synergy governance hypothesis posits that institutional owners with superior access to information and substantial supervisory experience are more likely to assist firms in making effective M&A decisions and opposing disadvantageous deals (Edmans et al., 2019; Li et al., 2021).

Based on this preliminary review of the literature, we developed the following hypotheses:

H1: The ownership of pressure-insensitive institutional investors positively correlates with a firm's organic capex investment intensity.

H2: The ownership of pressure-insensitive institutional investors is positively associated with the firm's inorganic investment intensity.

H3: The ownership of pressure-insensitive institutional investors is negatively correlated with a firm's R&D investment intensity.

3, Data and sample selection

This study utilizes a dataset from 2013 to 2022, comprising European entities listed on the Euro Stoxx Index. Initially, the dataset included 292 firms, which underwent a rigorous filtering process conducted in three successive phases to ensure the accuracy and relevancy of the sample. In the first phase, we excluded firms from the financial, insurance, and real estate investment trusts (REITs) sectors due to their distinct financial structures and regulatory environments, which could skew the generalizability of the results. In the subsequent phase, we eliminated entities lacking comprehensive financial data, ensuring the robustness of our analysis. Finally, Winsorization was applied to the continuous variables at the 1st and 99th percentiles to mitigate the effects of potential outliers, refining the sample to 228 European publicly listed corporations. For each single firm, we sourced data from Refinitiv.

According to the sample composition the industrial sector represents the most significant proportion, accounting for 25% of the final sample, as shown in Panel A of Table 12.In contrast, the energy sector comprises the smallest segment at 4%. Furthermore, the analysis in Panel B indicates that, on average, firms invested approximately 0.0436 euro million per employee in organic capex, with additional expenditures of 0.0241 euro million on inorganic capex (M&A) and 0.0136 euro million on R&D per employee from 2013 to 2022. Institutional ownership patterns, detailed in Panel C, show that such ownership averaged 29.07% over the analysed period, aligning with literature that suggests that institutional investors typically account for 20% to 30% of the market capitalizations in major European economies (Bas et al., 2023). The period under study also noted a significant 11.03 percentage point rise in total institutional investor ownership, propelled mainly by investment advisors.

Table 12 Sample Distribution

This table describes the sample. Panel A presents sample distribution by industry, whereby N represents the number of firms by industry, while % indicates the percentage distribution. Panel B shows the average investment intensity in euro million per employee from 2013 to 2022 by industry classification based on Refinitiv classification. Panel C shows the average institutional ownership percentage of traded shares by year and investor sub-type (including ownership of investment advisors, private equity and hedge fund). Panel D shows the average investment intensity in euro million per employee by investment category from 2013 to 2022.

Panel A | Sample distribution by industry classification

Industry	N.	%
Communication Services	16	7%
Consumer Discretionary	33	14%
Consumer Staples	20	9%
Energy	9	4%
Health Care	24	11%
Industrials	58	25%
Information Technology	18	8%
Materials	28	12%
Utilities	22	10%
Total	**228**	**100%**

Panel B | Average investment intensity in euro million per employee from 2013 to 2022 by industry classification

Industry	Organic Capex per Employee	Inorganic Capex per Employee	R&D per Employee
Communication Services	0.1451	0.2007	0.0033
Consumer Discretionary	0.0193	0.0094	0.0112
Consumer Staples	0.0136	0.0070	0.0029
Energy	0.1104	0.0034	0.0061
Health Care	0.0200	0.0197	0.0505
Industrials	0.0112	0.0030	0.0072
Information Technology	0.0150	0.0097	0.0279
Materials	0.0274	0.0045	0.0061
Utilities	0.1455	0.0348	0.0010
Total average	**0.0436**	**0.0241**	**0.0136**
Total median	**0.0200**	**0.0094**	**0.0061**

Panel C | Average institutional ownership by year and by investor sub-type

Years	% Institutional ownership	% Investment advisor ownership	% Private equity ownership	% Hedge fund ownership
2013	22.75%	22.06%	0.54%	0.16%
2014	24.50%	23.59%	0.72%	0.20%
2015	26.52%	25.48%	0.77%	0.27%
2016	27.70%	26.87%	0.56%	0.27%
2017	28.44%	27.68%	0.41%	0.35%
2018	30.33%	29.57%	0.39%	0.37%
2019	31.40%	30.36%	0.58%	0.45%
2020	31.99%	31.06%	0.49%	0.44%
2021	33.26%	31.97%	0.87%	0.42%
2022	33.78%	32.49%	0.84%	0.45%
Total	**29.07%**	**28.11%**	**0.62%**	**0.34%**
Delta 2022-2023	**11.03%**	**10.44%**	**0.30%**	**0.29%**

Panel D | Average investment intensity in euro million per employee by type of investment type and by year

Years	Organic Capex per Employee	Inorganic Capex per Employee	R&D per Employee
2013	0.0324	0.0067	0.0099
2014	0.0373	0.0121	0.0098
2015	0.0390	0.0192	0.0107
2016	0.0365	0.0102	0.0108
2017	0.0403	0.0155	0.0102
2018	0.0416	0.0060	0.0150
2019	0.0501	0.0214	0.0176
2020	0.0440	0.0914	0.0169
2021	0.0514	0.0345	0.0168
2022	0.0600	0.0175	0.0165
Total	**0.0436**	**0.0241**	**0.0136**
Delta 2022-2023	**0.0276**	**0.0108**	**0.0066**

4. Methodology

4.1. Measures of investment intensity

In line with previous studies (Chen et al., 2001), we derive three dependent variables as a proxy of the investment intensity of a company: (i) Organic Capex per employee, (ii) R&D per employee and (iii) Inorganic Capex per employee. These metrics scaled on employees offer a nuanced perspective on how firms allocate resources across various investment types, thereby providing insights into publicly listed companies'

willingness to undertake investments (Sakaki & Jory, 2019). Diverging from methodologies that rely on patent filings or non-self-citations as indicators of firm innovation (Sakaki & Jory, 2019), this study introduces a novel approach by enlarging the investment scope and by assessing investment intensity through the ratios of organic and inorganic capital expenditures to R&D expenses, adjusted by employee count. This approach yields a more stable measure of organizational size and efficiency, mitigating the impacts of fluctuations and distortions commonly associated with accounting-based metrics - such as revenues. Moreover, given our focus on European firms, it is crucial to highlight the relative workforce stability underpinned by stringent European labour regulations, in contrast to the U.S. "employment-at-will" doctrine, which affords employers greater flexibility to adjust their workforce in response to economic conditions.

We calculate the following measures for each period under review (*t*):

$Organic\ Capex\ per\ Employee_t$ is calculated as the Organic Capex at time *t* divided by the Average Employees at time *t*.

$$Organic\ Capex\ per\ Employee_t = \frac{Organic\ Capex_t}{Average\ Employees_t}$$

Where $Organic\ Capex_t$ is defined as the net variation in cash resulting from transactions involving tangible and intangible assets. This metric incorporates data as drawn from Refinitiv regarding Property, Plant, and Equipment (PPE), as well as Intangible Assets.

$R\&D\ per\ Employee_t$ is derived by dividing the R&D expenses and capitalized costs at time *t* by the Average Employees at time *t*.

$$R\&D\ per\ Employee_t = \frac{R\&D\ expenses\ and\ capitalized\ costs_t}{Average\ Employees_t}$$

Where $R\&D\ expenses\ and\ capitalized\ costs_t$ reflects the total expenditure on R&D, inclusive of the segments of R&D costs that are capitalized as intangible and tangible assets within the fiscal period.

$Inorganic\ Capex\ per\ Employee_t$ is obtained by dividing the Inorganic Capex at time *t* by the Average Employees at time *t*.

$$Inorganic\ Capex\ per\ Employee_t = \frac{Inorganic\ Capex_t}{Average\ Employees_t}$$

Where $Inorganic\ Capex_t$ is denoted by the net changes in cash flow attributable to the acquisition or divestiture of business entities.

Please note that for all three aforementioned measures, the variable $Average\ Employees_t$ reflects the reported total workforce employed by the firm, averaged over the fiscal period.

4.2. Measures of pressure-insensitive institutional ownership

Based on Sakaki & Jory (2019), this study identifies Investment Advisors, Hedge Funds, and Private Equities as pressure-insensitive investors. We collected data from Refinitiv on the percentage of traded shares owned

by each investor type. To assess the influence of pressure-insensitive investors, we combined the ownership percentages for Investment Advisors (*%OwnershipIA*), Hedge Funds (*%OwnershipHF*), and Private Equity (*%OwnershipPE*) into a single metric, termed %*Institutional Ownership*. This composite measure provides a clear indication of the extent to which these investor groups, which are less responsive to external pressures, participate in corporate ownership structures.

4.3. Control variables

Following previous studies, we incorporate a set of control variables to mitigate the effect of exogenous factors:

- Company Size (*Total Assets (log)*): Utilizing the one-year lagged natural logarithm of the book value of a company's assets at year-end accounts for the propensity of larger firms to engage in extensive corporate actions. This adjustment is based on the premise that firm size, as measured by the natural logarithm of total assets, can influence corporate behaviour and strategy (Hitt et al., 1996).
- Return on Average Total Equity (*ROE*): This metric is calculated as the one-year lagged ratio of net profit to shareholder equity. Controlling for firm performance through ROE acknowledges that firms with superior performance may have less incentive to enhance efficiency via growth initiatives (Shi et al., 2020).
- Corporate Leverage (*Mkt Debt ratio*): This is defined by the ratio of net financial position to enterprise value at period-end. High debt levels may compel firms to consolidate existing operations and limit growth activities, hence the inclusion of debt ratio as a control (Shi et al., 2020).
- Cash Holding Ratio (*Cash holding ratio*): The ratio of cash and equivalents to total assets at year-end is included to account for the impact of liquidity on a firm's propensity for investment actions (Shi et al., 2020).
- Diversification (*%Foreign sales*): The ratio of foreign sales to total sales at period-end serves as a proxy for firm diversification. Highly diversified firms are presumed to have greater opportunities for investment actions, leading to the inclusion of this variable (Shi et al., 2020).
- Economic Growth (*GDP growth)*: This is measured as the ratio of GDP at time *t* over GDP of the previous period (*t-1*). The inclusion of macroeconomic growth rates reflects the assumption that companies adjust investment decisions based on macroeconomic conditions.

Furthermore, the study incorporates governance-related variables to examine their impact on shareholder influence. In particular, following previous studies (e.g., Shi et al., 2020) we include Board independence *(% Independent BoD*), which indicates the proportion of independent directors (Hoskisson et al., 1994), CEO duality (*DummyCEOduality*), a dummy variable which takes the number of 1 if the CEO is also the board chair and Average Board Tenure (*Avg. Tenure BoD*), which is the average number of years each board member has been on the board. As posited by Shi et al. (2020) CEOs who are also the board chair and BoD with long tenure may be entrenched and thus less sensitive to the pressure of investors.

4.4. Base Model

The core objective of our analysis is to examine the impact of institutional ownership on the investment intensity of European listed firms. We consider three alternative proxies to capture investment intensity (Organic Capex, R&D investment, Inorganic Capex) and the percentage of traded shares owned by pressure-insensitive institutional ownership (hedge funds, private equities and investment advisors) to capture institutional ownership. To address our core objective, we run a fixed-effects model, which allows us to incorporate fixed effects for each entity or temporal segment, enabling us to mitigate the impact of unobserved heterogeneity. The baseline model of our analysis is shown below in Equation (1):

Equation (1):

$$Y_{it} = \alpha + \beta_1 Institutional\ ownership_{i,t} + \beta_2 Total\ Asset\ (log)_{\ i,t} + \beta_3 ROE_{i,t} + \beta_4 Mkt\ Debt\ Ratio_{i,t} + \beta_5 Cash\ holding\ ratio_{i,t} + \beta_6 \%Foreign\ Sales_{i,t} + \beta_7 GDPgrowth_{i,t} + \beta_8 \%Independent\ BoD_{i,t} + \beta_9 DummyCEOduality_{i,t} + \beta_{10} Avg.Tenure\ BoD_{i,t}$$

Where *i* and *t* indicate firm and time respectively.

These variables are lagged to acknowledge the influence of historical outcomes on investment decisions in the subsequent period, aligning with the notion that these decisions are also contingent upon the resources available at the year's end.

4.5 Additional Analysis

Robustness check 1 – the impact of constitutional constraints

To examine the robustness of Equation (1), we expanded the analysis to assess the influence of constitutional constraints on shareholder oversight. Following the methodological framework of Shi et al. (2020), we integrated moderating variables such as the Presence of a Staggered Board (*DummyStaggeredBoard*), which potentially mitigates swift alterations in board composition, thereby diluting immediate shareholder interventions; Golden Parachute provisions (*DummyGoldenParachute*), which affect executive compensation in acquisition scenarios; and Poison Pill provisions (*DummyPoisonPill*), aimed at thwarting hostile takeovers. Each variable was analysed for its interactive effects on institutional ownership, extending Equation (1) to include these moderating factors in a comprehensive model (Equation 2).

Equation (2): baseline model and moderating factors

$$\begin{aligned} Y_{it} = \alpha &+ \beta_1 Institutional\ ownership_{i,t} + \beta_2 Total\ Asset\ (log)_{\ i,t} + \beta_3 ROE_{i,t} + \beta_4 Mkt\ Debt\ Ratio_{i,t} \\ &+ \beta_5 Cash\ holding\ ratio_{i,t} + \beta_6 \%Foreign\ Sales_{i,t} + \beta_7 GDPgrowth_{i,t} + \beta_8 \%Independent\ BoD_{i,t} \\ &+ \beta_9 DummyCEOduality_{i,t} + \beta_{10} Avg.Tenure\ BoD_{i,t} + \beta_{11} DummyStaggeredBoard_{i,t} \\ &+ \beta_{12} DummyPoisonPill_{i,t} + \beta_{13} DummyGoldenParachute_{i,t} \end{aligned}$$

Where *i* and *t* indicate firm and time respectively.

The Equation (2) analysis on organic capex and research and development variables only includes the Staggered Board provision. In contrast, in the analysis of inorganic capex, Equation (2) also incorporates

Poison Pill and Golden Parachute provisions. This differentiation arises from the varying degrees of power the Board of Directors hold across these investment categories. Organic capex and R&D expenses, which can be directly authorized by the Board, typically do not significantly alter the company's core structure or strategic direction. However, mergers and acquisitions, representing inorganic investments, frequently require shareholder approval due to their potential to substantially impact the company's structure, strategy, and interests (Boone et al., 2018), thus provisions that limit shareholder's block holdings must be analyzed.

Implementing constitutional safeguards like Poison Pill and Golden Parachute, which are designed to reduce institutional investors' influence, actually enhance the democratic nature of corporate decision-making. These mechanisms prevent them from quickly securing a controlling interest that could push through significant changes without broader shareholder's consensus. Therefore, these governance mechanisms promote a balance between executive autonomy and shareholder oversight in strategic financial actions.

Robustness check 2 – the impact of the different categories of institutional investors

We refined Equation (1) to explore whether the relations identified in the broader institutional investors' ownership endure when disaggregated into specific investor categories, namely Investment Advisors (*%OwnershipIA*), Hedge Funds (*%OwnershipHF*), and Private Equity (*%OwnershipPE*). By extending Equation (1) to include these distinctions, we constructed Equations 3a, 3b and 3c which aims to assess the differential impacts of various categories of pressure-insensitive investors on the firm's investment intensity:

Equation (3a): baseline model expansion by investor sub-type – investment advisors

$$Y_{it} = \alpha + \beta_1 \%OwnershipIA_{i,t} + \beta_2 Total\ Asset\ (log)_{\ i,t} + \beta_3 ROE_{i,t} + \beta_4 Mkt\ Debt\ Ratio_{i,t} + \beta_5 Cash\ holding\ ratio_{i,t} + \beta_6 \%Foreign\ Sales_{i,t} + \beta_7 GDPgrowth_{i,t} + \beta_8 \%Independent\ BoD_{i,t} + \beta_9 DummyCEOduality_{i,t} + \beta_{10} Avg.Tenure\ BoD_{i,t}$$

Equation (3b): baseline model expansion by investor sub-type – private equity

$$Y_{it} = \alpha + \beta_1 \%OwnershipHF_{i,t} + \beta_2 Total\ Asset\ (log)_{\ i,t} + \beta_3 ROE_{i,t} + \beta_4 Mkt\ Debt\ Ratio_{i,t} + \beta_5 Cash\ holding\ ratio_{i,t} + \beta_6 \%Foreign\ Sales_{i,t} + \beta_7 GDPgrowth_{i,t} + \beta_8 \%Independent\ BoD_{i,t} + \beta_9 DummyCEOduality_{i,t} + \beta_{10} Avg.Tenure\ BoD_{i,t}$$

Equation (3c): baseline model expansion by investor sub-type – hedge fund

$$Y_{it} = \alpha + \beta_1 \%OwnershipPE_{i,t} + \beta_2 Total\ Asset\ (log)_{\ i,t} + \beta_3 ROE_{i,t} + \beta_4 Mkt\ Debt\ Ratio_{i,t} + \beta_5 Cash\ holding\ ratio_{i,t} + \beta_6 \%Foreign\ Sales_{i,t} + \beta_7 GDPgrowth_{i,t} + \beta_8 \%Independent\ BoD_{i,t} + \beta_9 DummyCEOduality_{i,t} + \beta_{10} Avg.Tenure\ BoD_{i,t}$$

Where *i* and *t* indicate firm and time respectively.

Robustness check 3 – the impact of industries by investment intensity

As a final robustness analysis, we explore the relationship between institutional investor ownership and investment intensity is influenced by different industries characteristics. Sectors such as healthcare and information technology are heavily influenced by intangible assets, with research and development (R&D)

playing a pivotal role. Conversely, industries like those within the communications services sector rely more on tangible infrastructures and are thus more inclined to invest in tangible assets.

To ensure the robustness of our findings, we applied Equation (1) to six distinct sub-samples. These sub-samples were carefully categorized based on the intensity of their investments relative to the median of the overall sample on organic capex, inorganic capex and R&D per employee.

For organic capex per employee, sectors such as communications services, energy, materials, and utilities exhibited values above the median (Sub-sample (1)). These sectors are characterized by the necessity for extensive infrastructure—ranging from networks to power plants—that demands significant initial investments and ongoing maintenance to ensure operational efficiency and safety. On the other hand, sectors like consumer discretionary, consumer staples, healthcare, industrials, and information technology recorded below-median values (Sub-sample (2)), indicating lesser reliance on heavy infrastructural investments.

Regarding inorganic capex per employee, industries such as communications services, healthcare, information technology, and utilities were above the median (Sub-sample (3)). These industries are often propelled by rapid technological advancements, leading companies to acquire others to access new technologies or innovative products, thus maintaining their competitive edge. Conversely, sectors like consumer discretionary, consumer staples, energy, industrials, and materials were below the median, potentially indicating a different strategic focus that deprioritizes acquisitions (Sub-sample (4)).

When it comes to R&D per employee, sectors like consumer discretionary, healthcare, industrials, and information technology stand out with their investments exceeding the sample median (Sub-sample (5)). On the other hand, sectors such as communication services, consumer staples, energy, materials, and utilities, while investing less in R&D, potentially demonstrate a different strategic focus that places less emphasis on these types of investments (Sub-sample (6)).

5. Results

5.1. Descriptive statistics of sample and correlation

Table 13 provides sample descriptive statistics. Panel A describes the investment intensity variable, Panel B describes the institutional ownership variables, and Panel C lists the control variables.

The mean logarithm of the *Organic Capex per Employee*, *Inorganic Capex per Employee* and R*&D per Employee* in euro million is 0.043, 0.013 and 0.009, respectively. Panel B indicates that the average institutional ownership has been 28.98% over the period, with a volatility of 17.10%. Investment Advisors were the most significant owners in our sample, representing about 28.01% of total ownership throughout the analysed period. They were followed by Private Equity, at approximately 0.65%, and Hedge Funds, at about 0.33% of total ownership.

Table 14 presents the Pearson correlation of variables. The correlation coefficients between institutional ownership % and organic capex per employee are positive and significant, while the correlation with R&D is

negative and significant at least at a 10% level. No significant correlation is found with the inorganic capex per employee. Therefore, it appears that a high proportion of institutional ownership is associated with higher investment intensity in terms of organic capex and lower investments in R&D.

Table 13 Descriptive statistics of the sample

This table shows descriptive statistics of the sample. The term log indicates that to compute total assets, we considered the natural logarithm of the variable.

VARIABLES	Obs	Mean	Std. Dev.	Min	Max
Panel A. Investment intensity variables					
Organic Capex per Employee	1,816	0.0398	0.0732	0.0000	0.4465
Inorganic Capex per Employee	1,816	0.0118	0.0566	-0.0718	0.4395
R&D per Employee	1,816	0.0107	0.0182	0.0000	0.1063
Panel B. Institutional ownership variables					
% Institutional Ownership	2,280	0.2907	0.1661	0.0000	0.8559
% Ownership IA	2,280	0.2811	0.1612	0.0000	0.8556
% Ownership PE	2,280	0.0062	0.0402	0.0000	0.5800
% Ownership HF	2,280	0.0034	0.0138	0.0000	0.1320
Panel C. Control variables					
Total Asset (log)	1,955	9.2336	1.5411	2.1551	13.1780
ROE	2,019	0.1161	0.1418	-0.4414	0.6156
Mkt Debt ratio	1,882	0.1583	0.2058	-0.4044	0.6881
Cash holding ratio	1,955	0.1013	0.0900	0.0008	0.4778
%Foreign sales	1,793	0.7171	0.2388	0.0365	1.0004
GDP growth	1,824	0.0165	0.0745	-0.1505	0.1839
% Independent BoD	1,972	0.5967	0.2567	0.0000	1.0000
Avg. Tenure BoD	1,942	6.6991	2.8907	0.0000	19.5000

Table 14 Correlations

This table reports the correlation among the variables used in this study. The term log indicates that we considered the natural logarithm of the variable to compute total assets. * indicates that the correlation is significant, at least at the 10% level.

VARIABLES	Organic Capex per Employee	Inorganic Capex per Employee	R&D per Employee	% Institutional Ownership	% Ownership IA	% Ownership PE	% Ownership HF	Total Asset (log)	ROE	Mkt Debt ratio	Cash holding ratio	%Foreign sales	GDP growth	% Independent BoD	DummyCEOduality	Avg. Tenure BoD
Organic Capex per Employee	1.000															
Inorganic Capex per Employee	0.2762*	1.000														
R&D per Employee	-0.0721*	-0.0083	1.0000													
% Institutional Ownership	0.1419*	0.0210	-0.0704*	1.0000												
% Ownership IA	0.1421*	0.0279	-0.076*	0.9674*	1.0000											
% Ownership PE	-0.0115	-0.0167	-0.0189	0.1805*	-0.0605*	1.0000										
% Ownership HF	-0.0073	-0.0217	0.0149	0.2043*	0.1334*	-0.0342	1.0000									
Total Asset (log)	0.0905*	-0.0898*	-0.0609	-0.1044*	-0.0767*	-0.0931*	-0.0543	1.0000								
ROE	-0.0516	0.0158	0.0049	0.096*	0.1082*	-0.0028	-0.0928*	-0.1171*	1.0000							
Mkt Debt ratio	0.2883*	0.0178	-0.2406*	-0.1136*	-0.1138*	-0.0096	-0.0046	0.4559*	-0.1919*	1.0000						
Cash holding ratio	-0.1249*	-0.0071	0.2231*	-0.0024	-0.0034	-0.0031	0.0182	-0.3601*	0.0550	-0.4249*	1.0000					
%Foreign sales	-0.1819*	-0.0749*	0.2076*	0.1286*	0.1196*	0.0536	-0.0247	-0.0676*	0.07*	-0.2046*	0.1503*	1.0000				
GDP growth	0.0168	-0.0063	0.0200	0.0945*	0.0928*	0.0063	0.0325	0.0326	0.1122*	-0.0331	0.0207	0.0489	1.0000			
% Independent BoD	0.0104	-0.0508	0.1682*	0.2988*	0.3004*	-0.0081	0.0949*	0.0164	0.0443	-0.0094	0.0198	0.2512*	0.0303	1.0000		
DummyCEOduality	-0.0968*	-0.0558	-0.0457	-0.0153	-0.0137	-0.0077	-0.0019	0.1732*	0.0406	0.0340	-0.0171	-0.0490	-0.0408	-0.2336*	1.0000	
Avg. Tenure BoD	-0.2441*	-0.0187	0.0105	-0.1161*	-0.0828*	-0.0853*	-0.1485*	0.0351	0.0290	-0.132*	0.0282	0.1472*	-0.0062	-0.0852*	0.2407*	1.0000

5.2 The influence of institutional ownership on investment intensity

Table 15 presents the estimation results of Equation (1) on Organic Capex (Column (1)), Inorganic Capex (Column (2)) and R&D (Column (3)) scaled by employee, thereby examining Hypotheses 1 (*H1*), 2 (*H2*) and 3 (*H3*). Our main variable of interest is *% Institutional Ownership*.

The coefficient on *% Institutional Ownership* is significantly positive (*Table 15* – Column (1)), with a β of 0.0457 ($p < 0.05$), indicating that at increasing levels of institutional ownership, firms report significantly higher investments in *Organic Capex per Employee*. This evidence suggest that institutional investors advocate for more aggressive investment strategies, potentially enhancing firm value (Schiereck et al., 2023; Swanson et al., 2022). Generally, organic capex has shorter time-lag than R&D in terms of improving a firm's cash flows (thus enhancing firm value) (Schimke and Brenner, 2014). Accordingly, institutional investors as they are potentially able to reap the enhanced value driven by organic capex, may not be incentivized in cutting down this type of investment. Institutional investors, able to potentially reap the enhanced value driven by organic capex, may not only sustain but also increase this type of investment, confirming our *H1* that institutional ownership positively correlates with a firm's organic capex investment intensity.

Conversely, *Inorganic Capex per Employee* exhibits a statistically significant negative association (*Table 15* – Column (2)), as indicated by a coefficient of -0.0327 ($p < 0.1$), implying that increased institutional ownership could lead to a reduction in spending on inorganic initiatives such as M&A. This result violates *H2*, as indeed institutional ownership is negatively associated with the firm's *Inorganic Capex per Employee*. However, as discussed in the subsequent section on robustness tests, the observed patterns exhibit inconsistency, thus not conclusively violating the hypothesis posited in *H2*.

The relevance of institutional investor ownership in a global landscape, especially with the rise of index or quasi-index tracking funds, has normalized the phenomenon of institutional investors holding stakes in multiple listed entities within the same sector concurrently (Zhu et al., 2024). This dual role may limit the economic impact of such ownership on M&A decisions, with diverging theories proposing varying impacts of institutional investors on M&A.

The coefficient *% Institutional Ownership* loses significance in the analysis of R&D spending per employee (*Table 15* – Column (3)), violating *H3*, which assumed that the ownership of pressure-insensitive institutional investors negatively correlates with a firm's R&D investment intensity. The findings align with mixed results in the literature, where some authors argue for a positive association between institutional ownership concentration and R&D expenses (Aghion et al., 2013; Eng & Shackell, 2001; Francis & Smith, 1995), while others suggest that the time lags associated with R&D results may incentivize short-term oriented investors, like hedge funds, to curtail or delay investments requiring longer to realize financial gains (Brav et al., 2008; Schimke & Brenner, 2014). The general inconclusiveness at the broader literature level appears confirmed in this specific study. Additionally, this result may reflect the heterogeneity of the sample, which includes several industries with different propensities for innovation and several categories of pressure-insensitive institutional

investors, comprising investment advisors, private equity, and hedge funds, each with potentially different investment goals and scopes.

Moreover, some authors, such as Sakaki and Jory (2019), argue that focusing solely on R&D expenditure may provide a partial view of innovation. They suggest that including patent counts and citation counts could offer a more comprehensive assessment, not only of a firm's willingness to undertake but also in the success of innovation activities.

Table 15 Fixed-effect regressions for change in institutional ownership proportion – baseline results

This table reports the results of the firm-fixed effect regression of the Organic Capex per Employee, Inorganic Capex per Employee and R&D per Employee. The dependent variable is the proportion of institutional ownership.

	(1)	(2)	(3)
VARIABLES	Organic Capex per Employee	Inorganic Capex per Employee	R&D per Employee
% Institutional Ownership	0.0457**	-0.0327*	0.00342
	(0.0206)	(0.0179)	(0.00374)
Total Asset (log)	0.0183***	-0.000553	0.00259**
	(0.00698)	(0.00557)	(0.00116)
ROE	0.00724	0.00514	-0.000244
	(0.00812)	(0.00772)	(0.00160)
Mkt Debt ratio	-0.0471***	-0.0779***	-0.000794
	(0.0160)	(0.0225)	(0.00199)
Cash holding ratio	-0.0277	-0.131***	0.00706
	(0.0283)	(0.0308)	(0.00683)
%Foreign sales	-0.0239	0.00124	0.00115
	(0.0251)	(0.0164)	(0.00325)
GDP growth	0.00332	-0.0239	0.00668***
	(0.00822)	(0.0189)	(0.00160)
% Independent BoD	-0.00232	0.0393**	-0.000870
	(0.00829)	(0.0176)	(0.00258)
DummyCEOduality	-0.0125	-0.0114*	-0.000169
	(0.0123)	(0.00661)	(0.00105)
Avg. Tenure BoD	0.000501	3.18e-05	-0.000294
	(0.000757)	(0.000827)	(0.000257)
Constant	-0.124*	0.0284	-0.0126
	(0.0691)	(0.0599)	(0.0106)
Observations	1,264	1,264	1,264
Number of ID	185	185	185
Year	Control	Control	Control
Industry	Control	Control	Control
R-sq	0.0754	0.0596	0.0584

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

This evidence suggests that institutional ownership may incentivize investment activities in companies, with efforts primarily dedicated to those that impact operating performance in the short term. On the one hand, we confirm the investor orientation towards safeguarding activities that nurture and protect value through organic capex (as evidenced by the impact on *Organic Capex per Employee*). However, this evidence does not hold in the R&D and inorganic investments analysis, which may be considered a relatively riskier expenditure that generates impacts on value in a relatively longer term (as shown by the impact on *Inorganic Capex per Employee* and *R&D per Employee*).

5.2. Additional Robustness Analysis

In this section, we present additional analysis to check the robustness of the results presented in Section 5.1. In particular, we examine how the influence of institutional ownership changes in a context characterized by more rigid constitutional constraints (as shown in Table 16), different investor sub-types (as shown in Table *17*), and industries (as shown in Table 18).

Starting from the constitutional constraints, Table 16 summarizes the results of Equation (2).

Table 16 Fixed-effect regressions for change in institutional ownership proportion including constitutional constraints

This table reports the results of the firm-fixed effect regression of the Organic Capex per Employee, Inorganic Capex per Employee and R&D per Employee. The dependent variable is the proportion of institutional ownership. This table includes the moderator factors deriving from constitutional constraint provisions. In particular, it includes the effects of Staggered Board, Poison Pill, and Golden Parachute and the respective interaction factors.

	(1)	(2)	(3)
VARIABLES	Organic Capex per Employee	Inorganic Capex per Employee	R&D per Employee
% Institutional Ownership	0.0697**	-0.0222	0.00400
	(0.0291)	(0.0273)	(0.00409)
Total Asset (log)	0.0179**	-7.00e-05	0.00260**
	(0.00702)	(0.00554)	(0.00114)
ROE	0.00554	0.00516	-0.000310
	(0.00853)	(0.00762)	(0.00156)
Mkt Debt ratio	-0.0472***	-0.0785***	-0.000810
	(0.0160)	(0.0226)	(0.00199)
Cash holding ratio	-0.0278	-0.133***	0.00717
	(0.0286)	(0.0315)	(0.00691)
%Foreign sales	-0.0230	0.00153	0.00115
	(0.0252)	(0.0162)	(0.00327)
GDP growth	0.00591	-0.0233	0.00679***
	(0.00790)	(0.0189)	(0.00157)
% Independent BoD	-0.00558	0.0377**	-0.000954
	(0.00824)	(0.0185)	(0.00257)
DummyCEOduality	-0.0122	-0.0114*	-0.000167
	(0.0122)	(0.00674)	(0.00105)
Avg. Tenure BoD	0.000372	0.000108	-0.000297
	(0.000786)	(0.000807)	(0.000261)
DummyStaggeredBoard	0.0157	-0.00565	-0.000291
	(0.0106)	(0.0145)	(0.00198)
DummyPoisonPill		-0.0252***	
		(0.00203)	
DummyGoldenParachute		0.0356	
		(0.0345)	
Staggered x Inst. Investor	-0.0768*	0.00244	-0.00175
	(0.0392)	(0.0356)	(0.00667)
Golden x Inst. Investor		-0.0449	
		(0.0535)	
Constant	-0.123*	0.0169	-0.0124
	(0.0693)	(0.0592)	(0.0106)
Observations	1,264	1,264	1,264
Number of ID	185	185	185
Year	Control	Control	Control
Industry	Control	Control	Control
R-sq	0.0804	0.0643	0.0588

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 16 Column (1) shows that pressure-insensitive institutional ownership, with a β of 0.0697 ($p < 0.05$), maintains a positive and significant relationship with the *Organic Capex per Employee*. However, the relationship is negatively moderated by staggered board provisions (*Staggered x Inst. Investors*). The moderator factor has a β of -0.0768 significant at a 10% threshold, suggesting that the capability of institutional investors to exert influence is reduced under more stringent governance constraints (Shi et al., 2020). The significance of the interaction term implies that institutional investors do not uniformly enhance investment; the magnitude of their impact on capital expenditure decisions may be resized by the presence of constitutional limits (L. Bebchuk et al., 2009). In particular, the relationship is stronger when firms have weak (i.e., low levels of) constitutional limits.

Interestingly, in Table 16 Column (2), we found that anti-takeover provisions such as the poison pills negatively influence Inorganic Capex per Employee.

To further clarify the influence of institutional ownership on the investment intensity of firms, Table 17 disaggregates institutional ownership into the three main investor categories: the percentage of ownership held by institutional advisors (*%OwnershipIA*), by private equity (PE) investors (*%OwnershipPE*), and by hedge funds (*%OwnershipHF*). Following Sakaki and Jory (2019), we checked whether the results observed at the institutional investor ownership level held by sub-type of investor. Indeed, despite belonging to the same category of pressure-insensitive institutional ownership, it is posited that hedge funds (HFs) have a stronger focus on the short-term, driven by the objective of augmenting dividends (Achleitner et al., 2010). Conversely, private equity and investment advisors tend to adopt longer-term strategies (Achleitner et al., 2010). Accordingly, considering the different investment horizons, it is reasonable to expect a differential impact on the investment intensity variables. The results are shown in Table 17.

Table 17 Fixed-effect regressions for institutional ownership by investor type on investment intensity

This table reports the results of the firm-fixed effect regression of the Organic Capex per Employee, Inorganic Capex per Employee and R&D per Employee. The dependent variable is the proportion of investment advisor ownership (% Ownership IA), the proportion of private equity ownership (% Ownership PE) and the proportion of hedge fund ownership (% Ownership HF).

VARIABLES	(1) Organic Capex per Employee	(2) Inorganic Capex per Employee	(3) R&D per Employee	(4) Organic Capex per Employee	(5) Inorganic Capex per Employee	(6) R&D per Employee	(7) Organic Capex per Employee	(8) Inorganic Capex per Employee	(9) R&D per Employee
% Ownership IA	0.0554**	-0.0269	0.00492						
	(0.0225)	(0.0197)	(0.00427)						
% Ownership PE				-0.0161	-0.0484	-0.00191			
				(0.0549)	(0.0378)	(0.00418)			
% Ownership HF							-0.133	-0.124	-0.0322**
							(0.102)	(0.119)	(0.0159)
Total Asset (log)	0.0179**	-0.000656	0.00254**	0.0195***	-0.00157	0.00268**	0.0196***	-0.00135	0.00271**
	(0.00693)	(0.00565)	(0.00116)	(0.00707)	(0.00562)	(0.00113)	(0.00706)	(0.00557)	(0.00113)
ROE	0.00610	0.00511	-0.000380	0.00963	0.00289	-7.11e-05	0.00956	0.00312	-0.000107
	(0.00844)	(0.00769)	(0.00163)	(0.00826)	(0.00816)	(0.00151)	(0.00786)	(0.00808)	(0.00150)
Mkt Debt ratio	-0.0472***	-0.0773***	-0.000773	-0.0493***	-0.0769***	-0.000971	-0.0489***	-0.0761***	-0.000879
	(0.0159)	(0.0224)	(0.00198)	(0.0166)	(0.0223)	(0.00201)	(0.0166)	(0.0222)	(0.00197)
Cash holding ratio	-0.0279	-0.131***	0.00704	-0.0278	-0.132***	0.00704	-0.0266	-0.130***	0.00732
	(0.0282)	(0.0308)	(0.00684)	(0.0290)	(0.0308)	(0.00681)	(0.0291)	(0.0309)	(0.00681)
%Foreign sales	-0.0237	0.000684	0.00115	-0.0219	0.000513	0.00131	-0.0221	-0.000115	0.00128
	(0.0252)	(0.0165)	(0.00325)	(0.0256)	(0.0165)	(0.00329)	(0.0251)	(0.0167)	(0.00328)
GDP growth	0.00327	-0.0243	0.00665***	0.00506	-0.0250	0.00681***	0.00548	-0.0247	0.00692***
	(0.00822)	(0.0188)	(0.00159)	(0.00843)	(0.0188)	(0.00158)	(0.00814)	(0.0188)	(0.00159)
% Independent BoD	-0.00246	0.0382**	-0.000948	0.00251	0.0362**	-0.000504	0.00371	0.0371**	-0.000202
	(0.00828)	(0.0177)	(0.00256)	(0.00800)	(0.0171)	(0.00261)	(0.00833)	(0.0168)	(0.00264)
DummyCEOduality	-0.0118	-0.0120*	-0.000132	-0.0110	-0.0116	-4.76e-05	-0.0112	-0.0123*	-6.45e-05
	(0.0122)	(0.00674)	(0.00104)	(0.0129)	(0.00714)	(0.00107)	(0.0123)	(0.00694)	(0.00104)
Avg. Tenure BoD	0.000421	4.56e-05	-0.000303	0.000594	-9.93e-05	-0.000288	0.000618	-4.11e-05	-0.000285
	(0.000757)	(0.000840)	(0.000258)	(0.000754)	(0.000836)	(0.000258)	(0.000748)	(0.000825)	(0.000255)
Constant	-0.123*	0.0284	-0.0125	-0.126*	0.0313	-0.0128	-0.128*	0.0288	-0.0131
	(0.0690)	(0.0603)	(0.0106)	(0.0684)	(0.0616)	(0.0106)	(0.0681)	(0.0610)	(0.0106)
Observations	1,264	1,264	1,264	1,264	1,264	1,264	1,264	1,264	1,264
R-squared	0.078	0.059	0.060	0.069	0.058	0.057	0.070	0.059	0.061
Number of ID	185	185	185	185	185	185	185	185	185
Year	Control	Control	Control	Control	Control	Control	Control	Control	Control
Industry	Control	Control	Control	Control	Control	Control	Control	Control	Control
R-sq	0.0778	0.0590	0.0598	0.0685	0.0582	0.0569	0.0701	0.0586	0.0608

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 17 Column (1) shows the positive and significant impact of *OwnershipIA%* on Organic Capex per Employee, with β of 0.0554 ($p < 0.05$). This finding corroborates the argument that institutional ownership, especially that of the IA sub-category, serves as a consistent catalyst for investment intensity, thereby affirming the hypothesis that institutional investors occupy a central role in shaping organic investment decisions (as shown by the impact on Organic Capex per Employee). Notably, PE and HF do not markedly influence the investment intensity in organic capex among the firms sampled. A plausible explanation for this phenomenon is the relatively marginal presence of PE and HF within European corporations. Specifically, within the firms sampled, the average ownership stakes held by PE and HF from 2013 and 2022 were 0.62% and 0.34%, respectively (Table 12), compared to 28.11% for IA, thereby establishing IA as the predominant investor sub-category.

Notwithstanding the entities in question being publicly traded and thus not necessitating a majority share for exerting an influential control, the prevalent ownership configuration found in European enterprises further corroborates the fact that PE and HF do not exert significant influence: Boot et al. (2022) argues that "*Many European firms […] are traditionally characterized by having high levels of ownership by founding families, corporations and governments, who hold a large number of shares*." (Boot et al., 2022). Notably, in Table 17 column (9), it emerges that HF ownership negatively impacts the R&D per Employee. Thus, this finding reopens the discussion on our H3, so that while the broader institutional investor ownership was found to be not significant in terms of impact on R&D per Employee, it emerges a partially different picture when looking at the investors' sub-type level. Indeed, % Ownership HF is found to negatively impact R&D per Employee, with a β of -0.0322, and significant at 5% threshold, potentially suggesting that the short-termism spectre is still present in specific institutional investors category. This finding may suggest that HF may impact a firm's willingness to undertake innovation activities. However, it does not fully correlate to actions intended to destroy the long-term value creation, as the dependent variable used in the paper does not measure the extent of the impact on the success of those efforts.

Finally, Table 18 further investigates the effect of institutional investors on investment intensity by sector type. In particular, the analysis distinguishes between sectors with investment intensity above or below the median of the broader sample for each investment type (such as *Organic Capex per Employee*, In*organic Capex per Employee* and R*&D per Employee*) from 2013 to 2022. The results shown in Table 18 further corroborate the baseline findings of Table 15 in section 5.1, suggesting that the impact of pressure-insensitive institutional investors is still positive and significant on *Organic Capex per Employee* (Table 18 Column (1)), especially in those sectors that are strategically more tied to an infrastructural network such as communication service, energy, materials and utilities industries.

Table 18 Fixed-effect regressions for institutional ownership on investment intensity by industry investment policy characteristics.

This table reports the results of the firm-fixed effect regression of the Organic Capex per Employee, Inorganic Capex per Employee and R&D per Employee on sub-samples defined compared to the broader sample median for each investment category. The dependent variable is the proportion of institutional investor ownership (% Institutional Ownership). Panel A column (1) applies Equation (1) to firms belonging to communication service, energy, materials and utilities as per Refinitiv classification. Panel A column (2) applies Equation (1) to firms belonging to consumer discretionary, consumer staples, health care, industrials and information technology as per Refinitiv classification. Panel B column (3) applies Equation (1) to firms belonging to communication services, health care, information technology and utilities as per Refinitiv classification. Panel A column (4) applies Equation (1) to firms belonging to consumer discretionary, consumer staples, energy, and industrials as per Refinitiv classification. Panel C column (5) applies Equation (1) to consumer discretionary, health care, industrials and information technology firms as per Refinitiv classification. Panel A column (6) applies Equation (1) to firms belonging to communication services, consumer staples, energy, materials and utilities as per Refinitiv classification.

	Panel A | Impact of institutional investors on above/below than the median organic capex per employee industries.		**Panel B | Impact of institutional investors on above/below than the median inorganic capex per employee industries.**		**Panel C | Impact of institutional investors on above/below than the median R&D per employee industries.**	
	(1)	(2)	(3)	(4)	(5)	(6)
	Higher than the median industries	*Lower than the median industries*	*Higher than the median industries*	*Lower than the median industries*	*Higher than the median industries*	*Lower than the median industries*
VARIABLES	Organic Capex per Employee	Organic Capex per Employee	Inorganic Capex per Employee	Inorganic Capex per Employee	R&D per Employee	R&D per Employee
% Institutional Ownership	0.110**	0.00413	-0.0437	0.00877	0.00311	0.00107
	(0.0543)	(0.00544)	(0.0603)	(0.0128)	(0.00615)	(0.00140)
Total Asset (log)	0.0703***	0.00414**	0.0320	-0.00675	0.00483***	6.27e-05
	(0.0261)	(0.00173)	(0.0228)	(0.00472)	(0.00163)	(0.000631)
ROE	-0.00181	0.0103**	0.00555	0.00492	0.000301	-5.63e-05
	(0.0208)	(0.00406)	(0.0307)	(0.00534)	(0.00288)	(0.000656)
Mkt Debt ratio	-0.0960***	-0.00393	-0.151**	-0.0351***	-0.00381	-7.64e-05
	(0.0334)	(0.00351)	(0.0718)	(0.0132)	(0.00337)	(0.000967)
Cash holding ratio	0.00336	-0.0242*	-0.0831	-0.0898***	0.00823	0.00174
	(0.0817)	(0.0137)	(0.105)	(0.0261)	(0.00879)	(0.00386)
%Foreign sales	-0.0461	-0.00111	0.0923	-0.00261	0.00400	0.000485
	(0.0486)	(0.00355)	(0.0856)	(0.00990)	(0.00664)	(0.000683)
GDP growth	-0.000895	0.00633*	-0.0250	-0.0117	0.0105***	0.00182*
	(0.0269)	(0.00345)	(0.0505)	(0.0102)	(0.00247)	(0.00102)
% Independent BoD	0.0130	-0.00594	0.181*	0.00227	0.000282	-0.000454
	(0.0274)	(0.00467)	(0.0910)	(0.00848)	(0.00519)	(0.000933)
DummyCEOduality	-0.0478	-0.000690	-0.0141	-0.00272	0.000810	-6.11e-06
	(0.0423)	(0.00235)	(0.0105)	(0.00316)	(0.00167)	(0.000379)
Avg. Tenure BoD	-0.000798	-0.000126	0.00223	-0.000662	-0.000526	1.36e-05
	(0.00363)	(0.000260)	(0.00233)	(0.000591)	(0.000324)	(6.60e-05)
Constant	-0.580**	-0.0172	-0.419	0.0853*	-0.0285*	0.00310
	(0.278)	(0.0154)	(0.313)	(0.0447)	(0.0162)	(0.00633)
Observations	434	830	451	813	731	533
Number of ID	62	123	67	118	108	77
Year	Control	Control	Control	Control	Control	Control
Industry	Control	Control	Control	Control	Control	Control
R-sq	0.208	0.0735	0.119	0.0683	0.115	0.0171

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

In summary, the robustness analysis carried out in this section helps corroborating the baseline findings (as shown in Table 15 in section *5.1*) but identifying the subtle nuances that emerges when analysing more in depth the moderating impacts of constitutional constraints, the investors sub-categories and the differential investment policies which depending on the industry type may prioritize investment in organic capex (such as for infrastructure driven industries as energy, utilities, etc.) or R&D expenditures due to the strategic relevance of patents and intangible assets (such as drug patents in the Health Care industries or software and proprietary platforms for Information Technology companies).

The robustness analyses support the baseline results presented in Section 5.1, corroborating the hypothesis that institutional investors' ownership may positively and significantly influence firms' Organic Capex per Employee. This finding reinforces our first hypothesis (*H1*). However, constitutional constraints such as Staggered Boards might diminish the influence of institutional investors on Organic Capex per Employee, as indicated in Table 16, Column (1). Although the impact remains significant, this suggests that the relationship is more pronounced in firms with weak constitutional limits.

Among different pressure-insensitive investors, Investment Advisor Ownership significantly increases Organic Capex per Employee, as demonstrated in Table *17*, Column (1). This outcome is not unexpected given their significant role among pressure-insensitive institutional investors in the sampled companies: from 2013 to 2022, their average ownership constituted a staggering 96.72% of the total average pressure-insensitive institutional ownership during the same period. Furthermore, our findings confirm the influence of institutional investors on Organic Capex per Employee at the industry level, particularly within industries that heavily rely on infrastructure, such as communication services, energy, materials, and utilities. These sectors often require substantial upfront investments for establishing and expanding infrastructure, including networks, pipelines, refineries, factories, and processing plants. Moreover, the assets in these industries typically have long lifecycles, necessitating continuous investment in maintenance, renewal, and upgrades to ensure efficiency and safety.

Conversely, there are mixed findings for the other investment categories: Inorganic Capex and R&D per Employee. For the first dependent variable, it is essential to note that unlike organic capex and R&D expenses, which belong to the operational decisions that can be undertaken and executed directly by the Board of Directors, mergers and acquisitions and other inorganic investments require shareholder approval when they substantially affect the company's structure, strategy, and shareholder interests. Institutional investors' role may be significantly restricted by constitutional constraints such as Poison Pill provisions, which indirectly limit the power of any single investor or coalition of investors to accumulate a controlling interest and enact significant changes without a broader consensus, as shown in Table 16, Column (2). Consequently, the analysis of Inorganic Capex per Employee did not support our second hypothesis (H2).

For R&D per Employee, the baseline analysis revealed no general correlation between pressure-insensitive institutional investors' ownership and the dependent variable. However, the analysis by investor subtype identified a significant role for hedge funds (HF), which negatively impact R&D per Employee, as evidenced

in Table *17*, Column (9), thus confirming our third hypothesis (H3). This result may seem contradictory initially, but it becomes understandable when considering the weight of hedge funds ownership in the sampled companies: from 2013 to 2022, hedge funds ownership was about 1.16% of the average pressure-insensitive institutional ownership. However, when analysed separately, it becomes apparent that hedge funds significantly negatively affect firms' propensity for innovation. This result is consistent with the arguments of DesJardine and Durand (2020), who posit that increased involvement from activist investors, particularly hedge funds, often leads to reduced operational budgets and diminished expenditures on research and development, thereby curtailing capital investments. These findings suggest that investment impacts may vary due to the time lags associated with realising results. Specifically, Schimke and Brenner (2014) propose that R&D typically exhibits a time-lagged nature in terms of result realisation compared to organic capital expenditures, indicating that the presence of short-term oriented investors like hedge funds may encourage firms to defer or reduce long-term investments in favour of immediate financial returns, as discussed by Brav et al. (2008).

6. Conclusions

This study investigates the impact of pressure-insensitive institutional investors on the investment behaviours of large corporations. The research aims to explore the effects of such investors on decision-making processes and test the validity of the "short-termism" hypothesis in contemporary settings. Our findings reveal that pressure-insensitive institutional investors positively influence firm investment levels, especially organic capital expenditures (capex).

The baseline analysis confirms that institutional investors' ownership may impact the investment intensity of firms; in particular, this impact is positive and significant for one investment category: Organic Capex per Employee, confirming our H1. However, the relationship is more robust when firms have weak (i.e., low levels of) constitutional limits. Furthermore, among the several pressure-insensitive investors, the role of Investment Advisor Ownership is fundamental in driving the growth in the organic capital expenditures, given that they contribute about 96.72% of the total average pressure-insensitive institutional ownership in the same timeframe. Their impact is particularly relevant for those firms operating in industries with business models that require infrastructural and physical presence, such as communication services, energy, materials and utilities. These industries often involve building and maintaining extensive infrastructure such as networks (communication services), pipelines and refineries (energy), factories and processing plants (materials), and power plants and distribution networks (utilities). The upfront costs for establishing and expanding such infrastructure can be significant. Besides, many assets in these industries have long lifecycles and require ongoing maintenance and upgrades to ensure operational efficiency and safety.

In contrast, the role of institutional investors provides mixed results in terms of Inorganic Capex per Employee and R&D per Employee. For the first investment category, the role of institutional investors may be strongly inhibited by the setting of constitutional constraints such as Poison Pill provisions, which power by ensuring that no single institutional investor or a coalition of investors can quickly amass a controlling interest that

could be used to push through significant changes without broader consensus, thereby confuting H2. For R&D per Employee, instead, while the baseline analysis did not show any general relationship between pressure-insensitive institutional investors ownership and the dependent variable, the analysis by investor sub-type identified a significant role of hedge funds (HF). Their negative impact confirms our H3, at least at the sub-category level.

Therefore, the analysis conducted on 228 listed firms in Europe suggests institutional ownership catalyses corporate investment activities, particularly in projects that yield relatively more immediate operational benefits. This observation supports that these investors favour initiatives that enhance and maintain value, primarily through organic investments. However, this trend does not uniformly apply to R&D expenditures, which have a longer-term impact on corporate value. Therefore, our results indicate that while institutional investors may not strictly adhere to a short-term agenda, their investment interactions primarily support projects with relatively shorter-term operational benefits.

These findings may open to potential policy implication especially from the governance viewpoint. Considering the fundamental role, institutional investors may have in some specific industries, designing governance rule that ease their entrance may be a greater boost for leading the company to tend towards more value-enhanced oriented decisions.

However, this analysis has limitations, as it predominantly examines large-cap listed companies, potentially overlooking the impact institutional investors have on private companies and smaller firms. Future research could explore the role of pressure-insensitive institutional investors in these contexts, possibly uncovering a more dominant influence on small-cap and private companies. Additionally, the study categorises pressure-insensitive institutional investors into groups such as private equity, hedge funds, and investment advisors. Further distinctions based on investment strategies might elucidate their active versus passive roles in firm investment decisions. Moreover, the primary focus on investment quantity over quality leaves room for future research to delve into the qualitative aspects of investments.

In conclusion, our research demonstrates that pressure-insensitive institutional investors significantly shape the investment landscape of targeted firms through strategic interventions, enhancing investment intensity. These insights contribute to a more complex understanding of the role of institutional investors in corporate investment strategies, challenging the oversimplified view of investor-driven short-termism.

Conclusions

Over the past 15 years, company ownership has undergone significant transformations, marked by an increasing dominance of institutional investors. In markets such as the U.S., institutional investors now hold more than 60% of the equity market capitalization, with their influence also growing in Europe, where they account for 20% to 30% of equity holdings (Bas et al., 2023). Institutional investors engage in firm equity through various avenues, including public equity markets, private equity approaches, and IPO investments. Their involvement often necessitates changes in corporate governance, impacting firm decision-making processes and performance. This shift underpins the analysis in Chapter 1, titled "*The Role of Equity Capital Markets in Institutional Investors' Holdings and Performance Impact: A Bibliometric Review*," which examines the evolving role of institutional investors from 2008 to 2024, providing insights into current research and growing prospects.

The analysis in Chapter 1 identifies five primary research clusters within the field of institutional investor studies over the past 15 years: "institutional investors," "corporate governance," "initial public offerings," "corporate social responsibility," and "mergers and acquisitions". While CSR is a recurring theme, niche trends are developing around new entrepreneurial finance mechanisms. Fisch and Momtaz's (2020) study on institutional investors' impact on ICO performance exemplifies this trend, paving the way for further exploration into innovative financial mechanisms such as SPACs (Bertoni et al., 2022).

Before delving into Chapter 2, it is essential to highlight the pivotal role of equity capital markets in shaping institutional investor ownership. For example, as previously mentioned, Michael et al. (2020) found that institutional holdings typically rise from 24% to around 36% post-IPO within the first year, stabilizing at approximately 42% by the second year. Therefore, as previous research demonstrated the fundamental impact of equity capital markets in influencing institutional investor holdings and the connection with stock return, Chapter 2's objective was to clarify the performance of a particular equity financing technique: SPACs. The burgeoning popularity of SPACs has sparked debates about a potential bubble (Naumovska, 2021), given their historically disappointing long-term post-merger returns and high failure rates (Dimitrova, 2017; Kolb & Tykvová, 2016; Vulanovic, 2017).

Chapter 2 investigated whether SPACs offer a superior investment avenue to traditional IPOs. The findings indicate a consistent pattern of SPAC underperformance relative to matched IPO peers, particularly concerning operating profitability and buy-and-hold returns over one- and two-years post-business combination. This underperformance intensifies, confirming their uncertain long-term outcomes (Datar et al., 2023), confirming that SPACs do not provide a superior investment option for institutional investors to traditional IPOs and directly addressing the sponsor–investor agency conflict in SPACs arising from the possible misalignment of incentives between sponsors, who may find it more convenient to conduct a bad deal over no deal at all to unlock equity compensation.

Institutional investors include insurance companies, mutual funds, hedge funds, sovereign wealth funds, REITs, investment advisors, private equities, banks, and pension funds. These investors differ in their time horizons (long-term vs. short-term) and investment styles (active vs. passive), influencing their impact on company decisions. Short-term institutional investors may focus less on long-term outcomes (Davies et al., 2014; Kang et al., 2018). Among active institutional investors, a distinction exists between pressure-sensitive and pressure-insensitive types. Pressure-sensitive investors, like insurance companies and banks, often maintain business affiliations with firms, potentially avoiding challenging managerial decisions. In contrast, pressure-insensitive investors, such as investment firms, private equities and hedge funds, are more likely to enforce stringent oversight, often prioritizing short-termism (Batra et al., 2023; Cornett et al., 2007; Sakaki & Jory, 2019). Therefore, how do changes in institutional investor holdings affect a firm's crucial decisions, such as investment?

"Innovation" is a focal research keyword from Chapter 1 analysis. Building on that, Chapter 3 expanded the analysis to encompass the firm's broader investment intensity, considering organic and inorganic investments and R&D. Given the rising institutional investor holdings, the study investigates how pressure-insensitive investors influence corporate investment intensity. The research reveals that pressure-insensitive investors positively impact firm investment levels, especially organic capital expenditures, with a more pronounced effect in firms with low constitutional limits. Investment Advisor Ownership is crucial, contributing significantly to organic capex growth, particularly in capital-intensive industries such as communication services, energy, materials, and utilities. However, the impact of institutional investors on inorganic capex and R&D is mixed.

In conclusion, the dissertation identifies key research streams in entrepreneurial finance, highlighting the underperformance of SPACs as an investment vehicle, which may influence corporate strategies towards equity capital markets. The findings suggest that institutional investor ownership's impact on firm decision-making is contingent upon industry characteristics, with capital-intensive sectors benefiting more from institutional investor presence. The dissertation aims to bridge equity capital markets with institutional investor influence, emphasizing their role in shaping critical corporate decisions such as investment strategies.

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