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Concentração Acionária e Risco Idiossincrático: Indicadores Bibliométricos da Produção Científica

Shareholder Concentration and Idiosyncratic Risk: Bibliometric Indicators for Scientific Production

Concentración de Accionistas y Riesgo Idiosincrático: Indicadores Bibliométricos de la Producción Científica

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RESUMO
Este estudo investiga a relação entre concentração de acionistas e risco idiossincrático, um tema da economia financeira em crescente relevância desde a década de 1990, com notável expansão após 2020. Por meio da análise bibliométrica, analisamos a evolução temporal das publicações, citações, a base teórica, os autores mais influentes e as subáreas de pesquisa relacionadas. Os resultados revelam que os economistas Eugene F. Fama e Michael C. Jensen são as principais referências, enquanto trabalhos de Jensen e Meckling (1976), Fama e French (1993), Ang *et al.* (2006) e Campbell *et al*. (2001) formam a base teórica, a qual está agrupada em 3 subáreas: (i) Teoria da firma, Finanças corporativas e Governança; (ii) A relação

risco-retorno e os modelos de precificação; (iii) Volatilidade e risco idiossincrático. Periódicos como Journal of Financial Economics, Journal of Banking & Finance e Journal of Empirical Finance destacam-se na área. Este estudo pode auxiliar novas pesquisas sobre a relação entre estrutura patrimonial e risco, expandindo abordagens em gestão e teoria da firma, precificação do risco idiossincrático e relações da volatilidade com a estrutura de propriedade das empresas.

Palavras-Chave: Risco Idiossincrático. Concentração Acionária. Mercados Financeiros. Estrutura de Propriedade. Bibliometria.

ABSTRACT

This study investigates the relationship between shareholder concentration and idiosyncratic risk, a topic in financial economics that is more relevant since the 1990s, with notable expansion after 2020. Through bibliometric analysis, we examined the temporal evolution of publications, citations, the theoretical basis, the most influential authors, and the related research sub-areas. The results reveal that economists such as Eugene F. Fama and Michael C. Jensen are the main references, while works by Jensen and Meckling (1976), Fama and French (1993), Ang *et al*. (2006), and Campbell *et al*. (2001) form the intellectual basis, which is grouped into 3 subareas: (i) Theory of the firm, Corporate finance, and Governance; (ii) The risk-return relationship and model pricing; (iii) Volatility and idiosyncratic risk. Journals such as the Journal of Financial Economics, Journal of Banking & Finance, and Journal of Empirical Finance stand out in the area. This study can assist new research on the relationship between ownership structure and risk, expanding approaches in management and theory of the firm, pricing of idiosyncratic risk, and relationships of volatility with the ownership structure of companies.

Keywords: Idiosyncratic Risk. Shareholder concentration. Financial Markets. Ownership Structure. Bibliometrics.

RESUMEN

Este estudio investiga la relación entre concentración de accionistas y riesgo idiosincrásico, un tema de economía financiera que tiene mayor relevancia desde la década de 1990, con notable expansión después de 2020. A través del análisis bibliométrico, examinamos la evolución temporal de las publicaciones, citaciones, base teórica, autores más influyentes y las subáreas de investigación relacionadas. Los resultados revelan que economistas como Eugene F. Fama y Michael C. Jensen son las principales referencias, mientras que trabajos de Jensen y Meckling (1976), Fama y French (1993), Ang *et al*. (2006) y Campbell *et al*. (2001) forman la base intelectual, que se agrupa en 3 subáreas: (i) Teoría de la empresa, finanzas corporativas y gobierno; (ii) La relación riesgo-retorno y modelos de fijación de precios; y (iii) Volatilidad y riesgo idiosincrásico. Revistas como Journal of Financial Economics, Journal of Banking & Finance y Journal of Empirical Finance destacan en el área. Este estudio puede ayudar a nuevas investigaciones sobre la relación entre estructura de propiedad y riesgo, expandiendo los enfoques en la gestión y la teoría de la empresa, fijación de precios del riesgo idiosincrásico y las relaciones de la volatilidad con la estructura de propiedad de las empresas.

Palabras-Clave: Riesgo Idiosincrásico. Concentración Accionaria. Mercados Financieros. Estructura de Propiedad. Bibliometría.

1 INTRODUCTION

Investors in any portfolio face at least two types of risk: systemic risk, which stems from macroeconomic and market forces, and non-systematic risk (idiosyncratic risk), which arises

from events specific to an organization and can be diversified (Fu, 2009; Nguyen, 2011). Systemic risk, also known as market risk, is non-diversifiable; it cannot be eliminated from diversified portfolios. In contrast, specific risk, whether associated with individual assets or markets, can be minimized or eliminated through portfolio diversification. Regarding non-systematic risk, it is relevant in asset pricing models and for investment decisions, particularly for investors with less than fully diversified portfolios (Markowitz, 1952, Sharpe, 1964). Understanding an asset's specific risk provides investors with the information necessary to construct a diversified portfolio exposed only to non-diversifiable risk (Ferreira and Laux, 2007).

The relationship between idiosyncratic risk and return has been extensively studied and debated in international publications, remaining a point of controversy (Huang *et al*., 2010). Notably, market disparities in emerging countries warrant attention, as studies analyzing these differences remain limited, particularly concerning capital concentration structures. For instance, Brazilian companies often exhibit significant capital concentration (Coutinho, Amaral and Bertucci, 2006), contrasting with Anglo-Saxon markets, which typically feature more dispersed capital ownership (Okimura, Silveira and Rocha, 2007).

In corporations with dispersed capital, common in American and British models, agency problems emerge from conflicts of interest between outside investors and managers, who typically hold minimal equity (Jensen and Meckling, 1976). Conversely, when capital is concentrated in a single individual or a majority shareholder block, agency problems shift to impacting minority shareholders. This often occurs because the controlling shareholder is also the manager, enabling close monitoring and direction of operations. Consequently, information asymmetry is reduced, as the controlling owner provides the necessary resources for information acquisition (Claessens and Yurtoglu, 2013).

Despite existing research, numerous opportunities remain to further explain non-systemic risk. Corporate governance presents one promising avenue. According to Shleifer and Vishny (1997), corporate governance encompasses actions designed to mitigate agency conflicts and safeguard investors through legal frameworks and stakeholder relationship policies. Given that governance policies are integral to a company's management strategy, the volatility of the company's value, or market volatility or risk associated with asset returns, must be considered. Durnev *et al*. (2003) further assert that governance practices act as investor relations policies, implying a direct relationship with idiosyncratic risk in investment decision-making, thereby reflecting the economic link between governance and investment quality (Villalonga and Amit, 2006).

According to Ferreira and Laux (2007), corporate governance influences stock volatility and is intrinsically linked to idiosyncratic risk and the distribution of returns, which is a crucial relationship in corporate finance. They argue that if a company's risk is viewed as a measure of information about it, then a direct connection between investment and organizational decisions should exist. And Goyal and Santa-Clara (2003) stated that this residual risk matters.

Corporate governance mechanisms, shaped by competitive context, formal authority, capital structure, social influence, and owner expertise, are intrinsic to effective business structures (Campos, 2006). Among the various approaches in corporate finance, capital structure stands out as a pivotal mechanism for institutionalizing sound governance practices. This is due to its extensive research within corporate governance and its established relationship with risk characteristics (Gompers, Ishii, and Metrick, 2003; Durnev *et al*., 2003; Ferreira & Laux, 2007; Nguyen, 2011). Despite the widely of discussion in the literature, conclusive results remain elusive.

Demsetz and Lehn (1985) assert that capital structure is important in the understanding of causes and consequences of shareholder concentration, as these factors are linked to the costs and benefits affecting a company's performance and value, beyond market instability, firm size, and capital structure itself. In essence, comprehending an organization's capital structure is crucial for assessing the risk borne by shareholders and the potential agency problems investors may encounter.

Regarding idiosyncratic risk, Roll (1988) emphasizes the importance of associating abnormal stock volatility with specific risk and the unknown factors contributing to this volatility, as it directly influences investment decisions.

International studies have identified several variables influencing idiosyncratic risk. Gompers, Ishii, and Metrick (2003), Durnev *et al*. (2003), Ferreira and Laux (2007), and Nguyen (2011) have demonstrated a direct influence of governance on stock prices. For instance, Abu-Ghunmia, Bino, and Tayeh (2015) found a relationship between non-systemic risk and corporate governance in Jordan's capital markets. However, analyses of Brazilian capital markets often focus on international comparisons. Consequently, investigating capital concentration in emerging economies, such as Brazil, highlights political, cultural, and market variations, allowing for a comparative assessment of existing research and expanding this field of study.

Marques, Guimarães, and Peixoto (2015) found no statistically significant coefficients for capital structure variables against corporate performance (measured by ROA and EBITDA) and risk (measured by stock return volatility). Conversely, Caixe, Kalatzis, and De Castro (2019) provided evidence that shareholder concentration affects investment risk sensitivity.

The behavior of asset prices in financial markets has long intrigued investors and academics, remaining a significant subject of study. Financial literature identifies non-systemic risk, or abnormal stock price volatility, as a crucial factor in determining company-specific risks and the impact of corporate governance practices (Shleifer and Vishny, 1997; Durnev *et al*., 2003; Ferreira and Laux, 2007; Abu-Ghunmia *et al*., 2015). Consequently, understanding a company's corporate governance practices contributes in identifying strategies to mitigate information asymmetry among its stakeholders.

This study aims to elucidate the origins and trends of the relationship between shareholder concentration and non-systemic risk, highlighting potential avenues for further research. A literature review was conducted to comprehensively identify, describe, and map the characteristics inherent to this theme (Bufrem and Prates, 2005). This article presents and discusses the spectrum of international scientific articles on this topic, utilizing data from the Web of Science and Scopus databases, following the methodology outlined by Prado *et al*. (2016) and Garcia *et al*. (2019). This methodology included: (i) quantitative analysis of publications; (ii) identification of knowledge areas; (iii) identification of highly cited authors; (iv) identification of relevant works; (v) identification of journals with high publication volumes; and (vi) discussion of key author conclusions.

The first section provides context and objectives of the study. The second section details the research methodology. The subsequent section presents and discusses the results. The final section concludes the study, addressing limitations and suggesting future research directions.

2 RESEARCH METHODOLOGY

This study employs a bibliometric analysis of the literature. This methodology enables researchers to assess the current state of specific subjects by analyzing key indicators, including frequency, citation and publication counts, co-citation analysis, bibliometric mapping, and centrality indices. Centrality indices, graph-theoretical properties, quantify an element's

importance within a network (Chen, 2006). These techniques utilize publication indicators to demonstrate the impact of sources, authors, articles, and institutions. They serve as a foundational step for new research, identifying gaps and opportunities for both theoretical and empirical advancements (Prado *et al*., 2016; Garcia *et al*., 2019).

The search strategy followed the steps outlined by Prado *et al*. (2016), as detailed in Chart 1. Data were collected from the Thomson Reuters Web of Science and Scopus databases. It is important to emphasize that this study focuses on the association between shareholder concentration and non-systemic risk within international research.

Chart 1. The flow for bibliometric analysis

Step		Procedure	Description
1	Research operationalization	1.1	Choosing the scientific databases
		1.2	Specifying the terms for the field of study
2	Search procedures	2.1	Terms for the field of study in the "Title"
		2.2	Use of quotation marks for exact expressions
		2.3	Filter1: Identifying only articles
		2.4	Filter2: Articles published in every year
		2.5	Filter3: Articles published in every area
		2.6	Filter4: Articles published in every language
3	Procedures for selecting the articles to create the data base	3.1	Download and table the references in spreadsheets
		3.2	Download the references for use in the CiteSpace software
		3.3	Organize the references in EndNote
		3.4	Organize the analysis matrix in the spreadsheet
		3.5	Import data into the analysis software
		3.6	Identify and eliminate duplicate articles in the database
4	Adequation and organization of data	4.1	Eliminate articles using skim reading
		4.2	Eliminate articles using polysemy analysis of the terms
		4.3	Search for complete articles
		4.4	Analyze the volume of publications and time trends
5	Analysis of the scientific production	5.1	Analyze the references and the most cited articles
		5.2	Analyze the journals
		5.3	Analyze authorship and co-authorship
		5.4	Analyze the categories (areas) of publications
		5.5	Keyword analysis
		5.6	Describe the obtained results

Source: Adapted from Garcia *et al*. (2019).

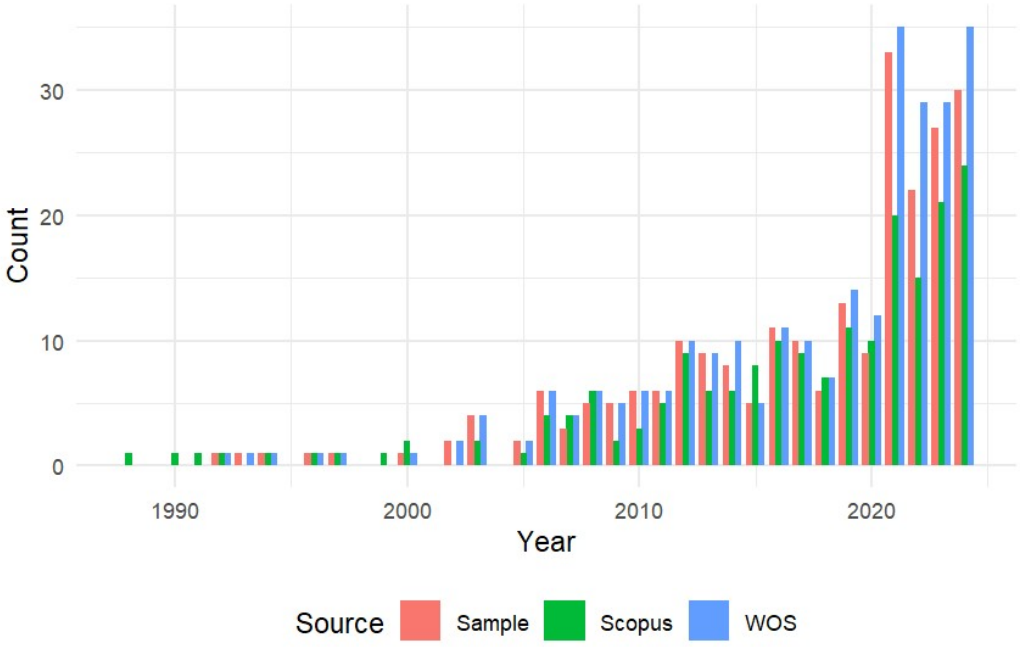
The search strategy focused on identifying academic articles related to the intersection of ownership and non-systemic risk. Specifically, the search targeted documents containing terms within the title, abstract, or author-supplied keywords, combining terms such as 'family ownership,' 'ownership control,' 'ownership structure,' or 'ownership' with terms like 'idiosyncratic risk,' 'specific risk,' 'unsystematic risk,' 'idiosyncratic volatility,' or 'stock volatility.' To ensure the results were limited to peer-reviewed research, the search was further refined to include only articles Web of Science and Scopus until 2024, without restrictions as to the area of knowledge, country, or language. The searches returned 263 articles in Web of Science and 193 in Scopus.

To focus the analysis on the business and management domain, we retained articles that included the words 'business,' 'management,' 'economics,' or 'finance' in their area of knowledge. Subsequently, a second selection filter was applied, which involved removing duplicate articles and applying inclusion criteria through a review of titles, abstracts, and keywords. This process resulted in a final sample of 238 articles from 1992 to 2024, which were then imported into Bibliometrix (Aria & Cuccurullo, 2017) in R software. This open-access software tool facilitates data processing and generates graphical visualizations of relationship networks among authors, studies, journals, and keywords (Chen, 2006).

3 SHAREHOLDER CONCENTRATION AND IDIOSYNCRATIC RISK: RESEARCH AND INTELLECTUAL BASIS

Figure 1 illustrates the initial analysis of the study sample, which involved determining the annual publication count and the overall growth trend from 1992 to 2024. Despite some fluctuations, a clear upward trend in publications is evident. The year 2021 recorded the highest number of published articles, contributing 33 to the sample. The geometric growth rate for the entire period was 10.8% annually.

Figure 1. Number of articles published per year in the Web of Science and Scopus databases



Source: Elaborated by the authors.

The academic relevance of this research area is evident. Notably, the surge in publications from 2010 onwards can be attributed, in part, to academic interest in analyzing the effects of the 2008 subprime crisis. According to Hanafi, Setiyono, and Sanjaya (2018), the 2008 financial crisis presented a sudden and 'endogenous' event for companies, serving as an ideal research subject for studies examining ownership and performance as endogenous issues. Furthermore, these authors noted a significant increase in awareness and corporate governance practices during the 2000s, with markets 'incorporating' these changes into asset prices, as posited by the efficient market hypothesis. A second substantial increase in articles occurred

from 2021 to 2024, averaging 28 articles per year. This surge primarily focused on risk management, particularly crash risk, and ESG factors, which were exacerbated by the COVID-19 pandemic (Duong *et al*., 2022).

The first two articles identified in the sample were: "The risk-return attributes of publicly traded venture capital: Implications for investors and public policy" (Kleiman and Shulman, 1992); and "Insurance with undiversifiable risk: Contract structure and organizational form of insurance firms" (Doherty and Dionne, 1993).

The study by Kleiman and Shulman (1992) analyzed the performance of publicly traded venture capital funds, specifically Small Business Investment Companies (SBICs) and Business Development Corporations (BDCs). The research compared the risk-adjusted returns of these two types of funds with the NASDAQ index during the period from 1980 to 1986. The results indicated that SBICs significantly outperformed the market and BDCs during this period. The article relates non-systematic risk to company ownership, especially in the context of SBICs. SBICs with higher discounts may reflect investors' aversion to non-systematic risk differences, rather than systematic risk differences. SBICs had more restrictive parameters regarding the size of potential borrowers and were more inclined to lend to riskier groups, given the existence of government guarantees and appreciation tax benefits. SBICs presented considerably higher non-systematic risk, which the article attributes to the higher percentage of small companies in SBICs' portfolios compared to BDCs. The article proposes policy changes to mitigate these difficulties and encourage investment in small businesses.

The Doherty and Dionne (1993) article explores the structure of insurance contracts in markets with non-diversifiable risk, such as liability insurance and earthquakes. It argues that traditional forms of insurance do not explain the recent increase in mutual companies and new contract designs. The study proposes a model where risk is decomposed into idiosyncratic and non-idiosyncratic components, allowing for a more efficient allocation of risk between policyholders and external investors. This approach, known as Decomposed Risk Transfer (DRT), can be implemented through different organizational structures, such as mutual insurers or participating policies from stock insurers. The article illustrates how this contractual innovation arose in response to the liability insurance crisis, where liability rules became unstable. The analysis concludes that DRT dominates simple contracts because it allows individuals to share social risk while fully insuring idiosyncratic risk.

Both Doherty and Dionne, and Kleiman and Shulman, address non-systematic risk, albeit in distinct contexts: the former examining insurance contract design and risk allocation, and the latter analyzing venture capital fund performance, linking risk and return to firm size, ownership, and regulation. This aligns with the agency theory framework, stemming from Berle and Means' (1932) observation of dispersed firm control, further developed by Jensen and Meckling (1976). They defined the firm as a nexus of contractual relationships, highlighting potential conflicts of interest arising from the separation of ownership and control. This fragmentation of ownership, resulting from the shift to atomized property, necessitates the hiring of managers to oversee resource allocation decisions, mitigating the challenges faced by numerous small owners in understanding and controlling firm operations.

In the second analysis we did not find any concentration of publications for one particular author. The authors with the most publications were five with three articles each (Cho KS; Kim HS; Hu Y; Xue WJ; Xia X). Kim and Cho where coauthors of three articles published in 2020 and 2021, both are from the Dongguk University in South Korea. Xue and Hu where also coauthors of three articles published in 2021, 2023 and 2024, Xue is from Shanghai University, China and Hu from University of Texas, USA. Xia also published three articles

with other five coauthors in 2017, 2019 and 2024, he is from Zhongnan University of Economics and Law, China.

We also analyze the concentration of articles by institutions, highlighting the following: The "University of Texas System" stands out for having the highest number of unique articles, twelve, and the longest span of years, from 2003 to 2024, suggesting a more extensive and comprehensive scientific production. In this case, two publications have two authors and ten involve more than two authors. The "University System of Ohio" has six articles, with publications between 1997 and 2019, there are four publications with two authors and two with more than two authors. While the "University of North Carolina" has five articles, with publications between 2017 and 2024, two publications with two authors and three with more than two authors. In all three cases, the number of unique journals is smaller than the number of articles, indicating that some journals have more than one published title. Thus, this analysis provides an overview of the scientific production and institutional collaboration of these universities, highlighting differences in publication volume, activity periods, and authorship patterns. Other institutes have fewer publications. This demonstrates that this is a diverse line of research comprising several authors and universities.

Table 1 presents the 10 most cited articles from the database, which are subsequently discussed. Examining these highly cited articles is essential for gaining an initial overview of prominent themes and authors, reflecting what Chen (2006) refers to as the 'research front.' Notably, these articles often provide pivotal and pertinent discussions, influencing the direction of scholarly debate (Garcia *et al*., 2019).

Table 1 Most cited articles on shareholder concentration and idiosyncratic risk in the Web of Science and Scopus databases (JCR impact factor for 2023)

Title	Authors	Citations WOS	Citations SCOPUS	Journal	JCR
CEO overconfidence and corporate investment	Malmendier and Tate (2005)	1949	2191	*Journal of Finance*	7,6
Managerial incentives and risk-taking	Coles, Daniel and Naveen (2006)	1547	1673	*Journal of Financial Economics*	10,4
R^2 around the world: new theory and new tests	Jin and Myers (2006)	1511	1665	*Journal of Financial Economics*	10,4
Media coverage and the cross-section of stock returns	Fang and Peress (2009)	1013	1088	*Journal of Finance*	7,6
Does board gender diversity improve the informativeness of stock prices?	Gul, Srinidhi and Ng (2011)	859	965	*Journal of Accounting & Economics*	5,4
Corporate social responsibility and stock price crash risk	Kim, Li and Li (2014)	841	908	*Journal of Banking & Finance*	3,6
The effects of corporate governance on firms' credit ratings	Ashbaugh-Skaife, Collins and LaFond (2006)	681	802	*Journal of Accounting & Economics*	5,4
Why is there a home bias? An analysis of foreign portfolio equity ownership in Japan	Kang and Stulz (1997)	676	807	*Journal of Financial Economics*	10,4
Stock price synchronicity, crash risk, and institutional investors	An and Zhang (2013)	401	431	*Journal of Corporate Finance*	7,2
Founding-family ownership, corporate diversification, and firm leverage	Anderson and Reeb (2003)	361	434	*Journal of Law & Economics*	2,2

Source: Elaborated by the authors.

The first article, cited 1949 times in WOS, and is entitled "CEO Overconfidence and Corporate Investment" by Malmendier and Tate (2005), investigates how CEO overconfidence influences corporate investment decisions. It posits that overconfident CEOs tend to

overestimate project returns and perceive external financing as costly, leading to increased investment with internal funds and reduced reliance on external sources. Analyzing data from Forbes 500 CEOs, the study finds that investment by overconfident CEOs, measured by stock ownership, is more sensitive to cash flow, particularly in equity-dependent firms. This research contributes to the understanding of investment distortions by focusing on the personal characteristics of leaders, rather than solely on firm or market factors.

Central to this study is the concept that a CEO's persistent failure to reduce personal exposure to firm-specific risk indicates overconfidence. Given that CEOs receive substantial stock and option grants, their reluctance to diversify this risk by exercising options or hedging through short selling is notable. Malmendier and Tate (2005) establish theoretical benchmarks based on utility models and option "in-the-money" percentages to determine when a rational CEO should exercise options. By classifying CEOs as overconfident if they consistently delay option exercises beyond these benchmarks, the study highlights how corporate ownership and firm-specific risk influence investment sensitivity to cash flow, potentially mitigating agency problems.

The second study, cited 1547 times, authored by Coles, Daniel and Naveen (2006), and published in the Journal of Financial Economics, explores the causal relationship between executive compensation and corporate investment and debt policies, as well as firm risk. The authors demonstrate that a greater sensitivity of CEO ownership to stock volatility (vega) leads to riskier decisions, such as increased R&D investment and higher leverage. Furthermore, the study finds that riskier policy choices generally result in compensation structures with higher vega and lower stock price sensitivity (delta). In essence, the research provides empirical evidence that managerial incentives, particularly through vega, significantly shape the risk profile and financial decisions of companies.

Further, the article addresses the theme of firm-specific risk by analyzing how managerial incentives, ultimately set by owners (shareholders) to maximize value, influence managerial decisions that can increase or decrease firm risk. The risk aversion of managers, due to a lack of diversification regarding firm-specific risk, is also a relevant point addressed in the article. The main mechanism explored is how the remuneration structure, particularly vega, encourages riskier decision-making that affects the company's risk profile.

The third most cited article in the database was “R^2 around the world: new theory and new tests”, with 1511 citations, written by Jin and Myers (2006). This paper investigates the causes of variations in stock return synchronicity across different countries, measured by R^2. The authors propose that opacity, or the lack of transparency of firms to external investors, plays a crucial role. In countries with lower transparency, internal managers retain more information, leading to a higher R^2 and a greater frequency of sharp stock price drops as negative firm-specific news is suddenly revealed. Using data from various stock markets, the study finds empirical evidence supporting this theory, demonstrating a positive relationship between opacity, R^2, and the occurrence of stock market crashes. The theoretical model highlights how information asymmetry between insiders and external investors affects the sharing of firm-specific risk, ultimately influencing market synchronicity and extreme negative events.

The study intricately links corporate ownership and firm-specific risk through the lens of opacity. It posits that opacity, defined as the ratio of observable to total firm-specific risk, directly impacts R^2 by shifting risk from investors to managers. This is because, in opaque environments, insiders can capitalize on positive undisclosed information while absorbing negative news until it becomes unsustainable, leading to potential crashes. The research also shows that while investor protection is important, it's the lack of transparency that primarily

drives high R^2 values and crash frequency. Empirical tests confirm a positive correlation between opacity measures and both R^2 and crash occurrences, reinforcing the theory that limited information availability significantly alters risk distribution and market behavior.

The article named “Media coverage and the cross-section of stock returns”, by Fang and Peress (2009), was cited 1013 times. This research reveals a significant "no-media premium" in stock returns, where stocks lacking media coverage outperform those with high coverage by approximately 3% annually, even after accounting for standard risk factors. This premium is particularly pronounced among smaller firms, those with high individual ownership, limited analyst following, and elevated idiosyncratic volatility, reaching 8% to 12% in these specific sub-samples. The study investigates this phenomenon through two primary rational-agent explanations: the "impediments-to-trade" hypothesis, which attributes the premium to market frictions hindering arbitrage, and the "investor recognition hypothesis," which suggests that less recognized stocks require higher returns to compensate for imperfect diversification.

Fang and Peress (2009) provide evidence supporting the investor recognition hypothesis, highlighting that media coverage enhances investor awareness and, consequently, reduces the required return. They also find that liquidity constraints, as indicated by bid-ask spreads, contribute to the persistence of the no-media premium. Notably, the study demonstrates that this effect is distinct from other documented return anomalies and that the idiosyncratic volatility puzzle (low returns for high volatility stocks) primarily holds for high-coverage stocks. The findings suggest that media, even if non-informative, plays a crucial role in shaping investor recognition and influencing firms' cost of capital, especially in the post-Fair Disclosure Regulation environment where analyst coverage has diminished.

The next article by Gul, Srinidhi and Ng (2011) explores the impact of board gender diversity on stock price informativeness, measured by idiosyncratic volatility (IV), using data from U.S. corporations between 2001 and 2006. The authors find a significant positive relationship between gender diversity, defined by the presence and number of female directors, and IV. They argue that gender-diverse boards enhance the reflection of firm-specific information in stock prices by bringing diverse perspectives, enriching information availability, and improving disclosure practices. Further analysis revealed that the mechanism varies by firm size: in large firms, gender diversity drives public disclosure, while in small firms, it fosters private information collection.

Addressing potential endogeneity, Gul, Srinidhi and Ng (2011) used the Norwegian board gender quota as an exogenous shock and employ change models, reinforcing the causal link between gender diversity and IV. They also examine interactions with earnings quality and institutional trading, suggesting potential substitutive relationships. Robustness tests, including alternative IV measures and controls for various firm and board characteristics, consistently support the main findings. The study concludes that board gender diversity enhances stock price informativeness, although it cautions against overgeneralization due to limitations in sample period and governance measures.

Related to the other five more cited articles, several explore the intricate relationship between corporate governance mechanisms and various aspects of firm behavior and market outcomes. The study on "The effects of corporate governance on firms' credit ratings" by Ashbaugh-Skaife, Collins and LaFond (2006) directly investigates how different governance attributes, such as ownership structure, board independence, and financial transparency, influence a firm's creditworthiness as assessed by rating agencies. This aligns with the research on "Corporate social responsibility and stock price crash risk," Kim, Li and Li (2014) which finds that strong corporate governance can moderate the negative relationship between CSR and future stock price crash risk. Similarly, "Stock price synchronicity, crash risk, and institutional investors" by An and Zhang (2013) highlights the role of institutional investors as monitors, with dedicated institutions contributing to lower stock price synchronicity and crash

risk due to their incentive to oversee management. Even the paper on "Founding-family ownership, corporate diversification, and firm leverage" by Anderson and Reeb (2003) examines how a specific ownership structure impacts firm risk through diversification and capital structure decisions.

Furthermore, the concept of risk also permeates these studies, although from different angles. Kim, Li and Li (2014) focused on the tail risk of stock price crashes. The Anderson and Reeb (2003) paper consider firm-specific risk and how undiversified shareholders might influence diversification strategies. An and Zhang (2013) study links institutional monitoring to the reduction of firm-specific risk and the mitigation of crash risk. Ashbaugh-Skaife, Collins and LaFond (2006) view governance as a factor influencing the overall credit risk of a firm. In contrast, "Why is there a home bias" by Kang and Stulz (1997) examines the risk diversification aspect of international investing and why investors deviate from optimal diversification strategies. Jointly, these articles underscore how governance structures and ownership characteristics play a significant role in shaping and influencing various dimensions of firm and investment risk.

In general, we observed a central theme in the ten most-cited articles that was the relationship between risk and return, with ownership structure consistently identified as a key determinant of governance effectiveness. Despite their publication in leading JCR-ranked journals, these studies presented mostly an alignment, but at times, conflicting results.

As detailed in Table 2, the primary journals featuring research on this topic are the Journal of Financial Economics, Journal of Banking & Finance and Journal of Empirical Finance, with 6,7%, 5,5% and 3,4% of the total articles, respectively. This concentration of publications in these journals, as noted by Garcia *et al*. (2019), provides researchers with valuable insight for both literature searches and submission strategies. Consequently, the research stream concerning equity/capital concentration and non-systemic risk is predominantly found within these publications.

The Journal of Financial Economics, with 16 articles, publishes theoretical and empirical studies on the main topics surrounding financial economics, including analytical, empirical, and clinical contributions in capital markets, financial institutions, corporate finance, corporate governance, and organizational economics.

The Journal of Banking & Finance, with 13 articles on this topic, publishes high-quality theoretical and empirical research across finance and banking. Its mission is to foster communication among academics, researchers, policymakers, and decision-makers at financial institutions, both public and private, and their regulators, at national and international levels.

The Journal of Empirical Finance, featuring 8 articles, publishes high-quality research across empirical finance, broadly defined to encompass empirical work in financial economics, financial econometrics, and theoretical studies with clear empirical implications. This journal welcomes submissions in all finance fields, including asset pricing, corporate finance, and behavioral finance. Notably, the editorial team encourages innovative, controversial, and unconventional research.

Consistent with expectations, Table 2 primarily features journals specializing in finance and financial economics. The data also reveals a relatively dispersed publication landscape, with the top ten journals accounting for only 32.4% of publications in the sample. However, these journals are home to the most highly cited papers, as evidenced by their total, range, and average citation metrics, and also its respective JCR impact factor.

Regarding the knowledge areas, and consistent with the sample criteria, it was observed that from 1992 to 2024, the majority of studies were published in Business and Economics (212 articles). In addition to Business and Economics, other articles fell into areas such as Urban

Studies and Social Sciences (5 articles each), and Government and Law (4 articles). Furthermore, from 2019 to 2024, the theoretical field expanded to include three additional knowledge areas: Operations Research and Management (3 articles), Environmental Sciences and Ecology (2 articles), and Psychology (1 article). As suggested by Prado *et al*. (2016) and Garcia *et al*. (2019), this expansion of debates into diverse knowledge areas is significant. It reflects the changes the field has undergone over time, enabling studies to be analyzed using a multidisciplinary approach.

Table 2 Most published journals on the Web of Science database and citations (JCR impact factor for 2023).

Journal	Articles	Freq.	Total Citations WOS	Mean Citations WOS	Range Citations WOS	JCR
Journal of Financial Economics	16	6,7%	5094	318,38	1-1547	10,4
Journal of Banking & Finance	13	5,5%	1328	102,15	0-841	3,6
Journal of Empirical Finance	8	3,4%	126	15,75	0-36	2,1
Journal of Corporate Finance	7	2,9%	563	80,43	8-401	7,2
Pacific-Basin Finance Journal	7	2,9%	249	35,57	4-125	4,8
International Review of Financial Analysis	6	2,5%	82	13,67	0-27	7,5
Journal Of International Financial Markets Institutions & Money	6	2,5%	74	12,33	0-21	5,4
Accounting And Finance	5	2,1%	53	10,60	0-33	3,1
Asia-Pacific Journal of Financial Studies	5	2,1%	33	6,60	0-16	1,8
Corporate Governance-The International Journal of Business in Society	4	1,7%	40	10,00	1-31	5,5
Sub total	77	32,4%				
Other journals	161	67,6%				
Total	238	100,0%				

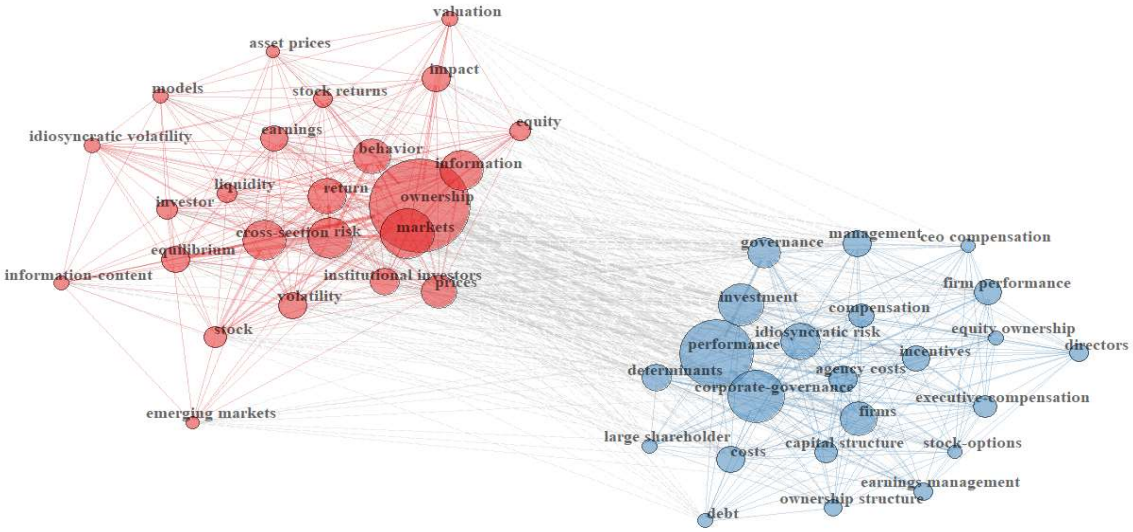
Source: Elaborated by the authors.

We identified the most frequently used keywords to deepen knowledge on the theoretical line of research. The appearance of a term is correlated with the delimitation of the research presented in the methodology. The network was useful in quantifying the most frequent words used and their relationship with other keywords. Of the total 611 keywords used in the articles, the keywords that appear at least 8 times are highlighted in Figure 2, grouped into two main clusters based on their occurrences. We observed that the ten most frequent words were ownership (96 times), performance (56 times), risk (43 times), corporate governance (42 times), markets (42 times), cross-section (36 times), information (32 times), return (31 times), investment (30 times), and firms (28 times). The terms 'behavior' and 'idiosyncratic risk' appear immediately afterwards in eleventh and twelfth position, respectively.

Upon verifying the most frequently used keywords, we observed directional diversity among the debates in the studied field. For example, considering the studies with the most used keywords by Pathan *et al*. (2021), Kim, Li and Li (2014), and Herskovic *et al*. (2016), each explores distinct aspects of financial markets and firm behavior. Pathan *et al*. focus on the banking sector, demonstrating that long-term institutional investors reduce bank risk-taking, enhance performance, and promote conservative policies. Kim, Li and Li, in contrast, examine a broader range of firms, revealing a negative correlation between corporate social responsibility (CSR) and stock price crash risk, particularly when corporate governance or institutional ownership is weak. Herskovic *et al*. investigate idiosyncratic volatility (IVOL),

finding a common factor (CIV) that is priced, indicating that stocks with lower sensitivity to CIV earn higher returns, highlighting the significance of idiosyncratic risk beyond systematic risk. These studies, while addressing different facets, suggest that investor horizon, CSR, and idiosyncratic volatility are critical factors in understanding firm behavior and market dynamics.

Figure 2 Co-occurrences Keyword network



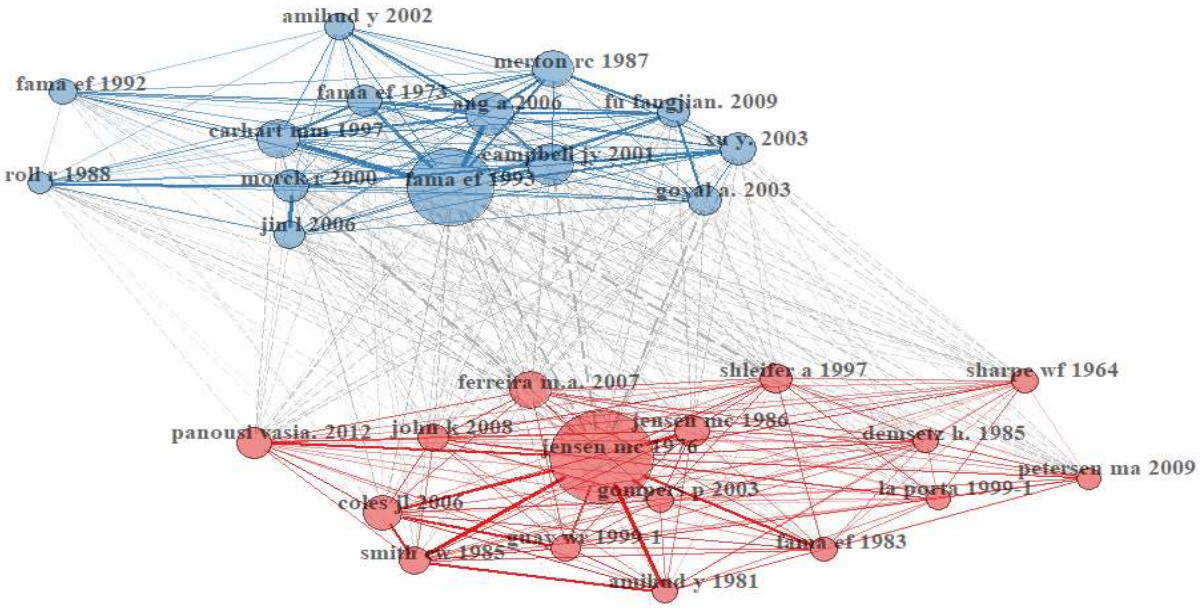
Source: Elaborated by the authors.

Although these studies primarily focus on separate areas, potential indirect connections exist. For example, the institutional investor horizon studied by Pathan *et al*. could influence a bank's CSR engagement, impacting crash risk as shown by Kim, Li and Li. Similarly, the moderating effect of institutional ownership in Kim, Li and Li's work may relate to Pathan *et al*.'s findings on investor impact. Herskovic *et al*.'s introduction of the CIV factor, and its influence on asset pricing, presents another risk dimension that could be affected by investor horizon or CSR. However, these studies do not directly explore these interconnections, leaving room for further investigation into how these factors interact within the broader financial market landscape.

According to Garcia *et al*. (2019), co-citation networks are used to evaluate intellectual bases. Figure 3 presents the co-citation network of references from our sample, which, as per Garcia *et al*. (2019), defines the intellectual base. This network demonstrates the authorship and citation frequency of the most cited works, organized into two main clusters with Eugene F. Fama and Michael C. Jensen as their respective centers.

The most cited author within the sample was Eugene F. Fama, the 2013 Nobel Memorial Prize in Economic Sciences laureate. Appeared in 211 articles, his work is recognized and influential in modern finance, both in academia and the investment industry, particularly his association with market research and the efficient-market hypothesis. He concentrates a large percentage of his research on the relationship between risk and expected return, and its implications for portfolio management. Cited in 121 articles, Michael C. Jensen, a researcher in financial economics, firm theory, and corporate finance, was another frequently cited author, studying corporate decisions, governance, and capital markets. Yakov Amihud, Andrew Ang, Andrei Shleifer, Randall Morck, Robert C. Merton, Rafael La Porta, and John Y. Campbell were also cited relatively frequently.

Figure 3 Co-citation network of references.



Note: Only the name of the first author of the article and the year of publication appears in the network, - complete authorship is shown in Table 3. The network also shows a structure organized by clusters.

Source: Elaborated by the authors.

Table 3 presents the most frequently cited papers from the 238 articles analyzed. The citation count for these papers ranges from 23 to 74 (see Figure 4, for the time series of citations of the first 8 articles). Among them, Fama and MacBeth (1973) and Jensen and Meckling (1976) are the earliest, and Ferreira and Laux (2007) and Panousi and Papanikolaou (2012) are the most recent. We note at least 3 groups of articles among the presented in the table: Theory of the firm, corporate finance, and governance; Risk - return relationship and model pricing; and Volatility and idiosyncratic risk.

Among the first group papers, and the more influential work, authored Jensen and Meckling (1976), is “Theory of the firm: Managerial behavior, agency costs and ownership structure”. The article deals with agency theory, property rights theory, and finance theory to construct a model for firm ownership structure, introducing the concept of agency costs and its connection to separation of ownership and control. It examines agency costs arising from debt and equity, determining their bearers and Pareto optimality, while proposing a novel firm definition that connects debt and equity issuance to market completeness. The work acknowledges the inherent potential for negligence and profusion when managers handle other people's money highlighting the relevance of agency costs in understanding corporate governance.

Another influential article in this area is Michael C. Jensen's (1986) paper, which addresses the agency costs of free cash flow. These costs arise from the conflicts of interest between corporate managers (agents) and shareholders. Managers often prefer to reinvest free cash flow within the firm, even in projects with negative net present value, as this enhances their power and growth-linked compensation, while also avoiding the scrutiny associated with external financing. This preference diverges from shareholders' interests for payouts. Jensen argues that debt can serve as a mechanism to reduce these agency costs by obligating firms to regular cash outflows, effectively substituting for dividends and curbing managers' tendency to overinvest or waste free cash flow. Furthermore, the theory explains why diversification programs frequently underperform compared to other corporate actions and offers insights into the factors driving takeover activity across various industries.

Table 3 Most Cited Studies from 238 Articles as the Intellectual Base of the Research Field.

Title	Reference	Citations
Theory of the firm: Managerial behavior, agency costs and ownership structure	Jensen and Meckling (1976)	74
Common risk factors in the returns on stocks and bonds	Fama and French (1993)	61
The Cross-Section of Volatility and Expected Returns	Ang *et al*. (2006)	41
Have Individual Stocks Become More Volatile? An Empirical Exploration of Idiosyncratic Risk	Campbell *et al*. (2001)	36
A Simple Model of Capital Market Equilibrium with Incomplete Information	Merton (1987)	34
Risk, Return, and Equilibrium: Empirical Tests	Fama and MacBeth (1973)	33
On Persistence in Mutual Fund Performance	Carhart (1997)	30
Agency costs of free cash flow, corporate finance, and takeovers	Jensen (1986)	29
Managerial incentives and risk-taking	Coles, Daniel, and Naveen (2006)	28
Investigating the behavior of idiosyncratic volatility	Xu and Malkiel (2003)	28
Corporate Governance, Idiosyncratic Risk, and Information Flow	Ferreira and Laux (2007)	27
The information content of stock markets: why do emerging markets have synchronous stock price movements?	Morck, Yeung, and Yu (2000)	26
Investment, Idiosyncratic Risk, and Ownership	Panousi and Papanikolaou (2012)	24
Illiquidity and stock returns: cross-section and time-series effects	Amihud (2002)	23
Idiosyncratic risk and the cross-section of expected stock returns	Fu (2009)	23

Note: Studies with 23 citations or more.
Source: Elaborated by the authors.

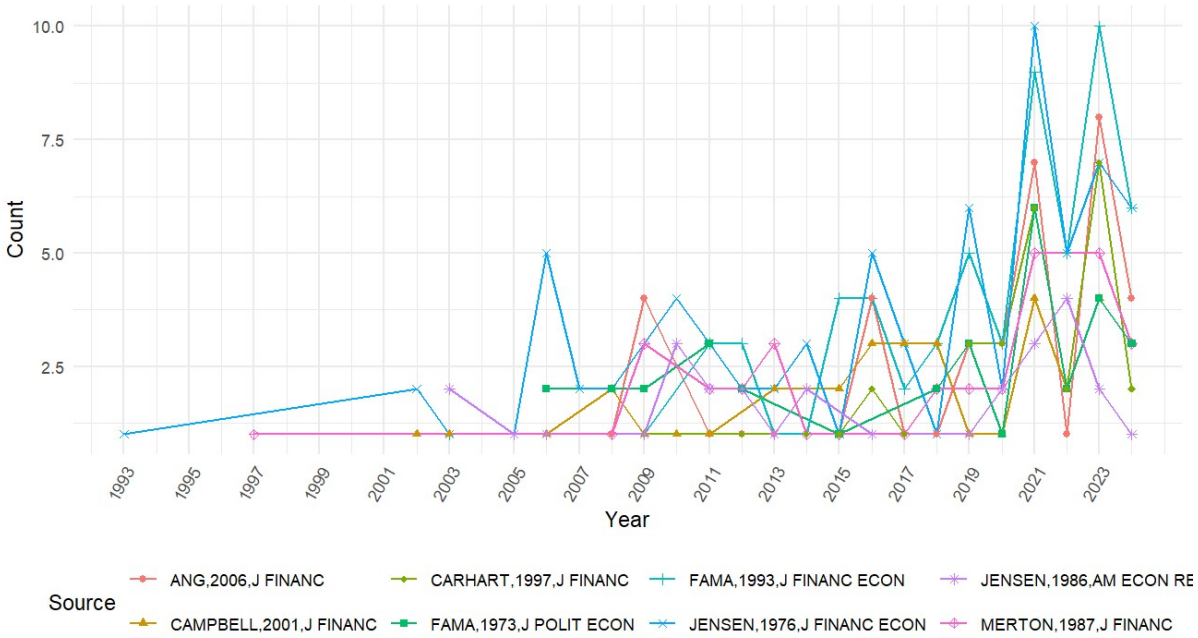
In the area of the risk-return relationship, there are several influential articles. Merton's (1987) model, "A Simple Model of Capital Market Equilibrium with Incomplete Information," emphasizes the role of incomplete information in asset pricing. This suggests that investors may not hold the market portfolio due to a lack of complete information, leading to localized or segmented markets where investors demand a premium for assets they are less informed about. Merton (1987) says that “neglected companies” are those listed on stock exchanges but are not well known in the market.

Another most referenced article written by Eugene Fama and co-authored by James MacBeth, is called Risk, Return, and Equilibrium: Empirical Tests. The study presents the first alternative to asset pricing. The authors explain that one problem stemming from the CAPM is that stock returns, when analyzed individually, are so volatile that average returns tend to be the same. Therefore, the CAPM cannot be tested. Fama and MacBeth (1973), group shares in portfolios following financial criteria that seek to maximize the average differences in returns. The authors estimated betas for each portfolio using the entire period, the sub-periods, and then the cross-section regressions for each period.

Fama and French's (1993) article, the second most cited in the sample, expands upon their earlier work by identifying five common risk factors that explain stock and bond returns. These include three stock market factors—market risk, size (SMB), and value (HML)—and two bond market factors reflecting maturity and default risk. The study demonstrates that these five factors significantly contribute to explaining average returns across both asset classes. Notably, building upon their 1992 findings, the authors suggest an economic foundation for the size and value effects observed in stock returns. They posit that these characteristics proxy for underlying common risk factors, aligning with multifactor asset-pricing models. Fama and French further propose that size and value are associated with systematic variations in profitability and growth, potentially serving as the origin of these risk factors. However, the paper acknowledges the need for further exploration into how the stochastic behavior of

earnings and other fundamental variables independently drive the size and value factors beyond the influence of the market return.

Figure 4 Frequency of citations by year of most cited articles.



Source: Elaborated by the authors.

In a 1992 analysis, Fama and French challenged the Capital Asset Pricing Model (CAPM) and introduced the three-factor model. This model, which incorporates market, size, and value factors, effectively explains a wide range of anomalies not captured by the CAPM's market factor alone. These findings contradicted the Fama (1970, 1991) Efficient Market Hypothesis (EMH), highlighting anomalies in asset returns. The EMH remains contested, with ongoing debate between proponents and critics. Also, the authors acknowledged that the momentum anomaly was unexplained, setting the stage for subsequent research. In this case Carhart (1997) proposed the four factor model, including the momentum factor, a model that became the standard for many years, until the appearance of the new factor models like the Hou *et al*. (2020) five-factor q5 model, the Fama and French (2015, 2018) five- and six-factor models (Hou *et al*., 2019).

Also, Merton (1987) was the starting point for many factor models. For example, the q5 model by Hou *et al*. (2020) builds upon the q-factor model by incorporating factors related to investment, profitability, and expected growth alongside the market factor, aiming to better explain cross-sectional variations in expected stock returns by focusing on firms' investment and operational decisions. Merton's model provides a theoretical foundation for the necessity of factor models like the q5, as it acknowledges the dispersion of information and investor limitations, challenging the traditional CAPM by recognizing the need for more nuanced models to account for asset pricing complexities, and potentially connecting to the Intertemporal Capital Asset Pricing Model (ICAPM) which allows for changing investment opportunities.

In the third area of volatility and idiosyncratic risk we have the following papers: article by Campbell, Lettau, Malkiel, and Xu (2001) analyzed stock volatility from 1962 to 1997, dissecting it into market, industry, and idiosyncratic components using daily data to derive realized monthly volatility. Their key finding was a significant positive trend in idiosyncratic

firm-level volatility, a phenomenon not observed in market or industry volatility. This increase in idiosyncratic risk, relative to market volatility, suggests a decline in stock return correlations and the explanatory power of the market model, requiring larger portfolios for effective diversification. Notably, firm-level volatility constituted the largest portion of total volatility and drove its changes, though market volatility displayed the greatest relative variation and acted as a leading indicator.

Beyond the trend analysis, the study revealed that all volatility components are countercyclical, leading variations in GDP growth and enhancing GDP forecasting beyond stock index returns. Campbell *et al*. (2001) replicated these findings at the industry level using industry betas, reinforcing the robustness of their results. The authors point that future research should delve into the underlying causes of the rising idiosyncratic volatility, tentatively suggesting that shifts in corporate governance and the institutionalization of equity ownership could be contributing factors.

The next influential article "Investigating the Behavior of Idiosyncratic Volatility," from Yexiao Xu and Burton G. Malkiel (2003), analyzes idiosyncratic volatility trends in the post-World War II era, demonstrating a significant increase in individual stock volatility over time. This rise is not solely attributable to the growth of the NASDAQ market; rather, it's also linked to the extent of financial institution share ownership and expected earnings growth. The idiosyncratic volatility was constructed from the Fama and French (1993) three-factor model. The authors propose that increased institutional investor trading may amplify market sensitivity to sentiment shifts. Furthermore, the 1990s' preference for growth may have driven firms towards unique investment projects, thereby elevating their idiosyncratic risk. The study establishes a positive correlation between institutional ownership and idiosyncratic volatility as well as between volatility and anticipated earnings growth. Additionally, it compares direct and indirect methods for estimating idiosyncratic volatility, noting that the most volatile stocks exhibit a consistent upward volatility trend, especially from the late 1960s to the 1990s, irrespective of specific stock characteristics.

Another paper in this area, the third most cited article in the sample, written by Andrew Ang, Robert J. Hodrick, Yuhang Xing, and Xiaoyan Zhang in 2006, examines the interplay between stock volatility and expected returns, demonstrating that stocks highly sensitive to aggregate volatility yield low average returns. This observation aligns with a negative price of risk for systematic volatility, a concept supported by option pricing and multifactor models. To further explore this, the authors created the FVIX factor, mirroring market volatility changes, which revealed that stocks with greater past exposure to VIX changes subsequently exhibit lower returns and decreasing Fama-French three factor alphas, highlighting the need for refined asset pricing models that can account for these complexities (Ang *et al*., 2009).

As we can see several papers are also related to the EMH, that states that market are efficient if asset prices quickly reflected all available information, making abnormal gains impossible. This concept proposed by Fama in 1970, and studies from the 70s and 80s tried to prove it, eventually concluding that the market was indeed efficient. However, from the mid-1980s to the new century, computational techniques allowed researchers to intensify their studies, showing how abnormal behavior is present in the returns of financial assets (see for example, Dezhkam and Manzuri, 2023). According to Zaremba, Czapkiewicz, Będowska-Sójka (2018), some of the identified anomalies might be driven by mathematical properties of return distributions, and therefore cannot be generalized and are not consistent over time. However, several studies show that there are many situations where market agents do not behave rationally, as predicted by the theory of efficient markets, see Lo (2004) for example. These

behavioral economists replace the principle of rationality with limited rationality or evolutionary principles where agents can learn and change according to the market behavior.

This study shows that scientific production on shareholder concentration and idiosyncratic risk is still developing, and that the theoretical field is multidisciplinary in its approaches, areas of research, and objects of study. However, the Capital Asset Pricing Model and its main variations (three and five factor models) are still widely used as a starting point for studying idiosyncratic volatility, despite its drawbacks. Nonetheless, capital structure can still be better explored to understand non-systemic risk to expand debates in the field of study.

4 FINAL CONSIDERATIONS

The goal of this study was to explore literature on shareholder concentration and idiosyncratic risk, using a bibliometric approach. Specifically, we sought to highlight publication trends in the field, in journals, and in categories, as well as identify the most cited authors, the most used keywords, while also identifying co-citations networks.

In summary, the results showed that this field can be grouped into three subareas, and presented a high growth, especially after 2020. Several approaches for dealing with property structure and idiosyncratic risk were observed among the most cited articles from the Web of Science and Scopus databases. These approaches mainly deal with Business & Economics, Economics, Business and Management. The Journal of Financial Economics, Journal of Banking & Finance, and Journal of Empirical Finance, along with other journals that focus on finance, economics, and quantitative analysis were important in promoting research on this topic.

There was no observed concentration of works by certain authors. The most cited article in this network was Theory of the firm: Managerial behavior, agency costs and ownership structure from Jensen and Meckling (1976). The most cited author was Eugene Fama, together with Kenneth French, and their article named Common risk factors in the returns on stocks and bonds, published in 1993. The most used keywords by researchers were ownership, performance, risk, and corporate governance, which leads us to conclude that emphasis was placed on risk measurement models and governance. These terms also help us understand the main scenarios of the studies. Based on this analysis we see that this field has evolved, and more attention has been given to new concepts, and towards developing new studies seeking to understand how the property structure can interfere with risk, and organizational performance and management.

The work of Campbell *et al*. (2001), Ang *et al*. (2006), Merton (1987), and Fama and French (1993), provided discussions on the best alternative to the CAPM model, which has been the target of recurring criticism, also addressing how sector-specific and firm shocks can influence asset returns, how market volatility is a risk factor, and just how risky of unknown assets (listed on stock exchanges) are for investors.

The limitations of this study are similar to those described by Garcia *et al*. (2019) and are due to the fact that: (i) the analyses were made using two recognized scientific research databases, that resulted on institutions mainly from the United States, China, United Kington and Canada; (ii) the analyses were strictly descriptive in nature, and an approach that explores the gaps, criticisms, or different perspectives within the theoretical field studied here can be developed based on what has been presented; and (iii) the ontological, epistemological, and methodological differences and similarities of the analyzed articles were not explored and is left for further analysis.

In short, it is important to emphasize that this study sought to deepen the discussion on the relationship between shareholder concentration and idiosyncratic risk, without making any generalized claims. Furthermore, the obtained results are important for other researchers in the

field, since they offer an overview of the main points from within this line of research and intellectual base. These can guide new theoretical and empirical discussions, especially on "management", "firm theory", "idiosyncratic volatility", and "risk-return", and its relationship, which have not been widely explored in literature.

We suggest that future studies replicate the steps adopted in this study using other databases including studies conducted in Latin America (in the sample there were only one study from Brazil and one from Argentina). We also suggest that future research analyze national articles or reports from recognized events in the area of administration, accounting sciences or any other areas of knowledge to survey discussions on the topics addressed here. Another future research opportunity would be to more directly study how the ownership structure of Brazilian companies influence non-systemic risk. According to De Andrade, Bressan, and Iquiapaza (2017), several companies in Brazil belong to pyramid structured economic groups and use dual class shares structure. Researchers should further analyze the influence of returns and the origins of idiosyncratic risk at these institutions. Caixe, Kalatzis, and De Castro (2019), suggests studying the relationship between management tools in divergences between ownership and control, and how much this affects the risk-investment relationship. Additionally, this bibliometric study analysis could be applied to find opportunities for developing studies that can add new ideas to this line of research in light of the methodological trends like artificial intelligence that have been little explored, or not explored at all (Alvarez *et al*., 2020, Zhu *et al*., 2023).

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