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## Deciphering price dynamics: A bibliometric analysis of research trends in the financial market

*Decifrando a dinâmica dos preços: Análise bibliométrica das tendências de pesquisa no mercado financeiro*

*Descifrando la dinámica de los precios: Análisis bibliométrico de las tendencias de investigación en el mercado financiero*

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### ABSTRACT

**Background:** The dynamics of financial price behavior have become a central theme in economic literature, especially considering increasing market volatility, technological advancements, and new global interdependencies. Understanding the factors that influence this dynamic is crucial, particularly in a scenario marked by uncertainties and ongoing digital transformations.

**Purpose:** This study aims to investigate the evolution of the scientific literature on financial price dynamics from 1970 to 2024. The focus is on mapping the trajectory of research, identifying its theoretical and social foundations, and outlining the emerging trends that shape the current and future research agenda in the field.

**Method:** A bibliometric approach was adopted, analyzing 3,648 publications extracted from the Scopus and Web of Science databases. The analysis process was divided into three stages: (i) temporal evolution of scientific production, (ii) analysis of the conceptual and social foundation through co-occurrence networks, thematic mapping, and author collaboration, and (iii) identification of emerging trends, with an emphasis on thirteen areas of study. Results: The literature on price dynamics showed consistent growth, with notable peaks during economic crises and technological innovations. The scientific production revealed increasing integration between micro and macroeconomic approaches, with a focus on empirical models.

**Conclusions:** The emerging trends indicate that the integration of advanced technologies and sustainable practices will significantly impact price modeling and investment decision-making. The research also points to new directions, such as considering environmental variables and the need for hybrid and adaptive models to cope with the volatility and complexity of financial markets.

**Keywords:** price dynamics; financial markets; bibliometrics; base analysis; research agenda.

### RESUMO

**Contextualização:** A dinâmica do comportamento dos preços financeiros se consolidou como um tema central na literatura econômica, especialmente diante da volatilidade crescente dos mercados, avanços tecnológicos e novas interdependências globais. A compreensão dos fatores que influenciam essa dinâmica é essencial, principalmente em um cenário caracterizado por incertezas e transformações digitais constantes.

**Objetivo:** O estudo visa investigar a evolução da literatura científica sobre a dinâmica dos preços financeiros, abrangendo o período de 1970 a 2024. O foco está em mapear a trajetória da pesquisa, identificar suas bases teóricas e sociais, e delinear as tendências emergentes que moldam a agenda de pesquisa atual e futura na área.

**Método:** A pesquisa adotou uma abordagem bibliométrica, analisando 3.648 publicações extraídas das bases de dados *Scopus* e *Web of Science*. O processo de análise foi dividido em três etapas: (i) evolução temporal da produção científica, (ii) análise da base conceitual e social, por meio de redes de co-ocorrência, mapa temático e colaboração entre autores, e (iii) identificação de tendências emergentes, com ênfase em treze áreas de estudo.

**Resultados:** A literatura sobre dinâmica de preços mostrou crescimento consistente, com destaque para os períodos de crise econômica e inovação tecnológica. A produção científica revelou uma crescente integração entre abordagens micro e macroeconômicas, com foco em modelos empíricos.

**Conclusões:** As tendências emergentes indicam que a integração de tecnologias avançadas e práticas sustentáveis terá um impacto significativo na modelagem dos preços e na tomada de decisões de investimento. A pesquisa também aponta para novas direções, como a consideração de variáveis ambientais e a necessidade de modelos híbridos e adaptativos para lidar com a volatilidade e complexidade dos mercados financeiros.

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**Palavras-chave:** dinâmica de preços; mercados financeiros; bibliometria; análise de base; agenda de pesquisa.

## RESUMEN

**Contextualización:** La dinámica del comportamiento de los precios financieros se ha consolidado como un tema central en la literatura económica, especialmente frente a la creciente volatilidad de los mercados, los avances tecnológicos y las nuevas interdependencias globales. La comprensión de los factores que influyen en esta dinámica es esencial, especialmente en un escenario caracterizado por incertidumbres y transformaciones digitales constantes.

**Objetivo:** El estudio tiene como objetivo investigar la evolución de la literatura científica sobre la dinámica de los precios financieros, abarcando el período de 1970 a 2024. El enfoque está en mapear la trayectoria de la investigación, identificar sus bases teóricas y sociales, y delinear las tendencias emergentes que estructuran la agenda de investigación actual y futura en el área.

**Método:** Se adoptó un enfoque bibliométrico, analizando 3.648 publicaciones extraídas de las bases de datos Scopus y Web of Science. El proceso de análisis se dividió en tres etapas: (i) evolución temporal de la producción científica, (ii) análisis de la base conceptual y social mediante redes de co-ocurrencia, mapas temáticos y colaboración entre autores, y (iii) identificación de tendencias emergentes, con énfasis en trece áreas de estudio.

**Resultados:** La literatura sobre la dinámica de precios mostró un crecimiento constante, con énfasis en los períodos de crisis económica e innovación tecnológica. La producción científica reveló una integración creciente entre enfoques micro y macroeconómicos, con énfasis en modelos empíricos.

**Conclusiones:** Las tendencias emergentes indican que la integración de tecnologías avanzadas y prácticas sostenibles tendrá un impacto significativo en la modelización de precios y en la toma de decisiones de inversión. La investigación también apunta a nuevas direcciones, como la consideración de variables ambientales y la necesidad de modelos híbridos y adaptativos para lidiar con la volatilidad y la complejidad de los mercados financieros.

**Palabras clave:** dinámica de precios; mercados financieros; bibliometría; análisis de base; agenda de investigación.

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## 1 INTRODUCTION

The dynamics of prices in the financial market constitute a central theme in academic and professional debates, given its relevance for investors, analysts, and policymakers. Understanding the mechanisms that govern asset price fluctuations is essential for developing effective investment strategies and for formulating public policies aimed at stability and economic development (Gaio et al., 2022; Takaishi, 2022; Moraes & Ceretta, 2023).

Despite the growing volume of publications on asset pricing, the literature remains fragmented, mainly focusing on specific studies related to certain types of assets, regional markets, or restricted time periods (Patil & Rastogi, 2019; Donthu et al., 2021). There is, therefore, a gap in performing integrative bibliometric reviews that encompass multiple dimensions, such as macroeconomic, political, and behavioral factors, in a comprehensive and longitudinal manner (Souza et al., 2017; Silva & Nobre, 2021). Thus, there is a need to consolidate the accumulated knowledge, identifying trends, thematic gaps, and new research agendas that strengthen the field and guide more informed practices in the financial market.

Previous bibliometric studies have investigated price dynamics in financial markets from different approaches and time frames. National research, such as that by Souza et al. (2017), Silva and Nobre (2021), and Moraes et al. (2024), has contributed to understanding scientific production patterns in specific markets and focusing on particular assets. However, these studies have limitations regarding temporal scope and the integration of multiple macroeconomic, political, and behavioral dimensions influencing price fluctuations. In contrast to these approaches, this study broadens the scope by conducting a more comprehensive longitudinal analysis, articulating various dimensions in an integrated perspective and using advanced data mining and visualization tools, which enhances the robustness and relevance of the findings. This comparison highlights the contribution of this study to expanding bibliometric knowledge applied to the financial field in both national and international contexts.

Based on this, this study proposes to explore and map the existing scientific literature on the variables that influence financial price fluctuations, considering factors such as macroeconomic indicators, political events, and investor behavior. For this purpose, a broad temporal framework is adopted, spanning from 1970 to 2024. This choice aims to cover the economic, technological, and regulatory transformations that have significantly impacted financial markets over the past four decades. These periods allow capturing the early debates on the Efficient Market Hypothesis (EMH), formulated in the 1970s, to the recent methodological innovations and the growth of research on price dynamics in globalized and technologically advanced contexts (Moraes, Sobral & Melo, 2021). Additionally, it includes diverse economic cycles, financial crisis, and significant political events that have directly influenced the formation and volatility of financial prices (Durisin & Puzone, 2009; Lim & Brooks, 2011; Moraes & Ceretta, 2023). Thus, the temporal framework ensures a comprehensive, longitudinal analysis that aligns with the goal of mapping the theoretical and empirical evolution of the literature, avoiding biases from very short or unrepresentative periods.

This study also advances the field of bibliometrics applied to price dynamics by integrating multiple analytical dimensions in an integrated and comprehensive perspective. Unlike previous bibliometric reviews, which often focus on specific sectors, regional markets, or a limited number of variables, this research expands the understanding of the theoretical and empirical evolution of the subject (Donthu et al., 2021). To achieve this, it uses advanced data mining and visualization tools, such as the internationally recognized Bibliometrix and VOSviewer software, known for their ability to provide detailed and rigorous analyses of scientific production (Aria & Cuccurullo, 2017; Van Eck & Waltman, 2014). The application of these tools, coupled with rigorous selection and filtering criteria for scientific documents, strengthens the mapping process, minimizing common biases in bibliometric studies and ensuring sample representativeness. Furthermore, the choice of a broad temporal period and the inclusion of publications in different languages and relevant databases contribute to creating a more complete and up-to-date picture, allowing for the identification of emerging trends, gaps, and potential new research agendas with greater accuracy.

Technological advances, the globalization of financial flows, and the increasing integration of international markets present new challenges to understanding price formation (Mohanty & Mishra, 2021; Vogl, 2023). In this context, the use of bibliometric methods emerges as a powerful tool for identifying research patterns, detecting thematic gaps, and highlighting promising areas for future investigation. Thus, systematic mapping of scientific production contributes not only to deepening the academic debate but also to supporting strategic investment decisions, fostering a more robust, transparent, and sustainable financial environment (Moraes et al., 2024).

The trajectory of studies on price dynamics dates back to pioneering contributions such as Bachelier (1900), who developed the first mathematical model of the random movement of asset prices, and Samuelson (1965), who consolidated the idea of Random Walk, laying the foundations for the Efficient Market Hypothesis. Later, Mandelbrot (1963) challenged the normality of financial returns by introducing concepts of persistent volatility and fractal structures, expanding the understanding of price distribution. Complementarily, Lo and MacKinlay (1988) empirically tested the Random Walk hypothesis through the Variance Ratio Test, contributing to the methodological advancement of market efficiency analyses. These foundational contributions support the theoretical development that culminated in Eugene Fama's formulation of the EMH and its contemporary evolutions.

Since the seminal works of Eugene Fama, who laid the foundations for the Efficient Market Hypothesis (EMH) in 1970, the literature on price dynamics has undergone significant transformations. The EMH postulates that asset prices fully reflect all available market information, making any systematic attempt to outperform the market ineffective (Fama, 1970). However, over the following decades, various pieces of empirical evidence have challenged this concept, revealing market anomalies, behavioral effects, and persistent inefficiencies (Moraes, Sobral & Melo, 2021). Robert Shiller's contribution in *Irrational Exuberance* (2000) stands out by demonstrating that stock prices exhibit excessive volatility relative to economic fundamentals, being strongly influenced by psychological factors and speculative bubbles.

Complementing and refining the postulates of the EMH, the works of Eugene Fama and Kenneth French represented a significant advance in understanding the factors explaining asset returns. Studies such as *Common Risk Factors in the Returns on Stocks and Bonds* (1993) and *A Five-Factor Asset Pricing Model* (2015) introduced additional variables, such as company size, market value, and investment, which challenge the simplicity of the original model. In *Multifactor Explanations of Asset Pricing Anomalies* (1996), the authors present a multifactor approach that more realistically incorporates the various risks and behaviors affecting asset pricing.

In contemporary approaches, Andrew Lo proposes the Adaptive Market Hypothesis (AMH), which views markets as evolving systems constantly adapting to environmental and behavioral changes, capable of responding non-linearly. In works such as *The Adaptive Markets Hypothesis: Market Efficiency from an Evolutionary Perspective* (2004) and *Adaptive Markets: Financial Evolution at the Speed of Thought* (2017), Lo argues that agents' rationality is limited and conditioned by evolutionary processes, offering a more flexible and dynamic alternative to the rigidity of traditional EMH. The incorporation of interdisciplinary perspectives has expanded the understanding of price formation. Furthermore, the book *Nudge* (2008) by Richard Thaler and Cass Sunstein introduces elements of behavioral economics, demonstrating how cognitive biases and psychological factors systematically shape financial decisions in an irrational and predictable manner. This line of research supports the idea that markets are not perfectly efficient and that collective behaviors can create significant distortions in asset prices (Moraes, Sobral & Melo, 2021).

In recent years, the literature has incorporated new analytical tools, such as non-linear econometric models, machine learning algorithms, and neural networks, expanding the methodological horizon of asset price investigations (Tian, Wen & Fu, 2024; Chen & Yang, 2024). These innovations allow the modeling of complex relationships between macroeconomic and microeconomic variables, offering a more holistic and predictive perspective on market movements (Moraes, Ceretta & Castro Filho, 2024). Additionally, price volatility, especially during periods of economic crisis and political instability, is a recurring theme in the literature due to its relevance for risk management and the formulation of monetary and fiscal policies. Understanding the effects of external shocks, interest rate changes, government interventions, and geopolitical conflicts is crucial for financial market stability and protecting invested capital (Agnello et al., 2020; Fan et al., 2024).

In this multifaceted scenario, bibliometrics emerges as an efficient methodological strategy to map and synthesize the accumulated knowledge on price dynamics. By examining academic production through quantitative metrics, it is possible to outline the theoretical evolution of the field, identify influential authors and publications, as well as detect emerging themes and research gaps (Durisin & Puzone, 2009; Donthu et al., 2021). This approach contributes to a deeper understanding of transformations in the theoretical and empirical framework, guiding both research and practice in the contemporary financial environment.

Thus, this study aims to advance the understanding of the mechanisms governing financial price movements, providing theoretical and empirical subsidies for researchers and professionals to develop more effective strategies in a scenario marked by uncertainty, complexity, and constant transformation. The relevance of this investigation extends beyond the academic sphere, being directly related to promoting more efficient, transparent, and resilient markets. Finally, it is worth noting that, like other bibliometric studies, this research is subject to limitations inherent in database selection, indexing criteria, temporal scope, and language restrictions (Aria & Cuccurullo, 2017). These aspects may influence the scope and representativeness of the results, requiring careful interpretation and consideration of complementary qualitative studies.

After this introduction, the second section details the methodology adopted in the study, with an emphasis on conducting the bibliometric analysis. The third section presents the results obtained and discusses the main findings of this analysis. Finally, the conclusion highlights the limitations of the work and points to potential paths for future research.

## 2 METHODOLOGY

This study aims to map the evolution of scientific production on the dynamics of price behavior in the financial market, highlighting its complexities, nuances, and advancements. To achieve this purpose, a descriptive and quantitative approach based on bibliometric analysis was adopted. This statistical technique has become a robust tool for evaluating the production and dissemination of knowledge across various fields, allowing for the measurement of scientific productivity, identification of trends, and the structuring of the main theoretical frameworks (Filser, Silva & Oliveira, 2017; Maia et al., 2019).

Bibliometric analysis involves a systematic process of identification, collection, organization, and analysis of data extracted from academic publications. This procedure not only facilitates an in-depth understanding of the investigated topic but also enables the identification of relevant patterns, such as the volume of production over time, the most influential authors, the leading journals, and emerging thematic areas (Aria & Cuccurullo, 2017).

Based on this methodological framework, the research was organized into interdependent stages, which include selecting the databases and formulating search strategies, as well as organizing and analyzing bibliographic data. Unlike purely qualitative narrative or systematic reviews, bibliometric analysis combined with the construction of co-occurrence and co-citation networks allows for the objective measurement of the structure, evolution, and gaps within the research field. This approach, consolidated in studies such as Prado et al. (2016) and Aria and Cuccurullo (2017), ensures greater robustness and replicability, aligning with the practices adopted by high-impact publications.

Thus, Table 1 presents the stages and procedures adopted for the bibliometric analysis, detailed in the following subsections. This methodology follows a logical flow, ensuring a clear and rigorous analysis of the literature while facilitating the identification of emerging trends and existing gaps within the field.

**Table 1**  
Stages and Procedures for the Bibliometric Analysis of the Research

Stages	Procedures
<b>1. Operationalization of the Research</b>	1.1 Selection of the scientific database; 1.2 Definition of terms representing the field of study; 1.3 Identification of additional terms to refine results.
<b>2. Search Procedures and Filters</b>	2.1 Title (keywords from the field of study); 2.2 Use of wildcard characters ("*") and logical operators ("AND" and "OR"); 2.3 Filter 1: Only open-access articles and reviews; 2.4 Filter 2: Complete temporal scope; 2.5 Filter 3: Inclusion of all knowledge areas; 2.6 Filter 4: Consideration of all languages.
<b>3. Database Selection Procedures</b>	3.1 Download of references using EndNote software; 3.2 Download references in spreadsheet format; 3.3 Download references for use in R, RStudio, and Bibliometrix software; 3.4 Organizing references in EndNote; 3.5 Preparing the analysis matrix in a spreadsheet; 3.6 Importing data into analysis software.
<b>4. Data Adjustment and Organization Procedures</b>	4.1 Removal of duplicate articles in the database; 4.2 Exclusion of articles through exploratory reading; 4.3 Filtering articles due to the polysemy of terms; 4.4 Search and retrieval of full articles in PDF format from EndNote.
<b>5. Research Front Analysis</b>	5.1 Temporal evolution of publications on the topic; 5.2 Citation analysis of publications on the topic; 5.3 Scientific production analysis of the most cited countries; 5.4 Network between the most cited countries on the subject; 5.5 Most cited journals and articles in the literature; 5.6 Most relevant affiliations.
<b>6. Database Analysis</b>	6.1 Co-occurrence network analysis of terms in the literature; 6.2 Thematic map analysis; 6.3 Collaboration network analysis between authors.
<b>7. Future Research Agenda</b>	7.1 Presentation of topics for future studies.

Source: Adapted from Prado et al. (2016).

## 2.1 Step 1: Operationalization of the Research:

For data collection, the CAPES (Coordination for the Improvement of Higher Education Personnel) journal portal was used, focusing on the Web of Science (Core Collection – Clarivate Analytics) and Scopus databases. The choice of these databases is justified by the high reputation and scientific rigor of the journals they index, as well as their broad international coverage and diversity of knowledge areas, which adds greater reliability to the analyzed sample (Filser, Silva & Oliveira, 2017; Moraes et al., 2024). Thus, this procedure results in a robust database, crucial to ensure that the results of the bibliometric analysis are accurate and well-founded, enabling the research to stand out in the academic and scientific context.

## 2.2 Step 2: Search Procedures and Filters:

In this study, searches were conducted using the following terms, applied in the title, abstract, and keywords sections: TS = ("price dynamic\*" OR "price behav\*" OR "price movemen\*" OR "price volatility" OR "price fluctuation" OR "price changes") in Web of Science, and Title-Abs-key with the same terms in Scopus. The choice of these strings was motivated by the differences in the search mechanisms of each database. The Boolean operator "OR" was adopted to ensure that the search covered relevant semantic variations, allowing for the capture of different terms and expressions that address the

same concept (Moraes et al., 2024). Thus, the search scope was broadened, and the exclusion of important articles that used synonyms or alternative forms of referring to the topic (e.g., "price behavior" or "price movement") was avoided. Moreover, the symbol "\*" was used as a wildcard to include variations of words such as "dynamic", "dynamics", "behavior", "behaviors", among others. This way, the search incorporated all forms of these words without the need to list them individually, resulting in a broader and more comprehensive data collection. The application of the terms in the title, abstract, and keyword sections of the Web of Science and Scopus databases ensured that the articles found were directly relevant to the topic of price dynamics, volatility, fluctuations, and price changes. By focusing on the most important sections of the publications, the relevance of the selected articles was increased (Maia et al., 2019; Donthu et al., 2021). Although this methodology is effective in expanding the scope and relevance of the research, it is subject to selection bias. This bias can occur for various reasons, such as the choice of databases (Web of Science and Scopus), which, despite being recognized for their quality and breadth, do not capture the entire existing literature on the topic. Furthermore, the definition of specific search terms and the exclusion of non-accessible articles (for example, those unavailable or without proposals for future studies) can influence the final sample, limiting the diversity of approaches, geographic areas, or methodologies considered (Aria & Cuccurullo, 2017). Thus, the sample may not fully represent all perspectives on price dynamics in financial and commodity markets.

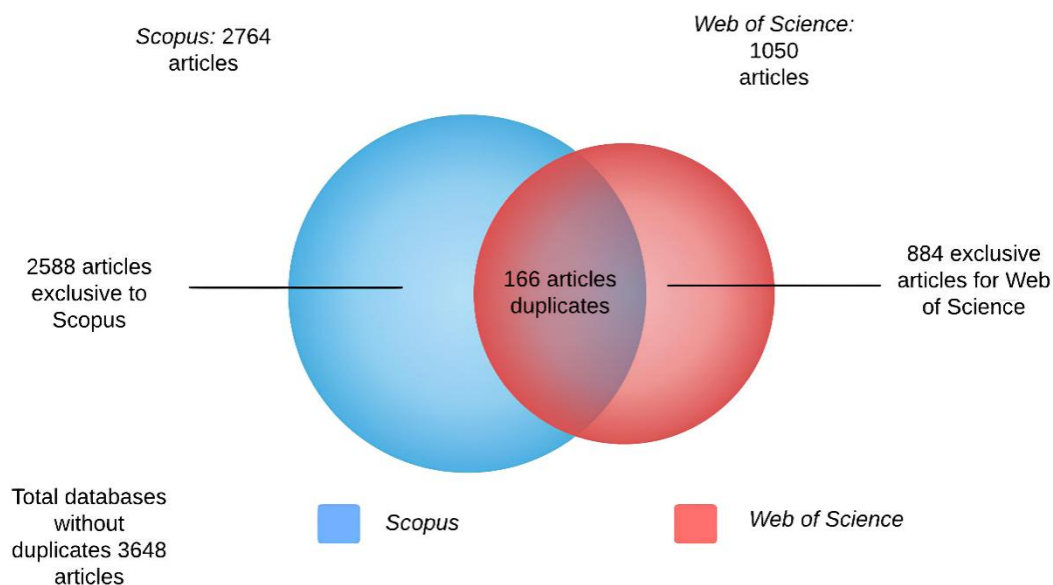
Despite these limitations, the combination of Web of Science and Scopus databases helps minimize selection bias, as these platforms cover a wide range of journals from various knowledge areas (Donthu et al., 2021). Still, it is acknowledged that the adopted search criteria result in a representative, but not exhaustive, sample, which should be considered when interpreting the results.

### 2.3 Step 3: Database Selection Procedures:

In this step, the metadata of the retrieved articles were exported in BibTeX, RIS (EndNote, Reference Manager), and CSV (Excel) formats, initially totaling 3,814 records. These records were organized with essential information such as article title, authors' names, publication source, year, keywords, and DOI (Digital Object Identifier). The BibTeX files were then imported into R and RStudio, where the Scopus and Web of Science databases were integrated, and duplicate records were removed (Maia et al., 2019).

From this processing, Figure 1 was created, showing a Venn diagram illustrating the distribution of articles on price behavior dynamics in financial markets across the two databases. As shown in Figure 1, the Scopus database had a broader coverage, accounting for 2,767 records, which represents 74.6% of the total sample. In comparison, Web of Science recorded 1,050 records, equivalent to 25.4%. After removing 166 duplicate articles, 2,588 exclusive articles were identified in Scopus, and 884 in Web of Science, totaling a consolidated base of 3,648 articles on the topic.

This result highlights that the Scopus database contains a significantly larger volume of studies related to price behavior dynamics in the financial field compared to Web of Science. Therefore, it is emphasized that for bibliometric analyses or literature reviews on this topic, the Scopus database provides a broader and more in-depth coverage of the available scientific production.



**Figure 1.** Articles on Price Behavior Dynamics in the Scopus and Web of Science Databases.

Source: Prepared by the authors based on estimates made in RStudio (2025).

## 2.4 Step 4: Data Adjustment and Organization Procedures:

In the following step, the data were analyzed with the support of the Bibliometrix package, developed for the R language. This tool provides advanced statistical resources and easily integrates with other analytical packages, ensuring greater precision and flexibility in data exploration (Aria & Cuccurullo, 2017). To facilitate interaction and make the results more accessible, the Biblioshiny interface, linked to Bibliometrix, was also used. Additionally, the VOSviewer software was employed to construct and visualize bibliometric networks, such as co-occurrence networks of keywords, co-citation of references, and author collaborations (Van Eck & Waltman, 2014). The combination of these tools enabled an integrated and in-depth analysis of the relationships and patterns present in the literature.

## 2.5 Step 5: Research Front Analysis:

For the research front analysis, the metadata from the 3,648 publications retrieved from the Scopus and Web of Science databases were imported into Bibliometrix in R. From this, indicators such as the temporal evolution of publications, the average citations per article, scientific production by country, and collaboration networks between countries were estimated (Maia et al., 2019). Furthermore, the most cited journals, the most relevant references, and the main institutional affiliations associated with the topic were identified (Moraes et al., 2024). Thus, the research front analysis not only organizes the accumulated knowledge but also provides the justification for recommendations of new lines of investigation, ensuring that the study has depth, academic rigor, and practical relevance for other researchers and stakeholders in the field.

## 2.6 Step 6: Database Analysis:

In this step, a detailed analysis of the database was conducted, considering three complementary dimensions: conceptual, social, and intellectual structure of scientific production on the dynamics of price behavior in financial markets. According to Aria and Cuccurullo (2017), in bibliometric studies, the conceptual analysis focuses on the main themes, concepts, and categories emerging from the data. For this, the co-occurrence network of keywords and the thematic map were used, organizing central topics and the relationships between them. Furthermore, the social analysis investigates authorship and collaboration networks. In this case, the author collaboration network allowed for identifying how researchers connect and form research groups around the topic. Lastly, the intellectual analysis examines the quality, influence, and relevance of the publications.

Part of this analysis is also included in Step 5, where the most cited journals, authors, and references were identified, complementing the understanding of the database. Therefore, the integrated application of these analyses allows for understanding not only what is researched but also who researches and how knowledge circulates in the field. This approach is essential to ensure the consistency and depth of the results obtained, in addition to offering insights for the formulation of research agendas more aligned with the gaps identified in the literature.

## 2.7 Step 7: Future Research Agenda:

To complement and deepen the analyses carried out in the previous steps, this phase aims to more precisely understand the existing gaps and emerging directions in research on the dynamics of price behavior. For this purpose, the most recent articles published in 2024 were selected, with particular attention to identifying new theoretical, methodological, and thematic approaches. The choice of this temporal scope is justified as it provides a solid basis for mapping current trends and indicating promising paths still underexplored by the established literature. Thus, the recent period serves as a strategic starting point for identifying research opportunities and proposing agendas more aligned with the contemporary transformations in the financial market (Donthu et al., 2021).

Moreover, this analysis was enriched by revisiting the studies by Filser et al. (2017) and Moraes et al. (2024), recognized as important references that continue to guide research advancements in the field. Thus, the integration of the most up-to-date production with the support of established studies strengthens the relevance and consistency of the proposals for future investigations.

Therefore, this research's bibliometric analysis enabled the identification of various established research fronts, as well as categories and central concepts that structure the field of study. These analyses were essential for interpreting the results in a contextualized manner, expanding the understanding of the directions, gaps, and challenges that still characterize the academic literature dedicated to the dynamics of price behavior in financial markets. Thus, this investigation contributes to the ongoing effort to systematize and deepen theoretical knowledge on the topic, offering relevant insights for advancing the field and for future research.

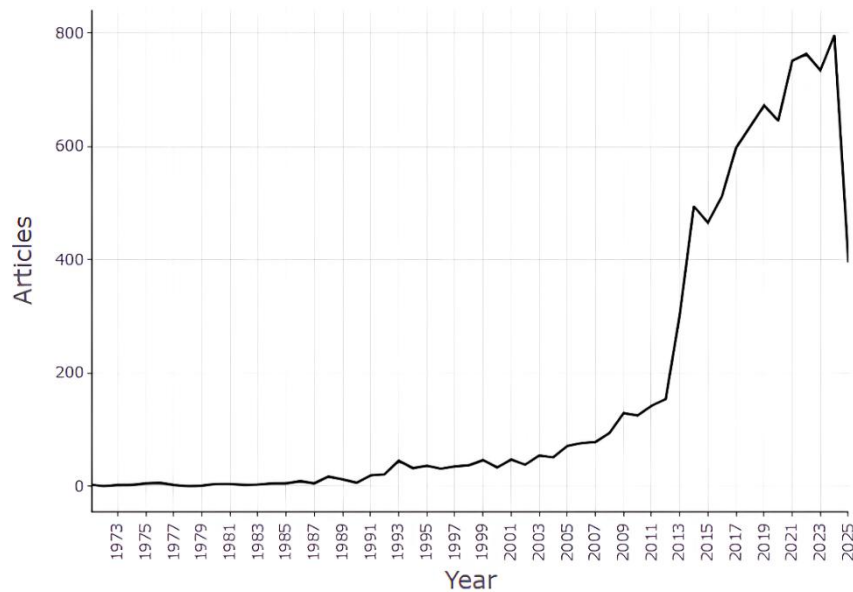
## 3 ANALYSIS AND DISCUSSION OF RESULTS

The results of this study are organized into three main sections, each focusing on distinct aspects of price behavior dynamics. The first section (3.1) provides a detailed analysis of the research front, examining the existing literature on price

behavior dynamics and identifying the key contributions and gaps. The second section (3.2) explores the conceptual and social foundations underlying these studies, highlighting the most influential theories and collaboration networks in the field. Finally, the third section (3.3) discusses future research trends, pointing out promising directions for new studies and suggesting areas that require further investigation.

### 3.1 Research Front Analysis on Price Behavior Dynamics Literature

The results presented in Figure 2 highlight the evolution of scientific publications on price behavior dynamics in the field of finance from 1970 to 2024. A significant and continuous growth in academic production is observed in recent decades, with notable peaks in 2014 (497 publications), 2019 (672), 2021 (751), 2022 (762), 2023 (734), and 2024 (796). This progress reflects the growing interest in investigating the mechanisms of price formation in financial markets, particularly in contexts marked by uncertainties, complexity, and external shocks.

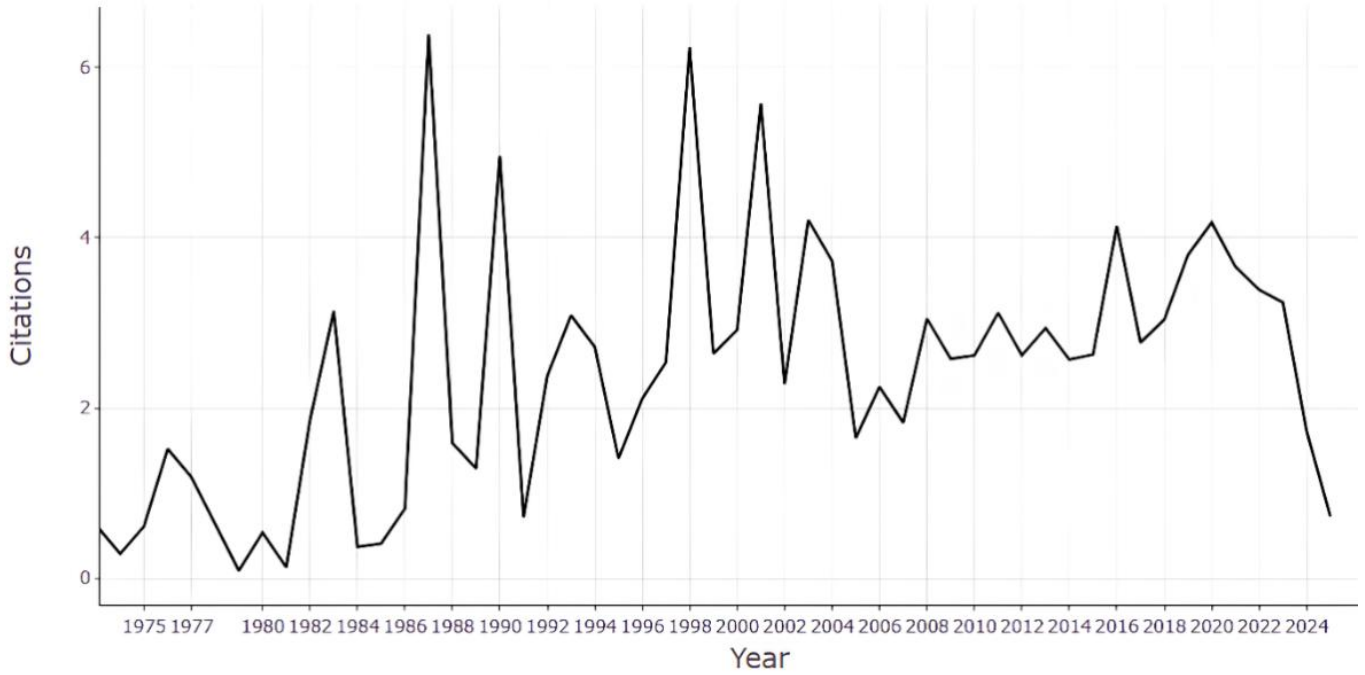


**Figure 2.** Temporal Evolution of Publications in the Literature on Price Behavior Dynamics in Financial Markets. Source: Prepared by the authors based on estimates made in Bibliometrix (2025).

Furthermore, major events such as the 2008 financial crisis and the Covid-19 pandemic acted as milestones that intensified the academic debate, prompting research focused on modeling and forecasting prices in instability scenarios. Another important factor is the development of quantitative methodologies and techniques, such as stochastic volatility models, multivariate time series, and machine learning tools, combined with the greater availability of high-frequency data and software specialized in econometric analysis.

Thus, the topic consolidates as a strategic research area, essential for deepening the understanding of market efficiency, asset pricing, risk management, and the foundation of economic policies. The constant growth of publications demonstrates that, in addition to responding to short-term shocks, the literature has been diversifying theoretical and methodological approaches, contributing to the improvement of predictive models, the development of investment strategies, and supporting regulatory decisions in increasingly complex environments.

Expanding on this analysis, it is observed that the growing interest in the topic is also reflected in the citation pattern, as illustrated in Figure 3. This figure highlights the peaks in average annual citations of works on price behavior, particularly in the years 1987 (6.4 citations per article), 1990 (5), 1998 (6.2), 2001 (5.6), 2008 (3), 2016 (4.1), and 2020 (4.2). These periods partly coincide with the emergence or strengthening of innovative approaches in the literature, which reflects the greater academic impact and relevance of the research produced.

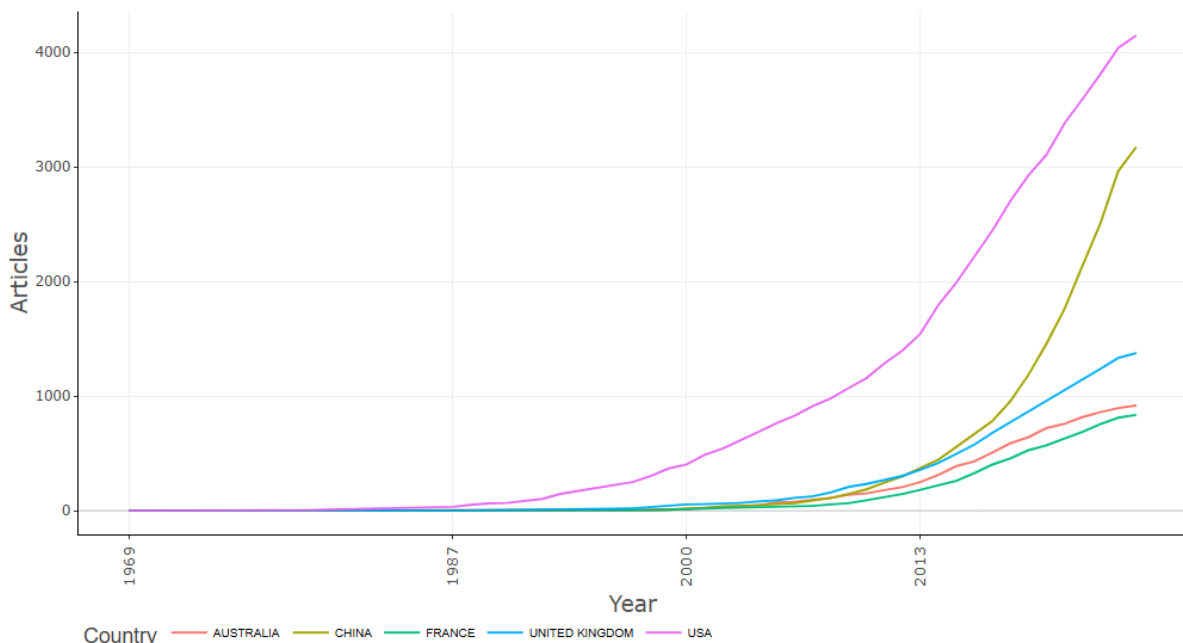


**Figure 3.** Temporal Evolution of Average Citations per Year in the Literature on Price Behavior Dynamics in Financial Markets. Source: Prepared by the authors based on estimates made in Bibliometrix (2025).

In particular, years such as 2003 and 2016 may be related to the consolidation of empirical studies on market microstructure, pricing anomalies, and multifractal analyses applied to price time series. In this sense, average annual citations serve as an indicator of scientific influence, signaling key moments of idea diffusion, relevant theoretical formulations, or methodologies that became benchmarks in the field.

On the other hand, there is also a noticeable occurrence of periods with a decline in the average number of citations per article. These fluctuations may result from factors such as the thematic dispersion of the area, the emergence of new research lines that redistribute the volume of citations, or the replacement of established approaches by newer methodologies. Additionally, changes in academic focus, technological transitions, and variations in data availability contribute to the alternation between periods of greater or lesser prominence. Thus, the phases of decline indicate that, while consolidated, the field remains dynamic, subject to cycles of renewal, critical reviews, and redefinition of its scientific agenda.

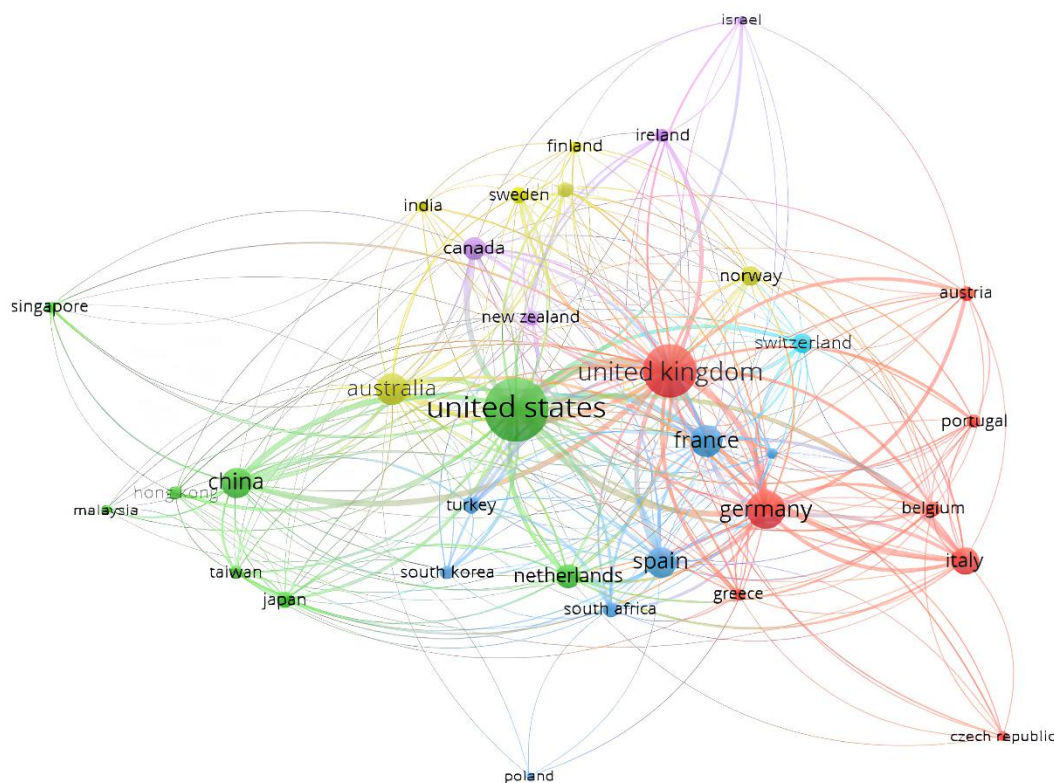
Continuing with the analysis of research fronts, Figure 4 shows the temporal evolution of scientific production by country on price behavior dynamics in financial markets. It is noted that the United States stands out as the absolute leader, with 4,147 publications, followed by China (3,172), the United Kingdom (1,374), Australia (917), and France (836).



**Figure 4.** Temporal Evolution of Scientific Production by Country on Price Behavior Dynamics in Financial Markets. Source: Prepared by the authors based on estimates made in Bibliometrix (2025).

The American leadership can be explained by the solid research infrastructure, the presence of reference centers in quantitative finance, and the consolidated tradition of academic institutions in fostering debates that impact global markets. This scenario shows that the hegemony of these countries is not limited to the volume of publications but also extends to their ability to shape the international scientific agenda. Additionally, the growth of participation from emerging economies, such as China, reveals a geographic expansion of knowledge, indicating the diversification of research hubs and the strengthening of contributions from new actors to the theoretical and practical development of the field. These results corroborate previous studies, such as those by Maia et al. (2019) and Moraes et al. (2024), which highlight the United States as one of the leading centers of knowledge production in finance, reinforcing the idea of an uneven geography of science, where some nations concentrate scientific and intellectual capital.

Figure 5 complements this analysis by highlighting the citation network between countries, allowing the identification of the main collaboration clusters and international influence. In this sense, each node represents a country, while the lines indicate the intensity of mutual citations between them. The thickness of the lines reflects the strength of these connections, while the colors group countries into clusters of greater collaborative proximity, according to the method proposed by Van Eck and Waltman (2014). This makes it possible to visualize cooperative blocks that share similar research agendas and maintain strong knowledge Exchange.



**Figure 5.** Network Among the Most Cited Countries on the Topic.

Source: Prepared by the authors based on estimates generated in VOSviewer (2025).

A strong density of interactions between the United States, United Kingdom, Australia, Germany, France, China, Spain, and Italy is observed, suggesting a globally articulated research ecosystem in which the flow of scientific knowledge concentrates in cooperative blocks that share similar research agendas and theoretically feed into each other. This network structure is characteristic of established scientific fields and points to the formation of an international epistemic community focused on the study of price dynamics.

These findings reinforce the idea that the advancement of literature in the field depends not only on the individual production volume of each country but, above all, on the capacity for articulation and exchange between research centers. Thus, strengthening these international networks increases the circulation of theories, methodologies, and data, favoring the integration of regional perspectives and the generation of more robust, diverse, and globally applicable knowledge.

In addition to the analysis of the citation network between countries presented in Figure 5, it is important to highlight the main channels for disseminating knowledge in this area. Table 2 presents the journals with the highest volume of publications related to price behavior dynamics, highlighting the main sources responsible for circulating the theoretical and empirical advances on the topic. This table was prepared using the Sources module of Biblioshiny (Bibliometrix/RStudio), based on data from the Scopus and Web of Science databases, considering articles and reviews published between 1970 and 2024, filtered by key terms such as price dynamics, financial market, and volatility.

**Table 2**

Most Cited Journals in the Literature on Price Behavior Dynamics

Journals	Articles
<i>Energy Economics</i>	1262
<i>Resources Policy</i>	468
<i>Applied Economics</i>	460
<i>Applied Economics Letters</i>	327
<i>Journal of Futures Markets</i>	187
<i>Empirical Economics</i>	185
<i>American Journal of Agricultural Economics</i>	137
<i>Finance Research Letters</i>	121
<i>Quantitative Finance</i>	107
<i>International Journal of Finance and Economics</i>	106

Source: Prepared by the authors based on estimates generated in Bibliometrix (2025).

Table 2 shows that the ten most cited journals include prominent titles such as *Energy Economics*, *Resources Policy*, *Applied Economics*, and *Applied Economics Letters*. These findings reflect a strong connection between research on price dynamics and fields such as energy, natural resources, and applied economics. This highlights the predominant interdisciplinary approach in recent studies on asset pricing. The high impact of these sources confirms their recognition as central platforms for disseminating contemporary economic theories and advanced econometric models.

These results indicate that scientific production is not limited to the narrow field of finance but expands into multiple related areas, integrating different perspectives to understand complex phenomena related to price formation, volatility, and risks in financial markets. The concentration of publications in high-impact journals reinforces the practical and theoretical relevance of the field, supporting the development of new research, investment strategies, and regulatory policies. Thus, the literature reveals a growing trend of thematic and methodological integration, broadening its reach and applicability across various sectors of the economy.

Continuing the analysis of knowledge sources in the area, Table 3 highlights the most influential articles in the literature on price behavior dynamics. While Table 2 presented the journals that concentrate scientific production, Table 3 deepens this perspective by showcasing the individual studies with the greatest impact, measured by indicators such as total citations and citations normalized per year.

**Table 3**

Most Relevant References in the Literature on the Dynamics of Price Behavior

Reference	Author(s)	Year	Total Citations	Citations per Year	Normalized Citations
Measuring Economic Policy Uncertainty	1262	2016	6220	622.00	150.33
Investor Psychology and Security Market Under- and Overreactions	468	1998	2473	88.32	14.15
What is an oil shock?	460	2003	1162	50.52	12.00
The Relation Between Price Changes and Trading Volume: A Survey	327	1987	1137	29.15	4.56
Oil price shocks and stock market activity	187	1999	1127	41.74	15.81
Investor Psychology and Asset Pricing	185	2001	1015	40.60	7.27
Covid-19 pandemic, oil prices, stock market, geopolitical risk and policy uncertainty nexus in the US economy: Fresh evidence from the wavelet-based approach	137	2020	1008	168.00	40.14
Heterogeneous beliefs and routes to chaos in a simple asset pricing model	121	1998	969	34.61	5.54
Overconfidence and Speculative Bubbles	107	2003	961	41.78	9.92
Autoregressive Conditional Duration: A New Model for Irregularly Spaced Transaction Data	106	1998	909	32.46	5.20

Note: The table presents the total citations, which indicates the raw impact of the publications, while the total citations per year adjusts this impact considering the time elapsed since publication, allowing comparisons between older and more recent articles. The normalized total citations perform an additional adjustment to ensure fair comparisons, taking into account the thematic area and the article's age (Aria & Cuccurullo, 2017).

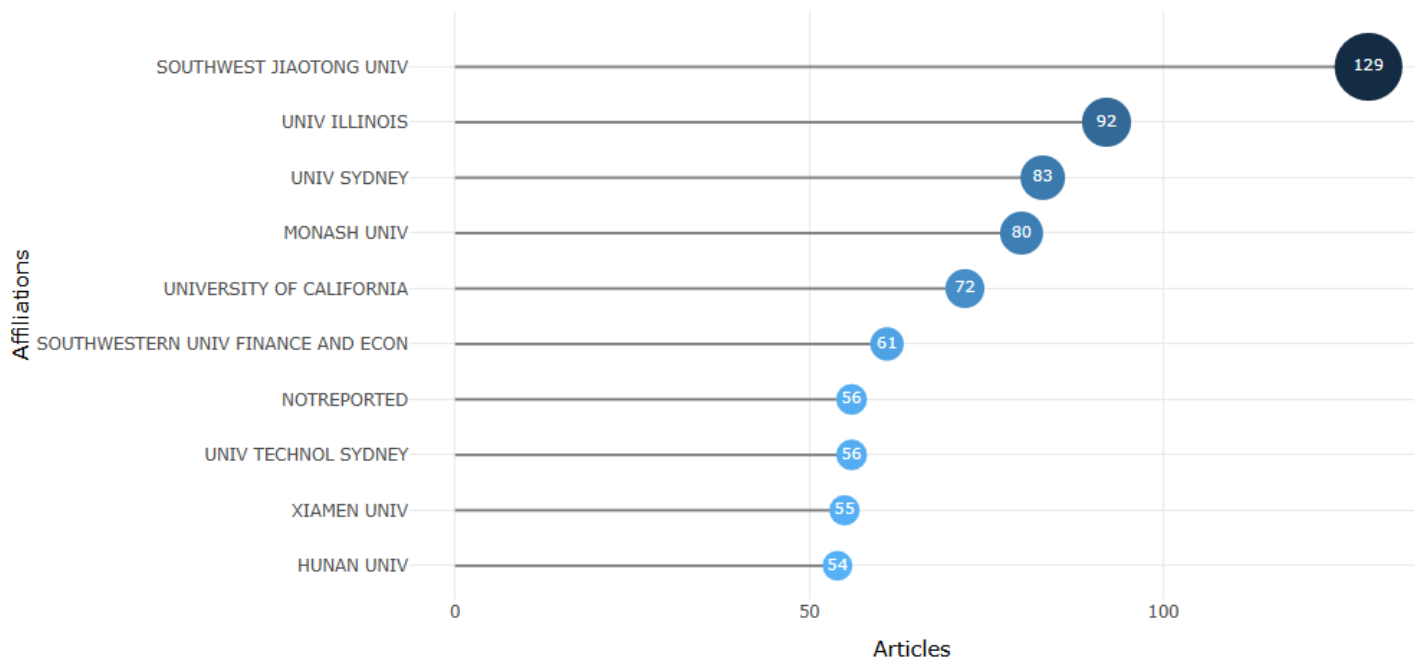
Source: Prepared by the authors based on estimates performed with Bibliometrix (2025).

This approach complements the view on scientific dissemination channels, revealing which works serve as the foundation for the theoretical and empirical development of the field. Among the most relevant articles, *Measuring Economic Policy Uncertainty* by Baker, Bloom, and Davis (2016) stands out, leading with an impressive 6,220 citations, becoming a key reference for understanding the effect of political uncertainty on markets. The study *Investor Psychology and Security Market Under- and Overreactions* by Daniel, Hirshleifer, and Subrahmanyam (1998) totals 2,473 citations and is a milestone in debates on investor behavior and market overreactions. Another important example is *What is an oil shock?* by Hamilton (2003), which redefined the analysis of oil price shocks from a demand-centered perspective, accumulating 1,162 citations.

Additionally, studies addressing investor psychology, speculative bubbles, energy shocks, and econometric models applied to financial time series are also prominent.

Overall, these articles illustrate the diversity of approaches underpinning research on price dynamics, integrating behavioral finance, macroeconomics, energy, and uncertainty policies. This interdisciplinarity shows that the literature is not limited to purely technical analyses but advances to explain complex phenomena such as volatility, exogenous shocks, and market fluctuations. Moreover, the recurrence of both classic and contemporary studies demonstrates that influential concepts and methods remain relevant, while new approaches emerge to explain recent crises such as the pandemic, geopolitical risks, and global instabilities. Thus, the analysis of Table 3 confirms that the literature on this topic combines theoretical robustness with constant renewal, fostering the emergence of new agendas, integrating diverse perspectives, and supporting broader investigations on price behavior in complex financial markets.

In addition to mapping the most impactful works in the literature (Table 3), it is equally important to identify the main institutional actors driving this scientific production. In this regard, Figure 6 expands the analysis by presenting the most relevant affiliations, highlighting the universities and research centers that have contributed the most to advancing studies on price behavior dynamics. This information helps to understand how knowledge in the area is organized and circulated among institutions, evidencing each one's role in consolidating and expanding the topic between 1970 and 2024.



**Figure 6.** Most Relevant Affiliations.

Source: Prepared by the authors based on estimates performed with Bibliometrix (2025).

Notably, Southwest Jiaotong University in China (129 publications), the University of Illinois in the United States (92), the University of Sydney in Australia (83), the University of Pretoria in South Africa (80), and the University of California, also in the United States (72), stand out. The strong concentration of academic production in a small group of prestigious universities reinforces the central role of these centers as hubs of excellence, responsible not only for generating cutting-edge knowledge but also for training researchers, fostering international collaboration networks, and establishing methodological references in the field. Furthermore, attention is drawn to the “Not Reported” category, which gathers 56 articles without clear institutional affiliation, possibly reflecting independent collaborations, multiple authorships, or indexing limitations in the databases used.

Overall, the identification of these hubs shows that research on price dynamics is supported by centers of excellence that act as true poles for disseminating theories, methods, and research agendas. These institutional actors exert significant influence over the direction of the literature, coordinating resources, establishing global partnerships, and shaping priority topics that guide future investigations.

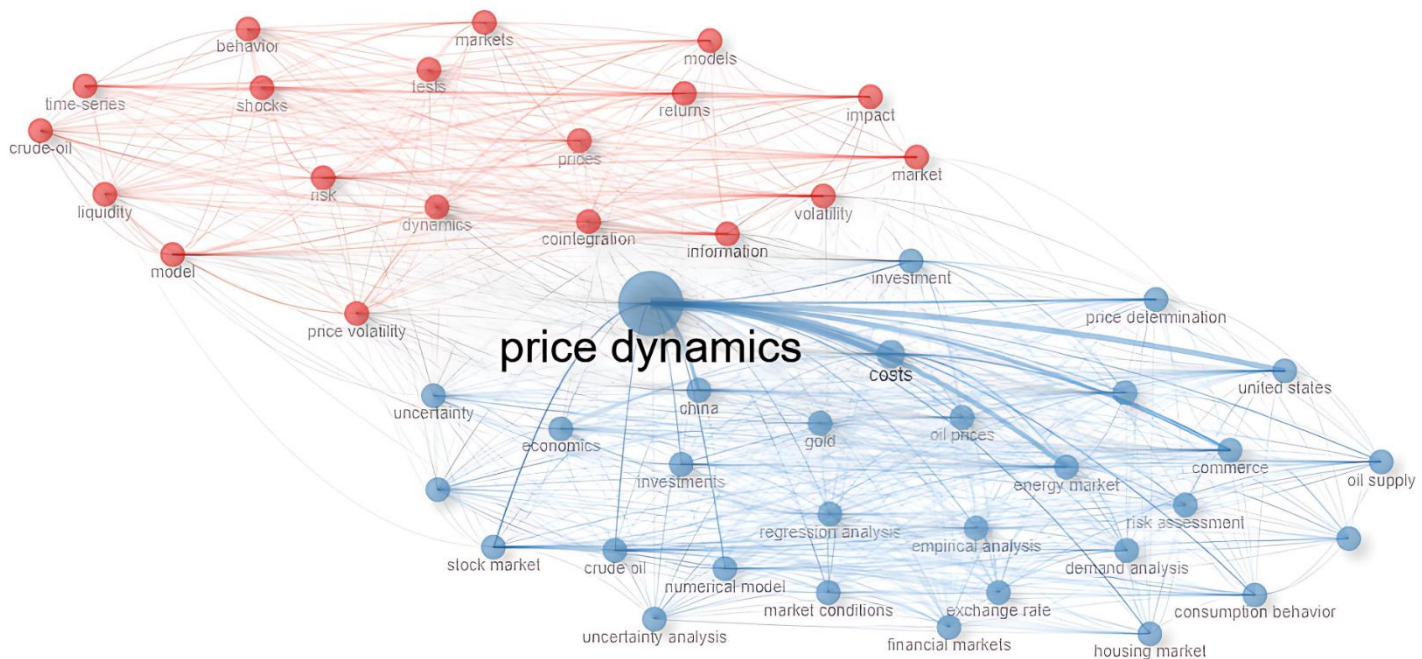
The analysis of the research front on the dynamics of price behavior reveals a constantly expanding field, marked by significant growth in the volume of publications in recent decades. This progress reflects the ongoing interest in understanding the factors that influence asset prices in financial markets. It is observed that specific periods especially, those associated with economic crises and technological innovations, correspond to peaks in scientific output, suggesting that external events have a direct impact on intensifying investigations in this area.

These findings corroborate the evidence presented by Souza et al. (2017) and Silva and Nobre (2021), who had already highlighted the importance of the macroeconomic context and exogenous shocks as drivers for the deepening of financial research. Thus, it is clear that price dynamics remain a central and relevant theme, driven by factors both internal

and external to the market. The identification of gaps and phases of higher academic production indicates that, despite the advances, there are still areas that require deeper investigation, especially regarding the updating of theoretical models in light of new economic and technological realities. This scenario opens up opportunities for future research capable of developing more robust approaches that are applicable to increasingly complex and volatile market contexts.

### 3.2 Analysis of the Conceptual and Social Base

The analysis of the conceptual and social base constitutes a strategic step toward understanding the epistemological and relational structures that shape scientific production within a given field of knowledge. In the case of the literature on price dynamics, this approach makes it possible not only to map the main recurring themes and concepts but also to outline collaboration patterns among authors and institutions, highlighting the dynamic hubs of knowledge generation and dissemination. In this regard, Figure 7 presents the co-occurrence network analysis, which shows which keywords or terms most frequently appear together in the same context, such as in abstracts, titles, or lists of keywords in scientific articles.



**Figure 7.** Co-occurrence Network.

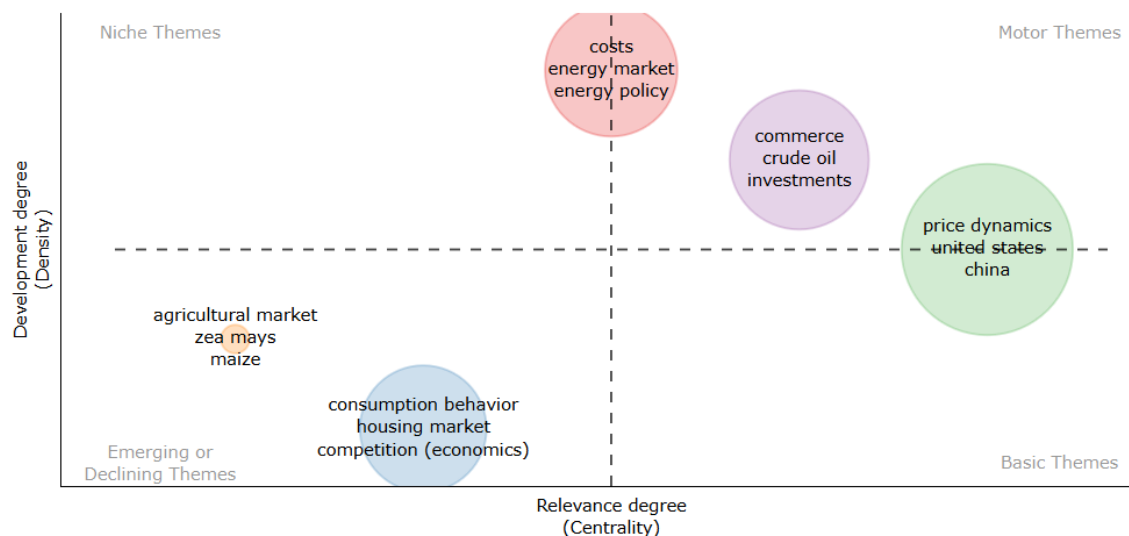
Note: Figure 7 shows the thematic associations within the field of study, highlighting the most strongly related topics. The identified research clusters map out lines of investigation, grouping topics that form thematic cores in the literature. In addition, the emerging trends reveal how concepts are connected, indicating which combinations are more recent or already consolidated. Finally, the degree of relevance is represented by the size of the nodes (terms) and the thickness of the lines (connections), signaling the strength of the relationships and the frequency of co-occurrence (Aria & Cuccurullo, 2017). To deepen the interpretation, network metrics such as betweenness and closeness were included. The betweenness metric indicates which terms act as linking points between different topic groups, functioning as bridges in the network. Meanwhile, closeness shows how central a term is in relation to others, indicating its capacity to quickly access different concepts within the thematic structure (Aria & Cuccurullo, 2017).

Source: Prepared by the authors based on estimates performed in Bibliometrix (2025)

The co-occurrence network reveals two main cores. Cluster 1 (blue) groups terms related to macroeconomic and market aspects, connecting price dynamics to sectors, geographic regions, and economic variables. Among the most representative terms are Price Dynamics (betweenness 176.179; closeness 0.021), Costs (46.190; 0.020), Investment (19.238; 0.021), China (13.276; 0.019), Uncertainty (11.819; 0.020), Inflation (10.839; 0.020), Oil Prices (9.452; 0.018), and Gold (4.498; 0.019). The high betweenness and closeness values indicate that these topics are central within the network, acting as bridges linking different themes and maintaining frequent relationships with other concepts in the area. Additionally, terms such as inflation, uncertainty, and oil prices reinforce the strong influence of macroeconomic variables and external shocks on price formation and behavior.

In turn, Cluster 2 (red) focuses on more technical and methodological aspects related to models, volatility, time series, and price behavior. Prominent terms in this core include Volatility (betweenness 13.825; closeness 0.018), Models (0.184; 0.014), Cointegration (4.665; 0.018), Time Series (0.281; 0.014), and Behavior (0.465; 0.014). The high betweenness values show that topics like volatility and cointegration play a fundamental role, serving as connecting elements between various technical concepts in the field. This line of research focuses on understanding the intrinsic dynamics of prices and applying quantitative methods to model their variations over time. In summary, this analysis highlights how the literature on price dynamics is organized around two major cores: one focused on the economic and market factors that influence prices, and another that deepens methodological and quantitative aspects, reflecting the complexity and multidimensional nature of the topic.

In addition to the co-occurrence network analysis shown in Figure 7, which highlights the main terms and their relationships, Figure 8 complements this view by organizing these same themes in a thematic map, classifying them according to their centrality and density. This combination makes it possible to understand not only which concepts are related but also how they are positioned within the literature's structure, indicating consolidated cores, expanding fronts, and niche areas.



**Figure 8.** Thematic Map.

Note: The thematic map organizes the topics into four quadrants according to their centrality (importance and connection with other topics) and density (degree of internal development). Motor themes have high centrality and high density, meaning they are well-developed and fundamental for advancing the field. Basic themes show high centrality but low density, indicating they are widely connected but still require further development. Niche themes have low centrality and high density, representing specific areas that are well-developed internally but have limited connections to the main core. Finally, emerging or declining themes have low centrality and low density, which may indicate topics that are rising in relevance or areas losing importance (Aria & Cuccurullo, 2017).

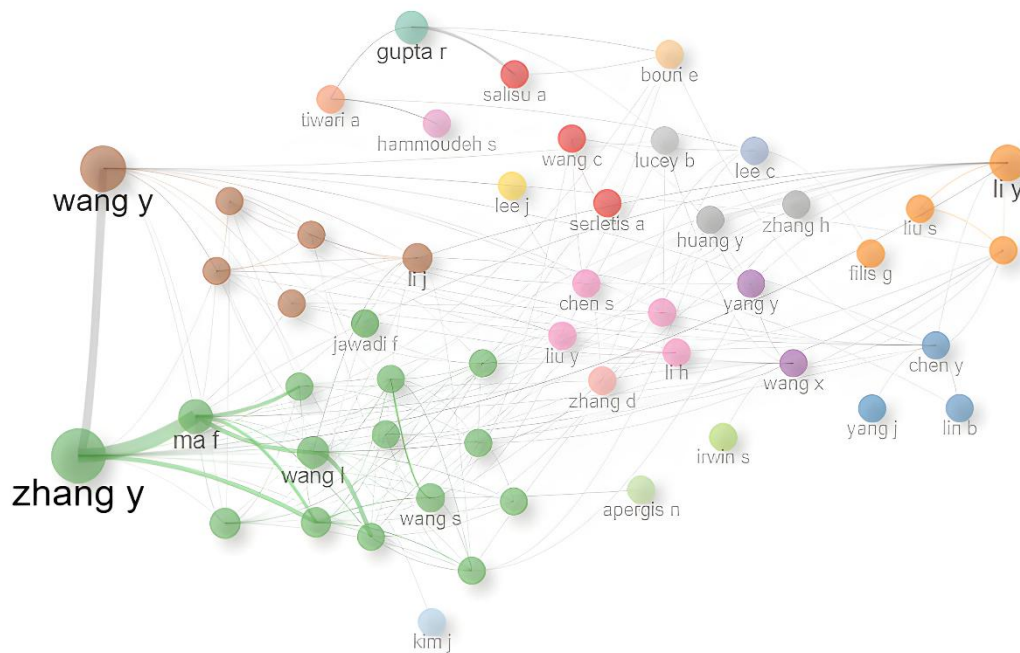
Source: Prepared by the authors based on estimates performed in Bibliometrix (2025).

The thematic map analysis presented in Figure 8 shows that Price Dynamics stands out as the most central and relevant topic in the field, with high centrality (1.436) and considerable density (2.466), characterizing it as a well-structured core connected to other topics. Costs and Trade also consolidate themselves as important pillars for studies on price behavior, with significant centrality (0.940 and 1.095) and density (3.115 and 2.864) values. Meanwhile, Consumer Behavior shows intermediate centrality (0.744) and lower density (2.167), indicating a front still in development with potential for greater integration into the central core. In contrast, Agricultural Market, with low centrality (0.079) and moderate density (2.436), appears as a niche topic, well explored internally but still little connected to the main discussions in the literature.

These results reveal how the topics are distributed among consolidated cores, emerging fronts, and specialized areas, highlighting the diversity and complexity of research on price dynamics. For the literature, this indicates that the field combines robust theoretical foundations with expanding themes and gaps that can be explored. Thus, there are opportunities to strengthen already consolidated lines or to bring specific topics closer to the central debates, expanding the articulation between different domains. In summary, the mapping points to strategic paths for researchers to deepen classical discussions and broaden innovative connections in a context of continuous evolution.

While the thematic map (Figure 8) shows how the main topics are conceptually organized, Figure 9 complements this analysis by displaying the collaboration network among authors, highlighting the co-authorship clusters that sustain the production and dissemination of knowledge in the price dynamics literature. In this configuration, the clusters represent groups of researchers who maintain more frequent collaborations among themselves, forming productive research fronts and strengthening the exchange of ideas.

Cluster 1 (red), for example, brings together authors such as Serletis, A. and Wang, C., forming a smaller group but playing an important bridging role between different cores, as indicated by their betweenness values (1.166 and 32.599, respectively). Cluster 2 (blue) highlights authors such as Chen, E. (90.917) and Lin, B., forming a more cohesive network that strongly articulates ideas, significantly contributing to consolidating theories and methods in the field. In turn, Cluster 3 (green) is the largest in terms of size and density, bringing together names such as Zhang, Y. (128.312), Wang, J., Wang, L., Ma, F., Wei, E., Li, X., Liu, J., Wang, Z., and others. These authors act as central hubs, functioning as points of convergence that connect multiple subgroups and expand the reach of academic collaborations. Additionally, Clusters 4 (brown), 5 (orange), and 6 (purple) gather researchers such as Wang, X., Li, Y., and Zhang, D., demonstrating additional collaborative networks that enrich the thematic and methodological diversity of the field.



**Figure 9.** Author Collaboration Network.

Note: Figure 9 shows the collaboration network among the main authors in the literature on price dynamics. The nodes represent researchers, while the connections indicate co-authorships between them. The clusters group together authors who collaborate more frequently, forming productive research nuclei. The betweenness and closeness metrics indicate the authors' strategic importance within the network, highlighting those who act as bridges between different groups and those with greater centrality in knowledge dissemination (Aria & Cuccurullo, 2017).

Source: Prepared by the authors based on estimates performed in Bibliometrix (2025).

Taken together, this configuration shows that the co-authorship network is composed of clearly defined cores and key authors, whose strategic position (high betweenness and closeness values) facilitates the flow of information and stimulates dialogue among different approaches. In summary, identifying these clusters and their main authors clarifies the social dynamics of scientific production, indicating who occupies leadership, articulation, and idea diffusion roles within the investigated landscape.

The integrated analysis of Figures 7, 8, and 9 provides a comprehensive overview of the conceptual, social, and intellectual structure of the financial literature focused on price dynamics. Figure 7, by revealing the thematic clusters and their connections, shows that the literature is organized around two main cores: one focused on macroeconomic and market aspects, and the other centered on technical and methodological approaches. This duality reflects the complexity of the field, which combines understanding the economic factors that influence prices with the development and application of quantitative methods to model their variation.

The thematic map presented in Figure 8 deepens this understanding, showing that there are consolidated and structuring themes, such as Price Dynamics, Costs, and Trade, which function as central pillars of the area. At the same time, it identifies emerging fronts and niche topics that point to paths for future research, indicating a dynamic and constantly expanding body of literature. Finally, the author collaboration network illustrated in Figure 9 shows that this intellectual production is supported by well-organized researcher clusters, with central groups acting as hubs for knowledge exchange and dissemination. The existence of distinct co-authorship clusters demonstrates an active and collaborative field in which different groups contribute to the theoretical and empirical advancement of the area.

Together, these findings indicate that the financial literature on price dynamics has a solid base, with well-developed and interconnected areas, while also offering space for innovation and deeper exploration of emerging topics and advanced methodologies. For researchers and professionals in the field, this highlights the importance of moving between macroeconomic and quantitative approaches, as well as valuing collaborative work that enhances the generation and dissemination of knowledge. These results support the analyses of Patil and Rastogi (2019), Donthu et al. (2021), and Moraes et al. (2024), who emphasize the importance of a robust conceptual foundation, thematic diversity, and collaboration networks as key elements for advancing research in finance. While these authors highlight the value of organized structures to sustain scientific development, this article contributes by empirically demonstrating, through bibliometric metrics, how these factors materialize in the specific field of price dynamics, expanding the possibilities for deeper inquiry and innovation.

### 3.3 Future Research Agenda

The analysis of publications indexed in 2024 in the Web of Science and Scopus databases revealed thirteen research trends (see Table 4), which outline a contemporary and promising agenda for studying price dynamics in financial markets.

The focus on 2024 is justified by the concentration of the most recent output, reflecting technological, regulatory, and behavioral changes that signal significant transformations in the markets. Moreover, selecting articles from this period is based on the premise that there are still gaps not fully explored by the established literature, creating fertile ground for new investigations. Thus, the chosen time frame provides a solid basis for identifying emerging directions in academic research.

Of the 72 articles selected, 5 were unavailable and 12 did not present clear proposals for future studies. Based on the methodology of Filser, Silva, and Oliveira (2017) and Moraes et al. (2024), a detailed reading of the remaining 55 articles was carried out, which made it possible to map perspectives and gaps for future research on the topic. These trends not only reflect the most recent methodological and thematic advances but also highlight areas that remain underexplored, providing a relevant starting point for developing new studies.

**Table 4**

Future Agenda on Price Behavior Dynamics

Research Trend	Authors	Objective	Research Agenda
Risk and Volatility Analysis in Markets	Musampa, Eita and Meniago (2024); Hatcher and Hellmann (2024); Massa, Karali and Irwin (2024); Conlon et al. (2024); Robinson (2024)	Analyze volatility, risk, and management based on models such as VaR and volatility models.	1) Develop models to forecast volatility and risk, including macroeconomic, political, and global event variables. 2) Investigate volatility behavior during extreme events (crises, global shocks).
Impact of Communication and Information on Markets	Lyu et al. (2024); Wu et al. (2024); Kumar and Mallick (2024); Cuaresma et al. (2024); Geng, Hao and Wang (2024); Moraes, Ceretta and Castro Júnior (2024)	Study the impact of communication and information (news, social media) on efficiency and pricing.	1) Improve modeling of informational asymmetry and the real-time impact of announcements. 2) Investigate information processing in high-frequency markets and its effect on prices.
Policy, Regulation, and Government Intervention	Batten, Mo and Pourkhanali (2024); Bunek and Janzen (2024); Conlon, Corbet and Hou (2024); Hui, Lo and Liu (2024)	Assess the impact of policies and regulations on financial and commodity markets.	1) Analyze the effects of regulations on financial stability and market efficiency. 2) Study how public policies influence market risks.
Macroeconomics and External Variables in Commodity Markets	Almutairi et al. (2024); Geng, Hao and Wang (2024); Yusuf et al. (2024); Peng, Hu and Robe (2024)	Study the effect of macroeconomic variables (interest rates, GDP, inflation) on commodity prices.	1) Integrate environmental, political, and macroeconomic factors to model structural impacts. 2) Apply robust models (Variance Ratio Test, cointegration, GARCH) to analyze macroeconomic shocks.
Behavioral and Informational Influence on Markets	Wu et al. (2024); De Lipsis and Agnolucci (2024); Ashwin (2024); Ding et al. (2024)	Investigate the role of public attention, sentiment, and news on efficiency and volatility.	1) Explore the use of social media and NLP to measure real-time impacts. 2) Integrate behavioral data into econometric models. 3) Expand studies to emerging markets.
Volatility Modeling and Forecasting Strategies with a Sustainability Focus	Lyu et al. (2024); Geng et al. (2024); Zhu, Zhang and Sun (2024); Narayan (2024)	Apply advanced models to forecast volatility and detect inefficiencies.	1) Develop hybrid models combining machine learning and econometrics. 2) Study the relationship between environmental policies and asset performance. 3) Create environmental efficiency indices for markets.
Complexity and Trading Strategies in Multi-Agent Markets	Buccheri, Grassi and Vocalelli (2024); Arslan (2024); Haugom, Iyocsa and Halouskova (2024); Haukvik, Cheraghali and Molnar (2024)	Simulate efficiency considering interactions among multiple strategic agents.	1) Apply stochastic game theory to trading decisions. 2) Simulate heterogeneous agents. 3) Validate models with high-frequency and market microstructure data.
Expanded Use of Data and Asset Diversification	Pinto-avalos, Bowe and Hyde (2024); Hussain, Bashir and Rehman (2024); Reztis, Andrikopoulos and Daglis (2024); Wahid and Kowalewski (2024)	Improve the robustness of analyses and capture multiple market dynamics.	1) Expand high-frequency data and include new assets (agricultural, energy commodities). 2) Broaden heterogeneous databases and diversification to capture high interdependence and dynamic connectivity.
Agent Heterogeneity and Market Behaviors	Campos-Martins and Hendry (2024); Beckmann, Geldner and Wuestenfeld (2024); Ashena, Khezri and Shahpari (2024); Chen e Yang (2024)	Understand how different investors influence price and risk decisions.	1) Analyze effects of local and foreign investors on volatility, liquidity, and returns. 2) Study how different profiles influence price formation, risk, and efficiency, highlighting institutional investors, speculators, and locals.

Impacts of Macroeconomic Shocks and Public Policies	Chulia et al. (2024); Hatcher (2024); Todorov (2024); Ciaschini and Recchioni (2024)	Assess the effects of macro variables and regulatory decisions on financial and commodity markets.	<ol style="list-style-type: none"> <li>1) Investigate impacts of interest rates, inflation, health crises, and geopolitical conflicts on efficiency and returns.</li> <li>2) Analyze the influence of policies and regulations on price dynamics and connectivity, especially during crises and instability.</li> </ol>
Connectivity Modeling and Shock Transmission	Vecco et al. (2024); Huang et al. (2024); Tsaknaki, Lillo and Mazzarisi (2024); Castro and Jimenez-Rodriguez (2024)	Identify interrelations and risk propagation across markets and assets.	<ol style="list-style-type: none"> <li>1) Apply TVP-VAR, GVAR, and regime-switching analyses to detect spillovers and interdependence.</li> <li>2) Develop models to capture dynamic connectivity and shock transmission in commodity markets.</li> </ol>
Hedge Efficiency and Dynamic Portfolios	Findenegg and Wessel (2024); Boddin and Stähler (2024); Molavi, Tahbaz-salehi and Vedolin (2024); Ferrero, Harrison and Nelson (2024)	Assess the effectiveness of hedging strategies in unstable environments.	<ol style="list-style-type: none"> <li>1) Evaluate the efficiency of traditional and dynamic hedges in volatile scenarios.</li> <li>2) Develop dynamic portfolios that consider asset connectivity to optimize protection against shocks and disruptions.</li> </ol>
Adoption of Quantitative Methods and Econometric Advances	Berry and Börjesson (2024); Bhattacharya (2024); Asproudis et al. (2024); Findenegg and Wessel (2024); Moraes, Ceretta and Castro Júnior (2024)	Improve prediction, understanding of volatility, and efficiency assessment.	<ol style="list-style-type: none"> <li>1) Refine econometric techniques for price and volatility forecasting, incorporating nonlinear structures and temporal dynamics.</li> <li>2) Investigate innovative methods such as machine learning and multifractal modeling to assess efficiency and dynamic connectivity.</li> </ol>

Source: Prepared by the authors.

The first observed trend relates to the analysis of risk and volatility in markets, highlighted by authors such as Musampa, Eita and Meniago (2024), Hatcher and Hellmann (2024), Massa, Karali and Irwin (2024), Conlon, Corbet and Mcgee (2024), and Robinson (2024). This line of research remains central in the literature, with growing emphasis in contexts of high uncertainty, such as geopolitical shocks, macroeconomic instabilities, and extreme climate events. Although traditional models, such as Generalized Autoregressive Conditional Heteroskedasticity (GARCH) and its extensions, are still widely used, there is an expansion of the analytical scope through the inclusion of exogenous variables and non-linear factors. Despite these advances, there are still limitations in the predictive capacity of these models in disruptive scenarios, which indicates the need to integrate more robust approaches, such as machine learning techniques and neural networks, to capture asymmetric risk behaviors.

The second trend, related to the impact of communication and information in markets, is explored by Lyu et al. (2024), Wu et al. (2024), Kumar and Mallick (2024), Cuaresma (2024), Geng, Hao and Wang (2024), and Moraes, Ceretta and Castro Júnior (2024). The rise of social media and the advancement of big data technologies have profoundly transformed how information circulates and affects price formation. Recent studies have been using natural language processing (NLP) and sentiment analysis to measure the impact of news and rumors, but challenges remain, such as detecting fake news and analyzing the timing of impacts. In this regard, there is room for the development of real-time models capable of monitoring, classifying, and reacting to high-frequency information flows, especially in markets that are highly sensitive to expectations.

In the field of policy, regulation, and government intervention, the third trend, authors such as Batten, Mo and Pourkhanali (2024), Bunek and Janzen (2024), Conlon, Corbet and Hou (2024), and Hui, Lo and Liu (2024) highlight the renewed interest in understanding the direct and indirect effects of public policies on price formation, especially in regulated markets such as energy and food. Although there have been advances in modeling the impacts of subsidies, tariffs, and fiscal policies, there is a lack of empirical studies evaluating the effectiveness of these interventions in the long term, particularly in emerging economies. The analysis of trade-offs between regulation and market efficiency, as well as the distributive effects of these policies, emerges as a fertile ground for new studies.

The fourth trend addresses the interaction between macroeconomics and external variables in the commodity market, developed by Almutairi et al. (2024), Geng et al. (2024), Yusuf et al. (2024), and Peng, Hu and Robe (2024). Although the literature has advanced in analyzing how inflation, interest rates, and economic growth influence prices, studies that combine these factors with climate, environmental, and geopolitical elements are still rare. Given the increasing frequency of extreme climate events, it is essential to create hybrid models that integrate environmental economics, macroeconomics, and finance to clarify the transmission mechanisms of environmental shocks on price fluctuations.

The fifth trend, which deals with behavioral and informational influence, is represented by Wu et al. (2024), De Lipsis and Agnolucci (2024), Ashwin (2024), and Ding et al. (2024). Although behavioral finance has become well established, empirical applications that associate variables such as overconfidence, limited attention, and loss aversion with price dynamics are still scarce. New studies could integrate behavioral investor data, digital media information, and expectation formation models, using high-frequency data to deepen this analysis.

The sixth trend, focused on volatility modeling and forecasting strategies with a sustainability emphasis, appears in the work of Lyu et al. (2024), Geng et al. (2024), Zhu, Zhang and Sun (2024), and Narayan (2024). With the strengthening of Environmental, Social and Governance (ESG) criteria, there is an initial effort to incorporate sustainability aspects into asset pricing. Even so, studies analyzing the volatility of green assets or measuring climate risks in financial portfolios are still rare. There is a need to advance in developing environmental risk metrics and methodologies that reconcile sustainability with market performance.

The seventh trend, about complexity and trading strategies in markets with multiple agents, is discussed by Buccheri, Grassi and Vocalelli (2024), Arslan (2024), Haugom, Iyocsa and Halouskova (2024), and Haukvik, Cheraghali and Molnar (2024). These studies have used agent-based models, simulations, and game theory, but theoretical analyses or simulated data still predominate, limiting practical application. Future work could evolve by using real microstructure market data to calibrate models, enriching the understanding of trading patterns.

The eighth trend highlights the expanded use of data and asset diversification, as discussed by Pinto-Avalos, Bowe and Hyde (2024), Hussain, Bashir and Rehman (2024), Reztis, Andrikopoulos and Daglis (2024), and Wahid and Kowalewski (2024). The greater availability of complex datasets and the entry of new assets, such as cryptocurrencies and agricultural derivatives, broaden analytical possibilities. Even so, comparative studies addressing the interaction between traditional and alternative assets under different market regimes are lacking, opening space for research that combines network analysis, machine learning, and multivariate time series.

The ninth trend, on agent heterogeneity and market behavior, is explored by Campos-Martins and Hendry (2024), Beckmann, Geldner and Wuestenfeld (2024), Ashena, Khezri and Shahpari (2024), and Chen (2024). Few studies explicitly differentiate between individual, institutional, or foreign investors, which may obscure important patterns. Future research could explore datasets segmented by investor type to analyze how strategies and impacts on volatility and liquidity vary.

The tenth trend, on the impacts of macroeconomic shocks and public policies, is addressed by Chulia et al. (2024), Hatcher (2024), Todorov (2024), and Ciaschini and Recchioni (2024). Health crises, armed conflicts, and financial shocks highlight market vulnerability. However, current models often fail to anticipate such disruptions. Thus, future research could advance with regime-switching models, scenario simulations, and the integration of geopolitical indicators to improve risk forecasts.

The eleventh trend deals with modeling connectivity and shock transmission, as proposed by Vecco et al. (2024), Huang et al. (2024), Tsaknaki, Lillo and Mazzarisi (2024), and Castro and Jimenez-Rodriguez (2024). The use of models such as Time-Varying Parameter Vector Autoregressive (TVP-VAR), Global Vector Autoregressive (GVAR), and network analysis has made it possible to map contagion channels between markets. However, studies still focus on pairs of assets or short periods. Expanding these analyses to dynamic financial networks, considering multiple asset classes, could enhance understanding of the mechanisms of shock propagation.

The twelfth trend, focused on the efficiency of hedge strategies and dynamic portfolios, is evidenced by Findenegg and Wessel (2024), Boddin and Stähler (2024), Molavi, Tahbaz-salehi and Vedolin (2024), and Ferrero, Harrison and Nelson (2024). There has been progress in using portfolio optimization techniques supported by artificial intelligence, but their effectiveness in crisis scenarios is still underexplored. Research that simulates hedge strategies under different macroeconomic conditions and incorporates ESG constraints could make important contributions.

Finally, the thirteenth trend highlights the adoption of quantitative methods and econometric advances, with work by Berry and Börjesson (2024), Bhattacharya (2024), Asproudis et al. (2024), Findenegg and Wessel (2024), and Moraes, Ceretta and Castro Júnior (2024). The use of techniques such as multifractal analysis, stochastic volatility, asymmetric copulas, and neural networks has grown, but still in isolation in many studies. Integrating traditional methods with advanced quantitative tools represents a promising methodological frontier, increasing the precision and generalizability of empirical results.

In summary, these thirteen trends outline a comprehensive research agenda aligned with the contemporary challenges of the global economy, the evolution of markets, and the emergence of new analytical paradigms. This overview not only maps the state of the art but also proposes concrete paths for theoretical, empirical, and methodological advances in the literature on price dynamics. Although progress has been remarkable, gaps persist, especially in the application of predictive models in crisis contexts, the integration of macroeconomic and environmental variables, and the consideration of market agent heterogeneity. These gaps indicate a fertile field for future research that addresses the challenges of market volatility, connectivity, and resilience. Thus, by integrating macroeconomic, behavioral, and regulatory dimensions, the proposed agenda expands the understanding of market efficiency and dynamic connectivity, which are essential foundations for explaining price fluctuations in increasingly interdependent commodity markets.

## 5 CONCLUSIONS

This study had as its central objective to map and analyze the evolution of the scientific literature on the dynamics of price behavior in financial markets, covering the period from 1970 to 2024. Through an integrated bibliometric and

conceptual approach, it was possible to identify the main theoretical, methodological, and empirical vectors that structure this field, as well as to highlight emerging trends that outline future research agendas. The results reveal an expanding field, strongly influenced by macroeconomic contexts, technological transformations, and global crises, which drive the development of new analytical paradigms.

The analysis of the conceptual base revealed increasing methodological sophistication, marked by the adoption of advanced techniques such as machine learning, complex network analysis, and robust econometric modeling, combined with interdisciplinarity that integrates macroeconomics, behavioral finance, shock theory, and institutional economics. This methodological progress aligns with the need to understand markets characterized by uncertainty, agent heterogeneity, and non-linear dynamics.

On the other hand, despite clear progress, significant gaps remain that require priority attention. Among these are the insufficient integration of macroeconomic and environmental variables into predictive models, the need for approaches that incorporate multiple behavioral regimes, and the lack of studies that explore agent heterogeneity in depth. These limitations point to the urgency of reconfiguring traditional analytical frameworks, expanding the explanatory capacity of models in the face of the current complexities of financial and commodity markets.

Furthermore, the research agenda outlined in this work, consisting of thirteen central trends, offers a systematic roadmap for advancing the field, encouraging approaches that combine theoretical rigor, methodological innovation, and practical relevance. The incorporation of elements such as artificial intelligence, big data, and ESG (environmental, social, and governance) criteria highlights the evolution of the literature beyond conventional metrics, promoting more comprehensive and contextualized analyses.

Finally, it is important to acknowledge the limitations of this study, especially the temporal scope and the dependence on the Web of Science and Scopus databases, which may restrict the breadth of the bibliographic sample. Future research could broaden the scope by including other databases and different languages, as well as conducting complementary qualitative analyses to deepen the understanding of the processes underlying price dynamics.

Thus, the findings and agenda presented here are intended to provide a solid foundation for future investigations, fostering the construction of new theoretical and methodological frameworks that engage with the complexity and volatility inherent to contemporary markets. This contribution aims, above all, to support the formulation of more effective economic policies and business strategies capable of meeting the challenges posed by an increasingly dynamic and interconnected financial environment.

## REFERENCES

- Agnello, L., Castro, V., Hammoudeh, S., & Sousa, R. (2020). Global factors, uncertainty, weather conditions and energy prices: On the drivers of the duration of commodity price cycle phases. *Energy Economics*, 90. <https://doi.org/10.1016/j.eneco.2020.104862>
- Almutairi, H., Pierru, A., & Smith, J. (2024). Managing the oil market under misinformation: A reasonable quest? *Journal of Commodity Markets*, 34. <https://doi.org/10.1016/j.jcomm.2024.100403>
- Aria, M., & Cuccurullo, C. (2017). Bibliometrix: An R-tool for comprehensive science mapping analysis. *Journal of Informetrics*, 11(4), 959-975. <https://doi.org/10.1016/j.joi.2017.08.007>
- Arslan, S. (2024). Bitcoin Price Prediction Using Sentiment Analysis and Empirical Mode Decomposition. *Computational Economics*, 65, 2227–2248. <https://doi.org/10.1007/s10614-024-10588-3>
- Ashena, M., Khezri, H. L., & Shahpari, G. (2024). Investigation into the dynamic relationships between global economic uncertainty and price volatilities of commodities, raw materials, and energy. *Applied Economic Analysis*, 32. <https://doi.org/10.1108/aea-06-2023-0207>
- Ashwin, J. (2024). Financial news media and volatility: Is there more to newspapers than news? *Journal of Financial Markets*, 69. <https://doi.org/10.1016/j.finmar.2024.100896>
- Asproudis, E., Gedikli, Ç., Talavera, O., & Yilmaz, O. (2024). Returns to solar panels in the housing market: A meta learner approach. *Energy Economics*, 137. <https://doi.org/10.1016/j.eneco.2024.107768>
- Bachelier, L. (1900). Théorie de la spéculation. *Annales scientifiques de l'École Normale Supérieure*, 17, 21–86. [https://www.numdam.org/item?id=ASENS\\_1900\\_3\\_17\\_21\\_0](https://www.numdam.org/item?id=ASENS_1900_3_17_21_0)
- Baker, S. R., Bloom, N., & Davis, S. J. (2016). Measuring Economic Policy Uncertainty. *The Quarterly Journal of Economics*, 131(4), 1593–1636. <https://doi.org/10.1093/qje/qjw024>
- Batten, J. A., Mo, D., & Pourkhanali, A. (2024). Can inflation predict energy price volatility? *Energy Economics*, 129. <https://doi.org/10.1016/j.eneco.2023.107158>
- Beckmann, J., Geldner, T., & Wuestenfeld, J. (2024). The relevance of media sentiment for small and large scale bitcoin investors. *Journal of International Financial Markets, Institutions and Money*, 92. <https://doi.org/10.1016/j.intfin.2024.101963>
- Berry, C., & Börjesson, M. (2024). Income and fuel price elasticities of car use on micro panel data. *Energy Economics*, 135. <https://doi.org/10.1016/j.eneco.2024.107661>
- Bhattacharya, P. S. (2024). Pass-through to export prices: Evidence from Australia. *The World Economy*, 47, 2574–2607. <https://doi.org/10.1111/twec.13554>
- Boddin, D., & Stähler, F. (2024). Import tariffs and transport prices. *Canadian Journal of Economics*, 24, 430–458. <https://doi.org/10.1111/caje.12708>

- Brock, W. A., & Hommes, C. H. (1998). Heterogeneous beliefs and routes to chaos in a simple asset pricing model. *Journal of Economic Dynamics and Control*, 22(8–9), 1235–1274. [https://doi.org/10.1016/S0165-1889\(98\)00011-6](https://doi.org/10.1016/S0165-1889(98)00011-6)
- Buccheri, G., Grassi, S., & Vocellelli, G. (2024). Estimating Risk in Illiquid Markets: A Model of Market Friction with Stochastic Volatility. *Journal of Financial Econometrics*, 22. <https://doi.org/10.1093/jfinec/nbad006>
- Bunek, G. D., & Janzen, J. P. (2024). Does public information facilitate price consensus? Characterizing USDA announcement effects using realized volatility. *Journal of Commodity Markets*, 33. <https://doi.org/10.1016/j.jcomm.2024.100382>
- Campos-Martins, S., & Hendry, D. F. (2024). Common volatility shocks driven by the global carbon transition. *Journal of Econometrics*, 239. <https://doi.org/10.1016/j.jeconom.2023.05.008>
- Castro, C., & Jimenez-Rodriguez, R. (2024). The impact of oil shocks on the stock market. *Global Finance Journal*, 60. <https://doi.org/10.1016/j.gfj.2024.100967>
- Chen, K., & Yang, J. (2024). Price dynamics and volatility jumps in bitcoin options. *Financial Innovation*, 10(132), 1–29. <https://doi.org/10.1186/s40854-024-00653-z>
- Chuliá, H., Klein, T., Mendoza, J. A. M., & Uribe, J. M. (2024). Vulnerability of European electricity markets: A quantile connectedness approach. *Energy Policy*, 184. <https://doi.org/10.1016/j.enpol.2023.113862>
- Ciaschini, C., & Recchioni, M. C. (2024). A market sentiment indicator, behaviourally grounded, for the analysis and forecast of volatility and bubbles. *Review of Behavioral Finance*, 16. <https://doi.org/10.1108/rbf-07-2021-0128>
- Conlon, T., Corbet, S., & Hou, Y. (2024). Navigating the green transition: the influence of energy volatility on green and sustainable ETFs. *Applied Economics Letters*. <https://doi.org/10.1080/13504851.2024.2337323>
- Conlon, T., Corbet, S., Hou, Y., Hu, Y., & Oxley, L. (2024). Seeking a shock haven: Hedging extreme upward oil price changes. *International Review of Financial Analysis*, 94. <https://doi.org/10.1016/j.irfa.2024.103245>
- Cuaresma, J. C., Fortin, I., Hlouskova, J., & Obersteiner, M. (2024). Regime-dependent commodity price dynamics: A predictive analysis. *Journal of Forecasting*, 43. <https://doi.org/10.1002/for.3152>
- Daniel, K., Hirshleifer, D., & Subrahmanyam, A. (1998). Investor Psychology and Security Market Under- and Overreactions. *The Journal of Finance*, 6. <https://doi.org/10.1111/0022-1082.00077>
- De Lipsis, V., & Agnolucci, P. (2024). Climate change and the US wheat commodity market. *Journal of Economic Dynamics and Control*, 161. <https://doi.org/10.1016/j.jedc.2024.104823>
- Ding, S., Wang, A., Cui, T., Du, M., & Zhou, X. (2024). Commodity market stability and sustainable development: The effect of public health policies. *Research in International Business and Finance*, 70. <https://doi.org/10.1016/j.ribaf.2024.102386>
- Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. *Journal of Business Research*, 133, 285–296. <https://doi.org/10.1016/j.jbusres.2021.04.070>
- Durisin, B., & Puzone, F. (2009). Maturation of Corporate Governance Research, 1993–2007: An Assessment. *Corporate Governance: An International Review*, 17(3), 266–291. <https://doi.org/10.1111/j.1467-8683.2009.00739.x>
- Engle, R. F., & Russell, J. R. (1998). Autoregressive Conditional Duration: A New Model for Irregularly Spaced Transaction Data. *Econometrica*, 66(5), 1127–1162. <https://doi.org/10.2307/2999632>
- Fama, E. (1970). Efficient capital markets: A review of theory and empirical work. *Journal of Finance*, 25, 383–417.
- Fama, E., & French, K. (1993). Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics*, 33, 3–56. [https://doi.org/10.1016/0304-405X\(93\)90023-5](https://doi.org/10.1016/0304-405X(93)90023-5)
- Fama, E., & French, K. (1996). Multifactor Explanations of Asset Pricing Anomalies. *The Journal of Finance*, 51. <https://doi.org/10.1111/j.1540-6261.1996.tb05202.x>
- Fama, E., & French, K. (2015). A five-factor asset pricing model. *Journal of Financial Economics*, 116, 1–22. <https://doi.org/10.1016/j.jfineco.2014.10.010>
- Fan, G., Zhang, R., Cao, C., Peng, L., Yeh, Y., & Hong, W. (2024). The volatility mechanism and intelligent fusion forecast of new energy stock prices. *Financial Innovation*, 10, 1–37. <https://doi.org/10.1186/s40854-024-00621-7>
- Ferrero, A., Harrison, R., & Nelson, B. (2024). House Price Dynamics, Optimal LTV Limits and the Liquidity Trap. *The Review of Economic Studies*, 91, 940–971. <https://doi.org/10.1093/restud/rdad040>
- Filser, L., Silva, F., & Oliveira, O. (2017). State of research and future research tendencies in lean healthcare: A bibliometric analysis. *Scientometrics*, 112(2), 799–816. <https://doi.org/10.1007/s1119-2-017-2409-8>
- Findenegg, J., & Wessel, J. (2024). Pump or pedal? The impact of fuel prices on cycling in Germany. *Transportation Research Part A: Policy and Practice*, 186. <https://doi.org/10.1016/j.tra.2024.104146>
- Gaio, L. E., Stefanelli, N. O., Pimenta, T., Bonacim, C. A. G., & Gatsios, R. C. (2022). The impact of the Russia-Ukraine conflict on market efficiency: Evidence for the developed stock market. *Finance Research Letters*. <https://doi.org/10.1016/j.frl.2022.103302>
- Geng, Q., Hao, X., & Wang, Y. (2024). Forecasting the volatility of crude oil futures: A time-dependent weighted least squares with regularization constraint. *Journal of Forecasting*, 43, 309–325. <https://doi.org/10.1002/for.3036>
- Hamilton, J. D. (2003). What is an oil shock? *Journal of Econometrics*, 113(2), 363–398. [https://doi.org/10.1016/S0304-4076\(02\)00207-5](https://doi.org/10.1016/S0304-4076(02)00207-5)
- Hatcher, M., & Hellmann, T. (2024). Communication, networks and asset price dynamics: a survey. *Journal of Economic Interaction and Coordination*, 19, 1–58. <https://doi.org/10.1007/s11403-023-00395-8>
- Haugom, E., Lyócsa, Š., & Halousková, M. (2024). The tipping point of electricity price attention: When a problem becomes a problem. *Economics Letters*, 235. <https://doi.org/10.1016/j.econlet.2024.111547>
- Haukvik, N., Cheraghali, H., & Molnár, P. (2024). The role of investors' fear in crude oil volatility forecasting. *Research in International Business and Finance*, 70. <https://doi.org/10.1016/j.ribaf.2024.102353>
- Hirshleifer, D. (2002). Investor Psychology and Asset Pricing. *The Journal of Finance*. <https://doi.org/10.1111/0022-1082.00379>
- Huang, T., Kumar, A., Sacchetto, S., & Vergara-Alert, C. (2024). Stock Comovement and Financial Flexibility. *Journal of Financial and Quantitative Analysis*, 59, 1141–1184. <https://doi.org/10.1017/S0022109022001338>

- Hui, C-H., Lo, C-F., & Liu, C-H. (2024). Equity Price Dynamics under Shocks: In Distress or Short Squeeze. *Risks*, 2(1). <https://doi.org/10.3390/risks12010001>
- Hussain, M., Bashir, U., & Rehman, R. U. (2024). Exchange Rate and Stock Prices Volatility Connectedness and Spillover during Pandemic Induced-Crises: Evidence from BRICS Countries. *Asia-Pacific Financial Markets*, 31, 183–203. <https://doi.org/10.1007/s10690-023-09411-0>
- Karpoff, J. M. (1987). The Relation Between Price Changes and Trading Volume: A Survey. *The Journal of Financial and Quantitative Analysis*, 22(1), 109–126. <https://doi.org/10.2307/2330874>
- Kumar, A., & Mallick, S. (2024). Oil price dynamics in times of uncertainty: Revisiting the role of demand and supply shocks. *Energy Economics*, 129. <https://doi.org/10.1016/j.eneco.2023.107152>
- Lim, K., & Brooks, R. (2011). The evolution of stock market efficiency over time: A survey of the empirical literature. *Journal of Economic Surveys*, 25, 69–108. <https://doi.org/10.1111/j.1467-6419.2009.00611.x>
- Lo, A. (2004). The adaptive markets hypothesis: Market efficiency from an evolutionary perspective. *J. Portf. Manage*, 30, 15–29. <https://ssrn.com/abstract=602222>
- Lo, A. (2017). *Adaptive Markets: Financial Evolution at the Speed of Thought*. 2. Ed. Princeton University Press.
- Lo, A. W., & MacKinlay, A. C. (1988). Stock market prices do not follow random walks: Evidence from a simple specification test. *The Review of Financial Studies*, 1(1), 41–66. <https://www.jstor.org/stable/2962126>
- Lyu, C., Do, H. X., Nepal, R., & Jamasb, T. (2024). Volatility spillovers and carbon price in the Nordic wholesale electricity markets. *Energy Economics*, 134. <https://doi.org/10.1016/j.eneco.2024.107559>
- Maia, S., Benedicto, G., Prado, J., Robb, D., Bispo, O., & Brito, M. J., M. (2019). Mapping the literature on credit unions: Abibliometric investigation grounded in Scopus and Web of Science. *Scientometrics*, 120, 929–960. <https://doi.org/10.1007/s11192-019-03165-1>
- Mandelbrot, B. B. (1963). The Variation of Certain Speculative Prices. *The Journal of Business*, 36(4), 394–419. <https://www.jstor.org/stable/2351623>
- Massa, O. I., Karali, B., & Irwin, S. H. (2024). What do we know about the value and market impact of the US Department of Agriculture reports? *Applied Economic Perspectives and Policy*, 46. <https://doi.org/10.1002/aepp.13409>
- Mohanty, S. K., & Mishra, S. (2021). Regulatory reform and market efficiency: The case of Indian agricultural commodity futures markets. *Research in International Business and Finance*. <https://doi.org/10.1016/j.ribaf.2019.101145>
- Molavi, P., Tahbaz-salehi, A., & Vedolin, A. (2024). Model Complexity, Expectations, and Asset Prices. *The Review of Economic Studies*, 91, 2462–2507. <https://doi.org/10.1093/restud/rdad073>
- Moraes, A. K., & Ceretta, P. S. (2023). Correlação condicional dinâmica, spillover de volatilidade e hedge para os preços do petróleo futuro e das ações das principais empresas do setor petrolífero. *Estudos Econômicos*, 53(2), 375–409. <https://doi.org/10.1590/1980-53575325ampc>
- Moraes, A. K., & Ceretta, P. S. (2023). Directional volatility spillover between agricultural commodities, oil and financial indices. *Organizações Rurais & Agroindustriais*, 25. <https://doi.org/10.48142/2520231903>
- Moraes, A. K., Ceretta, P. S., & Castro, L. G., Júnior. (2024). Análise Multifractal do Ibovespa: Dinâmicas de Preço, Volume Negociado e Eficiência de Mercado. *Revista Evidenciação Contábil & Finanças*, 12(1), 128–149. <https://doi.org/10.22478/ufpb.2318-1001.2024v12n1.70209>
- Moraes, A. K., Ceretta, P. S., & Castro, L. G., Júnior. (2024). Explorando a assimetria na dependência entre os índices da B3: Uma análise de cópula. *Revista Brasileira de Economia de Empresas*, 24(1). <https://doi.org/10.31501/rbee.v24i1.15137>
- Moraes, A. K., Furtini, A., Prado, J., Castro Junior, L., & Ceretta, P. (2024). Evolução da produção científica sobre o Mercado Eficiente: Estudo bibliométrico. *Contextus – Revista Contemporânea de Economia e Gestão*, 22, e92462. <https://doi.org/10.19094/contextus.2024.92462>
- Moraes, A. K., Sobral, M., & Melo, A. (2021). An analysis of the hedge operation on hydrated ethanol in a plant in the State of Paraíba. *Revista em Agronegócio e Meio Ambiente*, 14, 893–906. <https://doi.org/10.17765/2176-9168.2021v14n4e7850>
- Moraes, A. K., Sobral, M., & Melo, A. (2021). Market efficiency: application of the concept to the sucroalcooleiro sector of Paraíba. *Rev. Adm. UFSM*, 14, 138–161. <https://doi.org/10.5902/1983465939181>
- Musampa, K., Eita, J. H., & Meniago, C. (2024). The Effects of Oil Price Volatility on South African Stock Market Returns. *Economies*, 12(1), 4. <https://doi.org/10.3390/economies12010004>
- Narayan, P. K. (2024). Pricing behavior of clean energy stocks? Some trading implications. *Energy Economics*, 134. <https://doi.org/10.1016/j.eneco.2024.107590>
- Patil, A. C., & Rastogi, S. (2019). Time-Varying Price–Volume Relationship and Adaptive Market Efficiency: A Survey of the Empirical Literature. *Journal of Risk and Financial Management*, 12. <https://doi.org/10.3390/jrfm12020105>
- Peng, K., Hu, Z., & Robe, M. A. (2024). Maximum order size and market quality: Evidence from a natural experiment in commodity futures markets. *The Journal of Futures Markets*, 44, 803–825. <https://doi.org/10.1002/fut.22494>
- Pinto-Ávalos, F., Bowe, M., & Hyde, S. (2024). Revisiting the pricing impact of commodity market spillovers on equity markets. *Journal of Commodity Markets*, 33. <https://doi.org/10.1016/j.jcomm.2023.100369>
- Prado, J., Castro, A., Carvalho, F., Vieira, K., Machado, L., & Tonelli, D. (2016). Multivariate analysis of credit risk and bankruptcy research data: A bibliometric study involving different knowledge fields (1968–2014). *Scientometrics*, 106(3). <https://doi.org/10.1007/s11192-015-1829-6>
- Rezitis, A. N., Andrikopoulos, P., & Daglis, T. (2024). Assessing the asymmetric volatility linkages of energy and agricultural commodity futures during low and high volatility regimes. *The Journal of Futures Markets*, 44. <https://doi.org/10.1002/fut.22477>
- Robinson, Z. (2024). A macroeconomic viewpoint using a structural VAR analysis of silver price behaviour. *Mineral Economics*, 37, 15–23. <https://doi.org/10.1007/s13563-023-00386-y>
- Sadorsky, P. (1999). Oil price shocks and stock market activity. *Energy Economics*, 21(5), 449–469. [https://doi.org/10.1016/S0140-9883\(99\)00020-1](https://doi.org/10.1016/S0140-9883(99)00020-1)

- Samuelson, P. A. (1965). Proof that Properly Anticipated Prices Fluctuate Randomly. *Industrial Management Review*, 6(2), 41–49.
- Scheinkman, J. A., & Xiong, W. (2003). Overconfidence and Speculative Bubbles. *Journal of Political Economy*, 111(6). <https://doi.org/10.1086/378531>
- Sharif, A., Aloui, C., & Yarovaya, L. (2020). Covid-19 pandemic, oil prices, stock market, geopolitical risk and policy uncertainty nexus in the US economy: Fresh evidence from the wavelet-based approach, *International Review of Financial Analysis*. 70. <https://doi.org/10.1016/j.irfa.2020.101496>
- Shiller, R. (2000). Irrational Exuberance. *The American Journal of Economics and Sociology*, 59(3), 537-540. <https://www.jstor.org/stable/3487895>
- Silva, L. C. S., & Nobre, F. C. (2021). Produção científica sobre a influência dos vieses comportamentais no processo decisório: mapeamento comparativo entre Brasil, Estados Unidos da América e Europa. *Revista Contribuciones a la Economía*, 19(1), 53-84. <https://www.eumed.net/es/revistas/contribuciones-economia/ce-enero21/proceso-decisorio>
- Souza, R. M. F., Baia, M. W. M., Costa, I. C. M., Machado, R. S., Mendes, A. L. B., & Souto, M. V. (2017). Análise bibliométrica dos artigos científicos em finanças publicados na Revista de Administração de Empresas (RAE) da FGV/SP, no período de 2006 a 2016. *Administração: Ensino e Pesquisa*, 18(3), 489–517. <https://doi.org/10.13058/raep.2017.v18n3.631>
- Takaishi, T. (2022). Time evolution of market efficiency and multifractality of the Japanese stock market. *Journal of Risk and Financial Management*. <https://doi.org/10.3390/jrfm15010031>
- Thaler, R., & Sunstein, C. (2008). *Nudge*. Penguin Books.
- Tian, Y., Wen, H., & Fu, S. (2024). Multi-step ahead prediction of carbon price movement using time-series privileged information. *Expert Systems with Applications*, 255. <https://doi.org/10.1016/j.eswa.2024.124825>
- Todorov, K. (2024). When passive funds affect prices: evidence from volatility and commodity ETFs. *Review of Finance*, 28, 831–863, <https://doi.org/10.1093/rof/rfad038>
- Tsaknaki, I-Y., Lillo, F., & Mazzarisi, P. (2024). Online learning of order flow and market impact with Bayesian change-point detection methods. *Quantitative Finance*, 25. <https://doi.org/10.1080/14697688.2024.2337300>
- Van Eck, N. J., & Waltman, L. (2014). Visualizing bibliometric networks. *Measuring Scholarly Impact*, 285-320. <https://doi.org/10.1007/s11192-009-0146-3>
- Vecco, M., Rodríguez, J. P., & Teerink, S. (2024). Climbing the ladder? The gender gap in art prices across artists' cohorts in the Dutch art market. *European Economic Review*, 163. <https://doi.org/10.1016/j.euroecorev.2023.104657>
- Vogl, M. (2023). Hurst exponent dynamics of S&P 500 returns: Implications for market efficiency, long memory, multifractality and financial crises predictability by application of a nonlinear dynamics analysis framework. *Chaos, Solitons and Fractal*. <https://doi.org/10.1016/j.chaos.2022.112884>
- Wahid, A., & Kowalewski, O. (2024). Monetary Policy Spillovers and Inter-Market Dynamics Perspective of Preferred Habitat Model. *Economies*, 12(5), 98. <https://doi.org/10.3390/economies12050098>
- Wu, R., Hossain, M. A., & Zhang, H. (2024). Factors affecting the volatility of bitcoin prices. *The Economics and Finance Letters*, 11(2), 107–125. <https://doi.org/10.18488/29.v11i2.3730>
- Yusuf, M-B. O. Salau, T. J., & Adeiza, A. (2024). Oil and Food Price Before and During COVID-19 Pandemic in Nigeria: A Non-Linear ARDL Approach. *Studia Universitatis, Vasile Goldis Arad – Economics Series*, 34. <https://doi.org/10.2478/sues-2024-0007>
- Zhu, J., Zhang, L., & Sun, X. (2024). Optimal liquidation using extended trading close for multiple trading days. *Financial Innovation*. <https://doi.org/10.1186/s40854-024-00613-7>

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