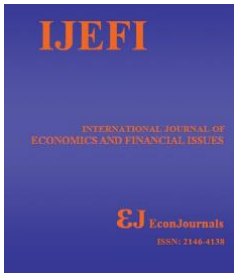

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Calendar Anomalies in Financial Markets: A Bibliometric Analysis

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ABSTRACT

Calendar anomalies are predictable pattern in stock returns, questioning the Efficient Market Hypothesis and enabling investors to enhance their trading strategies. There has been a proliferation of studies investigating these calendar-based effects across diverse financial markets in recent years. This paper aims to provide a comprehensive bibliometric analysis of the existing literature on calendar anomalies in financial markets to uncover insights on the relevant themes, influential authors, and emerging research fronts. The bibliometric analysis is grounded in 432 articles from the Scopus database related to seasonal anomalies, published between 1987 and 2023. The results indicate that academic research predominantly focuses on calendar effects within the stock market, with a significant amount of attention directed towards the US market. The review found a surge in research on calendar anomalies, with 89.99% of articles published between 2000 and 2022 with US being the dominant contributor totalling 86 publications and 2,075 citations. The study also reveals six prominent research themes, including the day of the week effects on global financial markets, seasonality in market returns and volatility, evidence of disappearing anomalies, explorations of the January effect, comparative studies of stock market seasonality across nations, and inquiries into seasonality effects during the late 1990s. Another key observation is the heterogeneity observed in the patterns of diverse calendar-based anomalies across international financial markets.

Keywords: Bibliometric Analysis, Calendar Effect, International Financial Markets, Market Efficiency, Seasonal Anomalies
JEL Classifications: G14, G15, G11

1. INTRODUCTION

Calendar anomalies are recurrent patterns or irregularities observed in financial market returns or trading volumes at specific points within the calendar year. These anomalies indicate that market efficiency, which assumes all relevant information is already reflected in security prices, may be undermined by predictable deviations from expected market behaviours during certain time periods (Ariel, 1987). The financial markets have long been the subject of investigation regarding calendar anomalies, which have captured the interest of researchers and practitioners alike. These anomalies, such as the January effect and day-of-the-week effects, shed light on temporal patterns that challenge the conventional understanding of efficient market theories and influence investment strategies on a global scale.

Despite extensive research, the landscape of calendar anomalies remains dynamic and multifaceted, necessitating a structured examination of existing literature to uncover underlying patterns and trends. However, the fragmentation and proliferation of studies on calendar anomalies across various financial markets have resulted in a dispersed body of knowledge. This dispersion poses challenges for synthesizing findings and identifying emerging trends and gaps in research. Understanding calendar anomalies is crucial for investors, financial analysts, and policymakers, as it can enhance market efficiency and inform investment decisions.

By uncovering underlying patterns and identifying influential factors, this study aims to provide actionable insights into market behaviour across different time periods.

Consequently, this study seeks to conduct a comprehensive bibliometric analysis of the literature on calendar anomalies in financial markets. By mapping out key themes, identifying influential authors, and delineating emerging research fronts, this paper aims to contribute to the synthesis of existing knowledge and provide a foundation for future research directions in this important area of financial economics.

2. REVIEW OF LITERATURE

An anomaly simply refers to an inconsistency or departure from the norm (Tadepalli and Jain, 2018). A security or group of securities that may act in a manner that isn't compatible with the predictions made by efficient market theory is known as an anomaly in the financial markets (Harshita et al., 2018). In 1965, Eugene Fama introduced the concept of an "efficient market," asserting that under such conditions, the competitive landscape would promptly integrate the full influence of new information into existing prices, making it impossible to consistently outperform the market through securities trading (Thaler, 1987) However, there are numerous breaches of the EMH observed throughout time due to the substantial presence of different stock market anomalies (Gao & Li, 2019). Anomalies can be categorized into three different categories based on their patterns. Fundamental anomalies, technical anomalies, and calendar or seasonal anomalies (Amarnani and Vaidya, n.d.).

In the domain of financial research, calendar anomalies retain a distinct and persistent relevance compared to other anomalies (Lean et al., 2007). These anomalies, characterized by repeated patterns and behaviours within financial markets connected to certain calendar events, give a level of predictability and consistency that sets them apart (Tadepalli and Jain, 2018). Calendar anomalies originate from psychological factors rather than economic logic, supporting behavioral finance explanations(Jacobs & and Levy, 1988). Numerous studies have explored different types of calendar anomalies prevalent in financial markets. One of the most significant calendar anomalies is the day-of-the-week effect, which leads to average returns being notably higher on certain days of the week compared to others (Brooks and Persand, 2001). The 'traditional' weekend effect is characterized by higher and significantly positive returns on the final trading day of the week, typically Friday, while the first trading day of the week, usually Monday, exhibits the lowest and even negative returns (Tsangarakis, 2007). In fact, the weekend effect shows U.S. stocks tend to drop on Mondays and rise on Fridays(Cross, 1973).

Another prominent calendar anomaly is the turn-of-the-month effect, where returns are concentrated around the transition from the old to the new month, typically the last and first few trading days (Arendas and Kotlebova, 2019). The month-of-the-year effect refers to a pattern where the returns of financial assets exhibit significant variations across different months, with certain months consistently generating higher returns compared to the rest of the year (Acharya et al., 2024). The January effect is characterized by the tendency of stock markets to generate significantly higher returns during the month of January compared to the rest of the year (Árendáš et al., 2021). A 90-year study finds seasonal anomalies like the January effect persist, demonstrating inefficiencies in price formation (Lakonishok & Smidt, 1988). The holiday anomaly refers to a view of the temporary surge in the values of the several stocks on a trading day before the stock exchange-mandated national or regional holidays (Tadepalli et al., 2021).

Even though most of the studies are done on stock market, there is evidence of week day anomalies various other financial market like currency market, crypto currency etc calendar anomalies in cryptocurrency market is time varying rather than static (Khuntia and Pattanayak, 2022). Presence of calendar anomalies found in Turkish foreign exchange market.(Aydoğan and Geoffrey Booth, 2003).

Calendar anomalies are also observed in the currency and global depository markets. Research on the Indian currency market indicates that returns are typically positive and higher from Monday to Wednesday compared to Thursday and Friday, with January showing higher returns than other months (Kumar and Pathak, 2016). Similarly, studies on the American depository receipts market reveal the presence of day-of-the-week, pre-holiday, and turn-of-the-month effects (Lobão, 2019).

Calendar-based anomalies have been examined across various financial markets globally. The Italian financial markets exhibit strong seasonal fluctuations, with repeating return patterns that challenge traditional market efficiency models(Barone, 1990). Similarly, most Asian markets, excluding a few, show favourable returns in December, while Indonesia has a negative effect in August, and a few other countries exhibit positive effects in January, April, and May (Keong et al., n.d.). The Turn of the month effect is present in Indian markets, indicating persistent market inefficiencies in emerging economies(Tadepalli et al., 2022). The analysis of the Monthly Seasonal Effect in the Gulf Cooperation Council (GCC) indices indicated that December tends to exhibit stronger and more significant returns than January, implying a prevalence of a December-effect rather than a January-effect in GCC countries (Ariss et al., 2011).

There are studies which re-examined the seasonality effects after any major stock market clashes in order understand the degree of change in the stock market inefficiency. Analyses of global market indices have identified the presence of day-of-the-week anomalies in stock market volatility following market shock and provide the first evidence of reduced volatility on Tuesdays after the COVID-19 shock (Kang and Cho, 2022). Examinations are conducted on the Israeli financial markets to investigate seasonal anomalies, focusing on periods before and after the global financial crisis (Jaisinghani et al., 2019).

There are studies that examine the presence of calendar anomalies in the context of time-varying efficiency. The investigation of calendar anomalies in African stock markets discovered their appearance in one regime and disappearance in another, showing that calendar anomalies' behaviour is influenced by market

conditions and aligns with the adaptive market hypothesis (Obalade and Muzindutsi, 2019).

A novel perspective was offered by exploring multifractality and the day-of-the-week effect, shedding light on the intricate nature of calendar anomalies and their influence on market dynamics (Stosic et al., 2022).

There are limited literature-based studies on calendar anomalies. An in-depth analysis of the connection between the Efficient Market Hypothesis (EMH) and calendar anomalies (Rossi, 2015). An analysis of the history and recent advancements in the literature on the day-of-the-week effect (Philpot and Peterson, 2011). Literature review on the persistence of calendar anomalies (Tadepalli and Jain, 2018). While comprehensive bibliometric analyses on calendar anomalies in financial markets seem limited, there is a clear need to undertake such in-depth examinations to gain a deeper understanding of the existing research. This study aims to provide a thorough bibliometric review of the current literature on calendar anomalies in financial markets, with the goal of unveiling insights into the relevant themes, influential authors, and emerging research areas in this domain.

The following are the research hypothesis:

H_1: Analysis of publication trends is likely to reveal fluctuations in research interest and activity related to calendar anomalies.

H_2: Specific authors will emerge as influential based on their significant contributions to the study of calendar anomalies, demonstrated through their frequency of publications and citation impact.

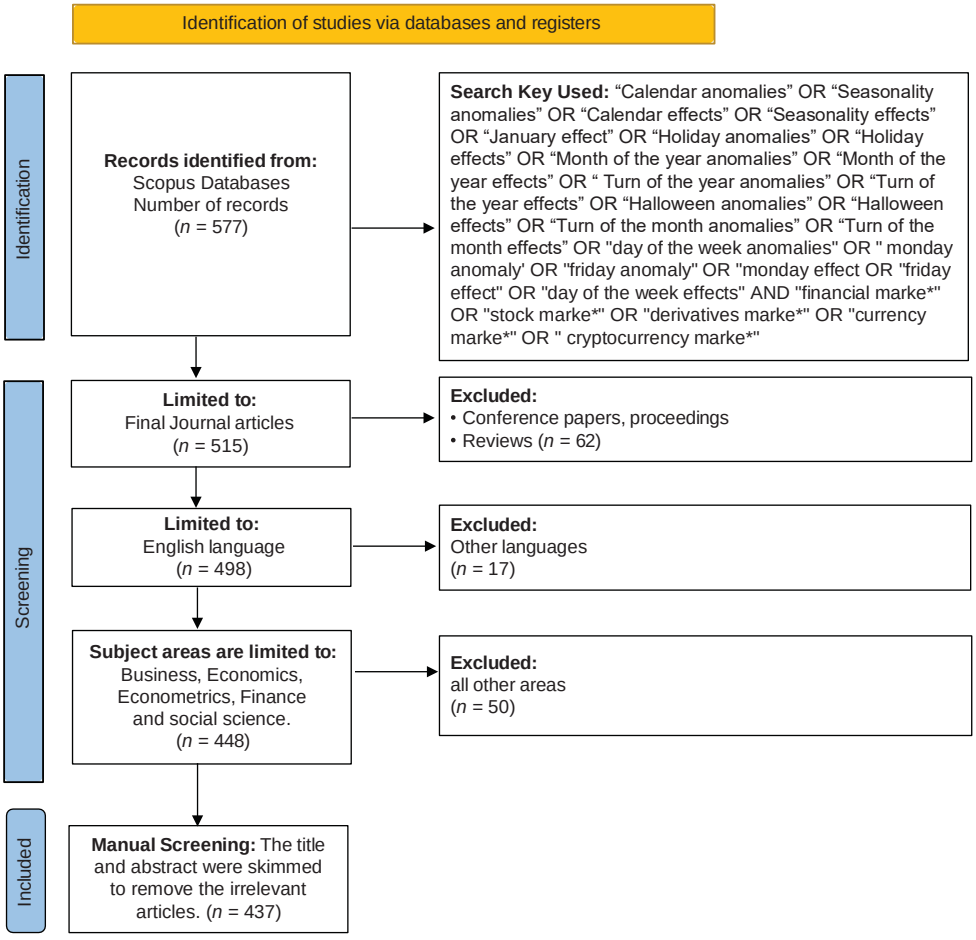
H_3: The bibliometric review is expected to identify prevalent themes in the existing literature on calendar anomalies in financial markets, reflecting the primary research areas of interest.

3. METHODS

Bibliometric analysis is a scientific method of computer-assisted review that can identify important authors or research pieces and their relationships by analysing all of the publications pertinent to a specific topic or field. This method facilitates the analysis of patterns within specific journals or groupings of articles. The advantage of using bibliometric analysis is that it draws attention to the importance of research in the area and the development of that research depending on the institution and performance. This paper makes an evaluation of the seasonality effects in various financial markets across the world through bibliometric analysis.

The authors used several methods of analysis in their bibliometric study, including citation analysis, co-occurrence analysis, and bibliometric coupling. The significance of a publication is measured by the number of times it is cited in subsequent works, as stated by (Donthu et al., 2021). The potential relationship between

Figure 1: PRISMA diagram



two bibliographic entries that exist in the same dissertation is examined using co-occurrence analysis in bibliometrics. The goal of bibliometric coupling analysis is to categorise works into related topical groups linked by their citations to one another. The authors employed VOS Viewer, a programme used to build bibliometric networks, displays the results of the bibliometric study. The Figure1 shows the PRISMA Diagram which depict how data is collected and screened. As part of this process, Bibliographic data was extracted from Scopus, the world's leading scientific database, on January 31, 2023. To find relevant articles in both databases, we use the following search terms: "Calendar anomalies" OR "Seasonality anomalies" OR "Calendar effects" OR "Seasonality effects" OR "January effect" OR "Holiday anomalies" OR "Holiday effects" OR "Month of the year anomalies" OR "Month of the year effects" OR " Turn of the year anomalies" OR "Turn of the year effects" OR "Halloween anomalies" OR "Halloween effects" OR "Turn of the month anomalies" OR "Turn of the month effects" OR "day of the week anomalies" OR " monday anomaly' OR "friday anomaly" OR "monday effect OR "friday effect" OR "day of the week effects" AND "financial marke*" OR "stock marke*" OR "derivatives marke*" OR "currency marke*" OR " cryptocurrency marke*" Five hundred seventy-seven documents were found in Scopus after the search. Articles that had reached their final stage of publication were the only ones considered. Economics, econometrics, and finance, management and accounting, and social science are the chosen disciplines. The language of the publications was English. We narrowed it down to 437 articles after applying the aforementioned filters. A structured approach was used in the selection process to ensure a systematic bibliometric analysis. Table 1 summarizes the key steps of the bibliometric study. It covers research area selection, database choice, search parameters, time frame, analysis tools, and data examination.

4. RESULTS

The present study undertook a comprehensive bibliometric analysis to investigate the scholarly landscape surrounding calendar anomalies, a topic of growing interest within the fields of finance and economics. The results section of this study encompasses analyses across several key areas, including an examination of publication trends over time, an assessment of research output patterns by country, a citation-based investigation of the top contributing authors, countries, and organizations, as well as the application of advanced bibliometric techniques such as tree maps, Bradford's law, co-occurrence analysis, and bibliometric coupling.

Within the extensive temporal span from 1984 to 2023, our bibliometric investigation unveils a comprehensive analysis of scholarly contributions originating from 229 distinct sources, constituting a collection of 400 documents. The evident annual growth rate of 7.98% underscores the liveliness and development of academic discourse throughout this prolonged timeframe. Collaboration is a pervasive theme in the research landscape, involving a total of 821 authors, with 81 documents credited to a single author. The research landscape is further enriched by international co-authorship, contributing to 22% of the scholarly output. Noteworthy is the average of 2.31 co-authors per document, highlighting the collaborative essence of scholarly production. The diversity of topics is reflected in the utilization of 985 unique authors' keywords. Additionally, the overall summary includes an average document age of 9.07 years and 15.53 citations per document, shedding light on the lasting impact and scholarly acknowledgment of the presented research. This comprehensive overview encapsulates the multifaceted dynamics

Figure 2: Main information

Figure 3: Publications trends in years

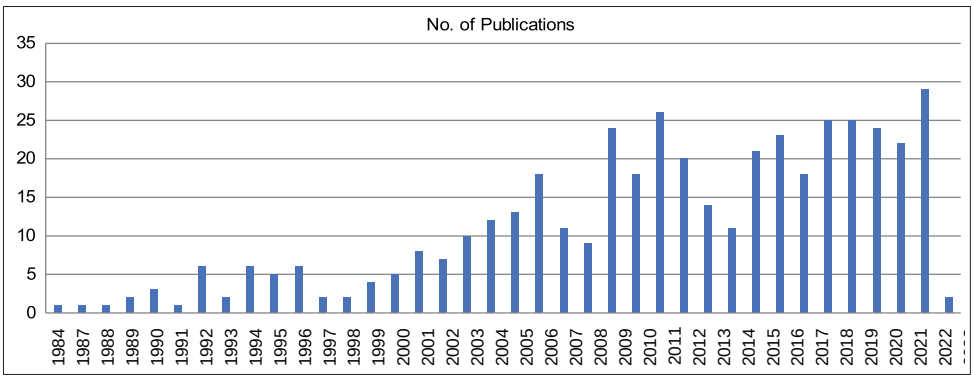


Figure 4: Countries production over time

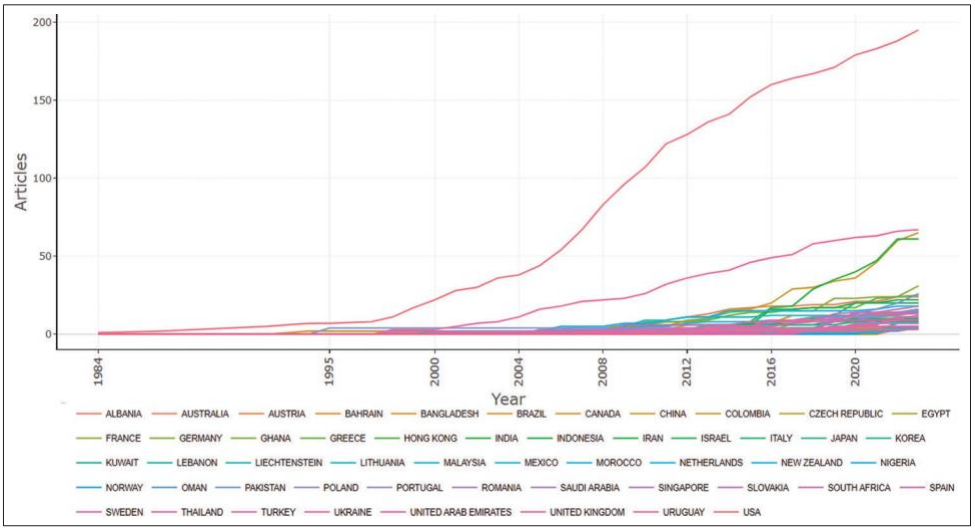


Figure 5: Tree map

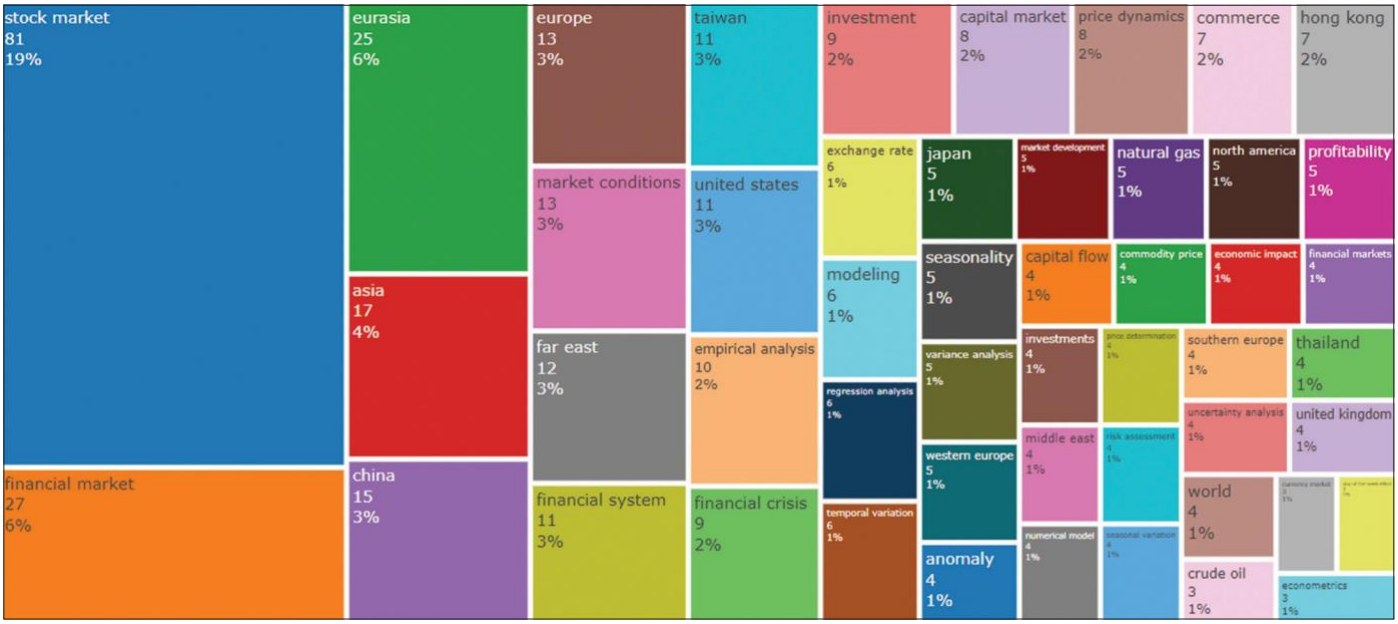
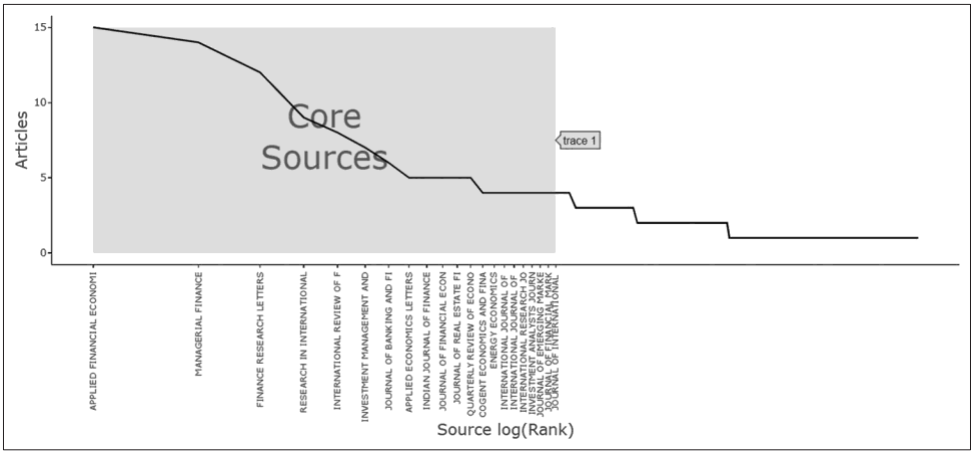


Figure 6: Bradford's core sources



and influence of scholarly involvement over the course of almost four decades.

4.1. Publication Trend in Years

Figure 2 in particular demonstrates a dramatic increase in study intensity after the year 2000. Figure 3 plots the trajectory of journal publications discussing the impact of seasonality on the financial markets from 1984 to 2022. The most number of articles were published in 2022 (29), 2011, 2019, and 2018 (25), while the earliest relevant article was written in 1984. There has been an evident rise in the quantity of articles written about this topic. Figure 2 in particular demonstrates a dramatic increase in study intensity after the year 2000.

Not rejecting the H_1 is justified because publication trends over the years demonstrate fluctuations in research interest and activity concerning calendar anomalies.

Table 1: Characteristics bibliometric study - characteristics

Step 1	Defining the area of research	Calendar anomalies
Step 2	Database selection	Scopus
Step 3	Search parameter for field	Keyword: "Calendar anomalies" "Seasonality anomalies" "Calendar effects" "Seasonality effects" "January effect" "Holiday anomalies" "Holiday effects" "Month of the year anomalies" "Month of the year effects" "Turn of the year anomalies" "Turn of the year effects" "Halloween anomalies" "Halloween effects" "Turn of the month anomalies" "Turn of the month effects" "day of the week anomalies" "Monday anomaly" "Friday anomaly" "Monday effect" "Friday effect" "day of the week effects"
Step 4	Time period	1987-2023
Step 5	Tool for analysis	Bibliometrix R package, VOS Viewer
Step 6	Examination of information	Analysis and discussion of results

4.2. Countries Production Over Time

Exploring how scholarly output varies across countries over time is a key aspect of bibliometric studies. This analysis sheds light on changing trends, patterns, and emerging themes, offering valuable insights into the global academic landscape. The temporal evolution of country-wise production is a fascinating journey that unveils dynamic narratives in the world of research.

In examining the Figure 4, it is apparent that the United States consistently leads in annual scholarly production across the entire observed period, while the United Kingdom has been the second-largest contributor since the year 2000. Significantly, China and India have experienced noteworthy growth in scholarly output, particularly in the last decade, establishing them as notable contributors on the global academic platform.

4.3. Citation Analysis - Top Authors, Countries and Organizations

Citation analysis is the examination of the importance and presumptive calibre of a work, an author, or an institution based on how frequently their works and/or writers have been mentioned by other individuals.

4.3.1. Top authors and countries

Table 2 lists the top twenty authors and nations. With 275 citations and a maximum of three published documents, Berument H. is the most prolific author, followed by Plastun A., who has 121 citations and six publications. With 112 citations, Gupta R is the third most referenced author. The United States leads the world in both publications (86) and citations (2075), with the United Kingdom coming in second place with 1120 citations and 56 publications. The least frequently cited nation on the list is South Korea.

Table 2: The prominent cited authors and countries

No.	Author	Citations	Documents	No.	Country	Citations	Documents
1	Berument H.	275	3	1	United States	2075	86
2	Plastun A.	121	6	2	United Kingdom	1120	56
3	Gupta R.	112	6	3	Turkey	478	19
4	Bouri E.	108	3	4	Australia	404	29
5	Rossi M.	90	3	5	Israel	293	11
6	Caporale G.M.	88	4	6	Canada	267	12
7	Qadan M.	73	5	7	China	255	23
8	Compton W.S.	69	3	8	Singapore	255	5
9	Kunkel R.A.	69	3	9	Hong Kong	216	16
10	Floros C.	68	3	10	India	204	40
11	Aharon D.Y.	54	3	11	Italy	192	5
12	Tang G.Y.N.	50	6	12	Greece	189	17
13	Kumar S.	49	7	13	Netherlands	159	8
14	Alagidede P.	47	3	14	Lebanon	151	6
15	Wohar M.E.	45	4	15	Taiwan	121	20
16	Tanizaki H.	43	3	16	Ukraine	121	7
17	Sibande X.	40	3	17	Malaysia	119	13
18	Lim S.Y.	38	3	18	United Arab Emirates	119	5
19	Patel J.B.	31	3	19	France	115	7
20	Bohl M.T.	29	3	20	South Korea	105	6

Table 3: Top cited organizations

No.	Organization	Documents	Citations
1	Bilkent University	2	135
2	Sumy State University	3	81
3	American University of Sharjah	2	53
4	University of Pretoria	3	40
5	Hong Kong Baptist University	4	35
6	University of Nebraska	2	34
7	Victoria University of Wellington	2	34
8	Loughborough University	2	34
9	Southwest Jiaotong University	2	23
10	Sumy State University	2	17
11	Ono Academic College	2	15
12	University Malaysia Sabah	3	14
13	Central South University	2	14
14	Indian Institute of Technology Delhi	2	12
15	University of Canterbury	2	11
16	Creighton University	2	7
17	University College London	2	6
18	Syiah Kuala University	2	5

4.3.2. Top cited organizations

Table 3 lists the top organizations that published the most influential articles on the calendar anomalies in the financial market. Department of Economics, Bilkent University, Ankara, Turkey, is the most dominant institute in the aforementioned topic, with 135 citations and 2 documents, followed by Sumy State University, Ukraine, which has 81 citations and 3 documents. The American University of Sharjah, United Arab Emirates, and Department of Economics, University of Pretoria, Pretoria, South Africa, are in third and fourth positions, respectively.

The decision to not reject H_2 is supported by citation analysis, which highlighted leading authors, the most frequently cited institution, and the country with the highest citation count.

4.3.3. Tree map

In the realm of academic inquiry, a tree map serves as a visual aid designed to depict and examine bibliographic data within a hierarchical framework. The field of bibliometrics encompasses the quantitative evaluation of scholarly publications, predominantly academic articles, with the aim of scrutinizing patterns, trends, and interconnections specific to a particular area of study or discipline.

Within the framework of a bibliometric investigation delving into calendar anomalies within the financial market, insights gleaned from the tree map analysis offer valuable perspectives on the thematic dispersion of academic contributions. Figure 5 illustrates that the "stock market" and comprising 25 instances (11%), implies a predominant focus on calendar anomalies within the broader context of stock markets. This concentration may suggest the perceived importance attributed to temporal irregularities within stock markets and their implications for financial decision-making. In close succession is the category "financial market," encompassing 14 instances (6%), thereby reinforcing the study's expansive scope beyond individual stock markets. Furthermore, noteworthy occurrences of terms like "China," "Eurasia," and "Europe" with 9 (4%), 8 (4%), and 7 (3%) instances, respectively, indicate a geographical dimension in the exploration of calendar anomalies. The prominence of these regions accentuates a global perspective in comprehending temporal patterns within financial markets. This array of topics portrayed in the tree map collectively illustrates a nuanced scholarly landscape, wherein researchers actively investigate calendar anomalies across diverse dimensions, ranging from specific markets to regional and global contexts.

4.3.4. Bradford distribution

In this bibliometric study, we employed Bradford's Law to analyze and classify journals within our dataset, categorizing them into core, secondary, and tertiary groups according to their contribution to the overall publication count in a specific subject area. Figure 6 shows applied financial economics, managerial finance, and finance research letters emerged as the primary core journals identified through Bradford's Law. It is noteworthy that all the journals situated in zone one of the Bradford distributions are predominantly finance-oriented publications.

4.3.5. Co-occurrence analysis

The potential relationship between two bibliographic entries that exist in the same dissertation is examined using co-occurrence analysis in bibliometrics. co-occurrence analysis is carried out in accordance with keywords. The network of all keyword co-occurrences is displayed in Figure 7. In all keyword analyses, the terms "stock market," "calendar anomalies," and "market efficiency" are the most extensively employed. the term "stock market" appears up to 99 times, indicating that studies relating to calendar effects or seasonality anomalies are primarily conducted in the stock market arena than other financial markets. furthermore, the fact that the keyword "calendar anomalies" appeared 61 times suggests that the majority of the research employ this term. The third most often used keyword was "efficiency," which appeared 56 times overall. This indicates that the majority of calendar anomalies investigations are conducted to evaluate market efficiency. Other commonly used terms in abstracts and titles include day of the week and the January effect, which indicate that the two most notable calendar anomalies are these two.

4.3.6. Bibliometric coupling

When two works make widespread use of a third work in their bibliographies, this is referred to as bibliographic coupling. The aforementioned domain is categorised by current research into different clusters. The study theme in each cluster is thoroughly described in the present section. Figure 8 displays the bibliometric coupling network, which highlights six clusters: (1) The day of the week effects on global financial markets (2) Seasonality in market returns and volatility (3) Evidence of disappearing anomalies (4) January effect (5) Comparative analysis of the of stock market seasonality across nations (6) Investigation of seasonality effects in the late nineties.

4.3.6.1. Cluster 1 (red): The day-of-the-week anomalies in global financial markets

This cluster, represented by the red circle in Figure 7, comprises 16 items. It highlights the prevalence of day-of-the-week anomalies in various financial markets, including the stock market, foreign exchange market, and cryptocurrency market. (Caporale &

Figure 7: Co-occurrence analysis of all keywords

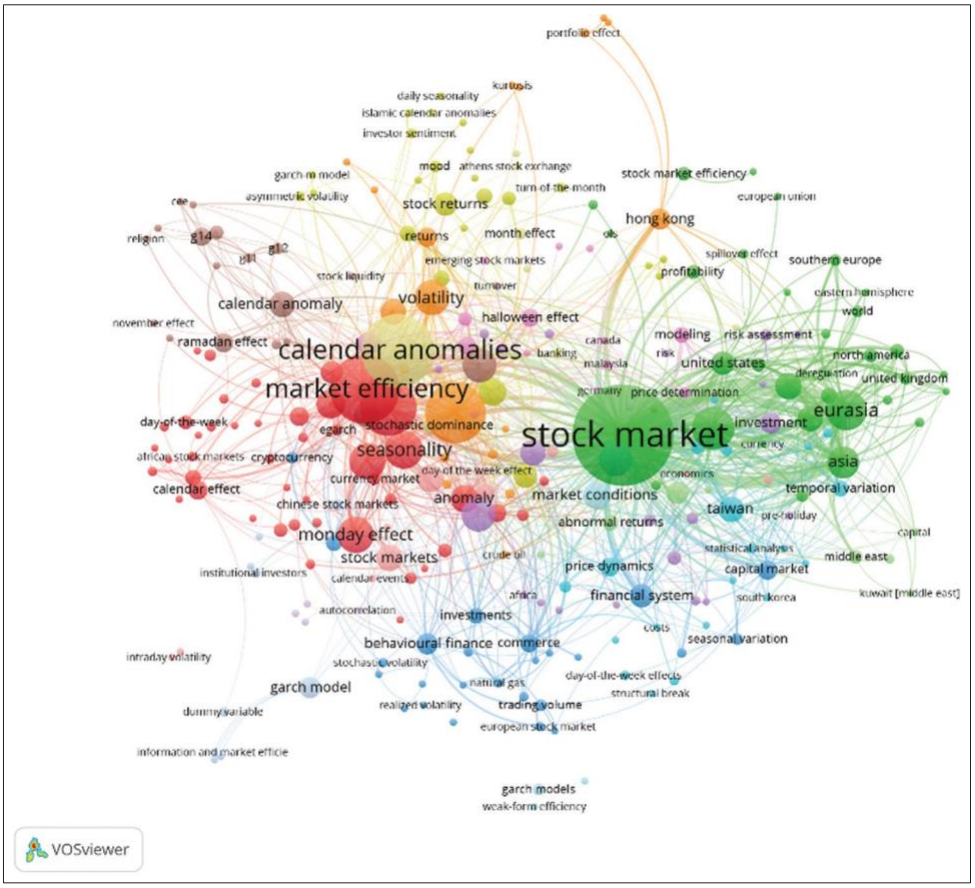
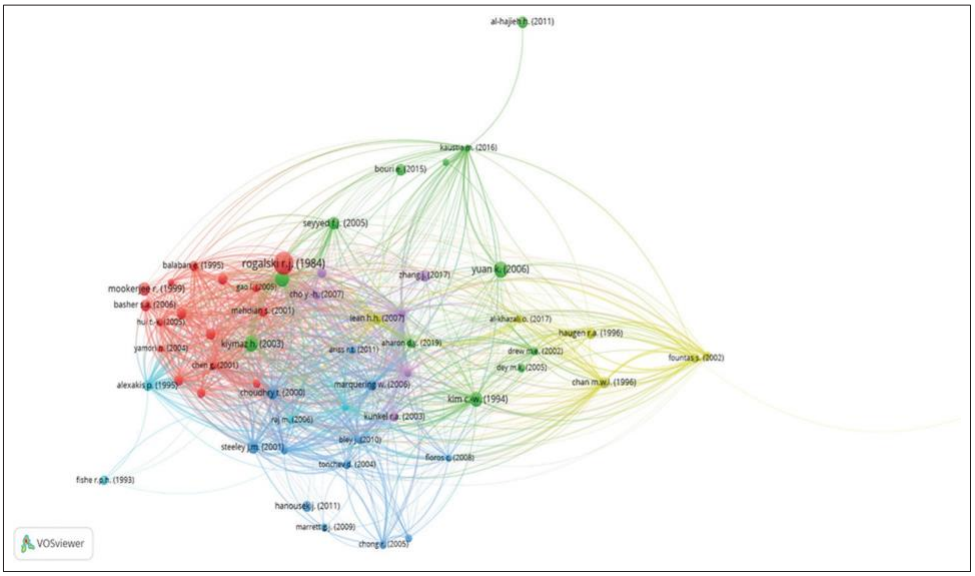


Figure 8: Thematic clusters through bibliographic coupling



Plastun, 2019) found that digital currencies like LiteCoin, Ripple, and Dash generally do not exhibit these anomalies, except for Bitcoin., (Basher and Sadorsky, 2006) noted the absence of a day-of-the-week effect in the majority of the studied emerging stock markets, except in the cases of the Philippines, Pakistan, and Taiwan. In contrast, (Yamori and Kurihara, 2004) noted the diminishing day-of-the-week effect for almost all currencies in the 1990s. Additionally, (Berument and Kiymaz, 2001) identified the existence of day-of-the-week effects in both volatility and return in the U.S. market from 1973 to 1997, and (Choudhry, 2000) found similar effects in seven emerging countries: India, Indonesia, Malaysia, the Philippines, South Korea, Taiwan, and Thailand. Furthermore, (Kiymaz and Berument, 2003) observed a weekly effect in return and volatility in major stock market indices, highlighting peak volatility on specific days for different countries. Lastly, (Yan-Ki Ho and Cheung, 1994) discovered day-

of-the-week variations in volatility in most emerging Asian stock markets, with Monday returns generally exhibiting the lowest volatility, except for Korea.

4.3.6.2. Cluster 2 (green): Seasonality in market returns and volatility

Cluster 2, the second-largest cluster with 12 papers, explores seasonality effects in both stock market returns and volatility. (Berument and Kiymaz, 2001) identified the day-of-the-week effect in both S&P 500 market index return and volatility, noting the highest and lowest returns on Wednesday and Monday, and the highest and lowest volatility on Friday and Wednesday. Similarly, (Kiymaz and Berument, 2003) discovered day-of-the-week anomalies in both volatility and returns for major stock market indexes, highlighting peak volatility on specific days for different countries.(Seyyed et al., 2005) examined return volatility seasonality during the Muslim holy month of Ramadan in the Saudi Arabian Market, noting a regular trend of declining volatility throughout Ramadan, indicating a predictable change in market risk. (Aharon & Qadan, 2019) found evidence of day-of-the-week anomalies in both returns and volatility of Bitcoin. Overall, the studies suggest a correlation between high market volatility and low trading volume across various markets.

4.3.6.3. Cluster 3 (blue): Evidence of disappearing anomalies

Cluster 3 also consist 12 document, and provide evidence of disappearing calendar anomalies. (Steeley, 2001) found disappearance of Weekend phenomenon in the UK stock market in 1990. (Marquering et al., 2006) discovered disappearance of most of anomalies except Month-End Effect in US market after the academic publication. (Keef and Roush, 2005) found pre-holiday effect is greatly diminished in S& P 500 stock index after 1987 and found no indication of a weekend anomaly in pre-holiday returns. (Floros, 2008) found no evidence of January effect in Greek market. (Chong et al., 2005) discovered a declining of pre -holiday effect in U.S., U.K. and Hong Kong markets. (Ariss et al., 2011) found significant December effect instead of January effect in Gulf Cooperation Council (GCC) stock markets.

4.3.6.4. Cluster 4 (yellow): January effect

Cluster 4, the third largest cluster, explores the presence of the January effect in various emerging and Asian markets. (Lean et al., 2007) provided evidence of weekday and monthly seasonality effects in certain Asian markets. Examining Asian stock markets, (Chan et al., 1996) identified month-of-the-year effects in Chinese and Singaporean markets but not in Thai and Bombay Stock markets. (Fountas and Segredakis, 2002) investigated seasonality anomalies in eighteen emerging stock markets, noting limited evidence of the January effect despite substantial indications of monthly seasonality in stock returns. (Wong et al., 1990) found evidence of the January effect in the Malaysian stock market. Re-examining the January effect in the US stock market, (Mehdian and Perry, 2001) concluded that January returns post-1987 are positive but not statistically significant. In contrast, (Haugen and Jorion, 1996) discovered strong evidence of the persistence of the January effect in the US stock market from 1926 to 1993.

4.3.6.5. Cluster 5 (violet): Comparative analysis of the of stock market seasonality across nations

Cluster 5 consist of 5 documents which discuss one of the seasonality anomalies in various stock market and made a comparative analysis on the presence this anomaly on different countries. (Kang and Cho, 2022) studies Monday effect in US, UK and Japanese stock market and found strong Monday effect in many cases. The presence of Monday effect found to disappear in Dow Jones and S&P 500 indexes after 1987 while it strongly persist in other index like NASDAQ, the Russell 2000 and the CRSP. (Doyle and Chen, 2009) found the evidence time varying behaviour of weekend anomalies from USA, Japan, UK, Germany, France Hong Kong, China and India.(Kunkel et al., 2003) found evidence of turn of the month anomalies sixteen countries out of nineteen countries include Austria, Belgium, Denmark, France, Germany, the Netherlands, Switzerland, UK, Australia, Japan, New Zealand, and Singapore, Canada, United States, Mexico, and South Africa. The TOM effect is a global occurrence that can be seen in South Africa, North America, the Far East, and Europe. Additionally, it indicates that the TOM effect in other nations is not merely a spillover from the US market given that we no longer observe the TOM effect in the US during the 1994-2000 time frame. (Rossi and Gunardi, 2018) analyses presence of prominent calendar anomalies in in France, Germany, Italy and Spain and not found any comprehensive evidence of calendar anomalies, they conclude that these anomalies are country specific.

4.3.6.6. Cluster 6 (blue): Investigation of seasonality effects in the late nineties

In cluster 6, there would be four documents that provide evidence of the investigation of seasonality effects in the late nineties. In the Greek stock market from 1985 to 1994, (Alexakis and Xanthakis, 1995) discovered that Mondays had positive returns while Tuesdays had negative returns. (Raj and Kumari, 2006) found no evidence of the Monday effect in the Indian stock market; instead, they documented negative returns on Tuesday for the period of 1979-1998. (Coutts and Sheikh, 2002) also documented a contrasting results than international evidence that no weekend effect in the All Gold Index in Johannesburg Stock Exchange for the period of 1987-1997. (Fishe et al., 1993) found the negative returns on the mondays for the period of 1962-1986.

H_3 is not rejected because bibliometric coupling has revealed six significant themes within the domain.

5. DISCUSSION

This study investigated the research and developments in the area of calendar anomalies through bibliometric analysis. The findings indicate that there has been a general rise in publication output over the years; however, this trend faced significant declines in certain years. Notably, there was a marked spike in production following the year 2000. The analysis indicates a substantial increase in the volume of published research on this subject matter after the turn of the century, with 89.99% of the articles included in this study having been published between 2000 and 2022. The analysis of the geographical distribution of research on calendar anomalies revealed that the United States has been the dominant contributor,

accounting for 86 publications and being the most cited country with 2,075 citations. Berument H. is the leading author in this field, with 275 citations across 3 publications. The Bilkent University in Ankara, Turkey, is the leading institution contributing to research in this domain, having garnered 135 citations.

The analysis revealed that the most prominent research theme centered around the stock market, indicating a strong focus on calendar anomalies within this broader context. In this domain, "applied financial economics" emerged as the primary core journal. The terms "stock market," "calendar anomalies," and "market efficiency" are the most widely used keywords in this domain. The analysis further identified six distinct clusters within this domain, each exploring a unique aspect: (1) Day-of-the-week effects on global financial markets, (2) Seasonality in market returns and volatility, (3) Evidence of disappearing anomalies, (4) The January effect, (5) Comparative analysis of stock market seasonality across nations, and (6) Investigation of seasonality effects in the late nineties. This detailed categorization highlights the diversity of research themes and the complex nature of calendar anomalies within the stock market context.

Several studies have examined seasonality in many financial markets, including the exchange market, stock market, market for cryptocurrencies, market for derivatives, etc. It is evident that more academics focus on calendar effects in the stock market than other markets (Kang and Cho, 2022; Kiymaz and Berument, 2003; (Zhang et al., 2017). It should be highlighted that returns and volatility both exhibit the calendar effects (Kang and Cho, 2022; Bhattacharya et al., 2003; Choudhry, 2000). There are variations in the pattern of various anomalies depending on the country, that significant Tuesday effects are noted in specific countries instead of Monday anomalies (Chen et al., 2001) and significant April and December effects are also evident instead of January effects, depending on variation in the country's financial year. (Alagidede and Panagiotidis, 2009; Ariss et al., 2011; Shahid, 2015). While there is growing evidence of these effects worldwide but there is no consensus on the results of these studies (Rossi and Gunardi, 2018).

The study also revealed noteworthy insights regarding the emergence and subsequent disappearance of these anomalies. The weekend effect is said to have vanished after 1990, according to the authors (Hui, 2005; Kohers et al., 2004; Marquering et al., 2006) and the anomalies are said to have returned together with major market shocks (Bouri, 2015; Kang and Cho, 2022). It can be concluded that weekend effects have a different pattern and shift with different markets, seasons, and markets. The dynamic and evolving nature of calendar anomalies in relation to the adaptive market hypothesis and analysis persistence of calendar anomalies in cryptocurrency market are emerging theme.

Although there has been progress in understanding this issue, there is still room for improvement in our understanding of the fundamental causes of calendar effects and the heterogeneity of calendar effects study outcomes. Also, we need to gain more insight into the relationship between disappearance and reappearance weekend effects and major market shocks. The time-varying behaviour of various calendar anomalies and its implications to adaptive market is also pioneering stage of research, which also needs to be explored. The literature on calendar anomalies in financial markets beyond traditional stock markets, such as cryptocurrency, foreign exchange, and derivative markets, is relatively limited and warrants further exploration.

6. CONCLUSION

The academic landscape continues to evolve, the study of calendar anomalies has emerged as a captivating area of research. This paper presents a comprehensive bibliometric analysis of the existing literature on calendar anomalies in financial markets, with the aim of uncovering insights into the relevant themes, influential authors, and emerging research areas in this field. This bibliometric study found a surge in research on calendar anomalies, with 89.99% of articles published between 2000 and 2022. The US was the dominant contributor, with 86 publications and 2,075 citations. Berument H. is the leading author, with 275 citations across 3 publications.

The analysis found that the primary research focus was on calendar anomalies in the stock market. The core journal was "applied financial economics," and the key terms used were "stock market," "calendar anomalies," and "market efficiency." Six distinct research clusters were identified, examining various aspects such as day-of-the-week effects, seasonality, disappearing anomalies, the January effect, cross-country comparisons, and late-1990s seasonality. This categorization highlights the complexity and diversity of calendar anomaly research in the stock market context.

This study focuses exclusively on the Scopus database, thereby excluding research from other databases, which may introduce bias in coverage. While the paper comprehensively reviews prominent and relevant literature from January 1973 to January 2023, any sources outside of this timeframe are not included, potentially leading to temporal bias. Additionally, citation patterns may be affected by various factors, including authorship, journal reputation, and social networks, potentially influencing the perceived impact or significance of a publication.

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