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Nature and Dynamics of Stock Market: A Bibliometric Analysis of its Development and Operations as an Economic Agency

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Abstract

This study methodically examines the pivotal role of stock markets in global economies, emphasizing their evolution from theoretical concepts to essential economic infrastructures. It employs advanced bibliometric tools and analysis, including co-authorship, citation, bibliographic coupling, and visual mapping techniques using VosViewer, to explore into stock market research from 1990 to 2023. The findings offer unprecedented insights into the academic and practical fields of stock market research. These analyses explore detailed collaboration networks, influential research contributions, and thematic clusters, highlighting the dynamic interplay between stock market developments and economic growth. This study documented the multifaceted nature of stock market development, with particular emphasis on four factors: supply, demand, institutions, and economic policies. The findings also emphasize that stock market development is a dynamic and long-term process, intricately linked to the broader development of a financial system. Although stock markets are primarily a private sector endeavour, the government's supporting role is pivotal for their success. The integration of this framework not only enriches our understanding of stock market dynamics but also charts the course for future research directions in the field, emphasizing the importance of interdisciplinary approaches and global research collaborations in advancing our understanding of financial systems.

Introduction

Stock markets have emerged as central pillars of today's global economy, assuming a critical role in fuelling economic growth for nations across the world. While they now stand as formidable institutions in contemporary finance, it's essential to recognize that stock markets are a relatively recent addition to the tapestry of global economics. This study embarks on a rigorous examination of the multifaceted nature and dynamic evolution of stock market development and operations. It seeks to illuminate the factors that have propelled stock markets to their current status as dominant drivers of the global economic engine. At the core of financial systems, stock markets serve as a conduit, ingeniously transforming savings into vital financing for the real sector. From a theoretical vantage point, stock markets hold the potential to expedite economic growth through several distinct mechanisms. These include

the mobilization of domestic savings, infusion of liquidity into the financial system, risk diversification, and enhancement of the quality and quantity of investments (Levine & Zervos, 1996, 1998a; Rousseau & Wachtel, 2000, 2011). This mobilization of savings not only bolsters the rate of saving but also, crucially, allocates these savings towards investment projects with the promise of higher returns. The resulting upswing in returns makes savings an even more attractive prospect. Consequently, a greater share of savings finds its way into the corporate sector, ultimately reinforcing economic growth (Xu, et. al., 2011).

Beyond their primary economic function, stock markets perform a myriad of vital roles. They enable long-term investments to be underwritten by individual investors who retain the prerogative to liquidate their holdings as the need arises (Raunig & Scharler, 2011). Additionally, stock markets introduce an element of competition among various financial instruments, thereby augmenting the efficiency of the financial system. This increased efficiency leads to higher returns for savers and lower borrowing costs for firms. Furthermore, stock markets exert pressure to maintain stable revenue sources with income diversification and improved accounting and tax standards, as investors increasingly demand comprehensive and transparent information for inter-corporate performance comparisons (Karki et al., 2023, Dahal et al. 2020). Naturally, this fosters an environment where corporations are motivated to provide detailed disclosures, facilitating rigorous comparisons between peers. One of the standout advantages of stock markets is their potential to impart greater discipline in the realm of economic management. By rendering policymakers acutely sensitive to policy adjustments, particularly within the sphere of monetary policy, stock markets play a pivotal role in enhancing policy credibility.

The recognition of stock market development as a catalyst for economic growth traces its roots back to the foundational works of early scholars such as Bagehot (1873) and Schumpeter (1912). These early ideas laid the groundwork for subsequent research by luminaries like McKinnon (1973) and Shaw (1973), who pioneered the modelling of financial development's role in fostering economic growth. More recent empirical research has provided substantial support for the hypothesis that well-functioning financial systems, which include developed stock markets, foster economic growth (Levine & Zervos, 1996, 1998a; Rodrik, 2008; Rodrik & Subramanian, 2009; Rousseau & Wachtel, 2000, 2011).

While the positive influence of stock market development on economic growth is well-established, the process is intricate and protracted. Stock market development is an integral facet of broader financial system development and is primarily driven by private sector initiatives, necessitating substantial government support. There is no single way to quantify or define financial development. Since single proxies are unlikely to capture the whole potential of financial development, inference based on them may lead to an imperfect understanding of the connection between financial development and economic growth. To solve this problem, Cave et al. (2019) utilized a MIMIC (multiple indicators, multiple causes) approach to establish a more all-encompassing index of economic growth. They did this by using the MIMIC model to predict developments in the banking sector and the stock market as proxies for financial development. Data from 101 countries between 1990 and 2014 showed a significant negative correlation between banking sector expansion and GDP growth, while the impact of stock market development on GDP growth was favourable up to a certain point before turning negative.

Research over the past decade has switched to the subject of the determinants of stock market development, as empirical evidence supports the thesis that stock markets stimulate economic growth. The relationship between finance and economic growth is essential to comprehend, and so is the development of an understanding of the dynamics and determinants of stock markets, which has important policy implications as it highlights areas where government action is required to create an economic and institutional environment conducive to stock market development. This study aims to address a research gap in the field of the Nature and Development of the Stock Market as an Economic Agency. An intensive literature review was done to acquire various data to address this deficiency. The goal is to improve understanding of the topic and develop scholarly knowledge.

This study is organized into the following sections: Section 2 describes the study's methodology, while Section 3 performs thematic and bibliometric data analysis of the selected publications. Section 4 presents the results and discussions of the research on the special features of stock markets, while Section 6 summarizes the main conclusions and implications of the study project.

Materials and Methods

The term "developed" often peppers the discourse surrounding stock markets, yet a precise definition remains elusive. Does a "developed" stock market equate to one that is large or highly liquid? Is it synonymous with high performance? And, in the case of burgeoning emerging stock markets, does rapid growth herald their transformation into developed markets? Typically, the yardsticks used to evaluate stock market development center on stock market size and liquidity indicators (Adarov & Tchaidze, 2011; Karki 2021). However, the adequacy of these measures for comprehensively assessing stock market development is an ongoing subject of debate.

First and foremost, it's crucial to distinguish between growth and development. While stock market growth signifies an increase in size or liquidity, development implies enhancing a stock market's ability to fulfil the economy's needs, as delineated in the primary functions of stock markets. Stock market development finds truer reflection in the quality of services it provides rather than in metrics like size, liquidity, or index performance. Mere liquidity, driven by an influx of funds, does not necessarily connote "development". Conversely, a well-developed market can leverage size and liquidity to serve the economy more effectively than a similarly sized and liquid but less developed counterpart. It's essential to note that stock market growth and development can coexist and even reinforce each other. This distinction parallels the traditional economic divergence between growth and development.

Despite extensive research on stock market development, a single criterion for its measurement remains elusive. A stock market may be large but lack liquidity, or it could be liquid with trading concentrated in a few stocks that dominate the total market capitalization. Hence, relying on a single indicator is inadequate for capturing the multifaceted nature of stock market development.

Measures of Stock Market Development

To holistically assess stock market development, El-Wassal (2013) and others propose a set of indicators encompassing five key aspects of stock markets.

i) **Stock Market Size:** In the literature, market size has been widely measured with two basic elements; namely: market capitalization and the number of listed companies.
   Market Capitalization: This indicator, expressed as Market capitalization/GDP, measures the market value of listed shares divided by GDP. It is widely used in the literature due to its correlation with the ability to mobilize capital and diversify risk (Karki & Aryal, 2019). However, it can be misleading if driven solely by a few companies with little change in fundraising or market breadth (Levine & Zervos, 1998b; Bekaert et al., 2001; Rajan & Zingales, 2003).
   The Number of Listed Companies: This complementary measure gauges the breadth of the stock market and isn't influenced by market fluctuations or GDP mismeasurement. However, it may undervalue economies with a concentrated industrial structure and doesn't capture high-frequency changes or corporate restructuring (Rajan & Zingales, 2003; Karolyi, 2004; Rajbhandari et al., 2020).

ii) **Stock Market Liquidity:** Liquidity, a pivotal aspect of stock market development, encompasses dimensions like tightness, immediacy, depth, breadth, and resiliency. Traded value/GDP and turnover ratio are commonly used indicators to measure liquidity. The former reflects organized share trading as a percentage of GDP, while the latter represents the number of times outstanding shares change hands. Using both indicators provides a more comprehensive view of liquidity (Bao et al., 2016).

iii) **Stock Market Concentration:** Market concentration occurs when a few companies dominate a stock market, affecting its breadth and liquidity. Concentration is measured by the share of market capitalization held by large companies, often the top three to five or the top ten stocks (Maunder et al., 1991; Raunig & Scharler, 2012). Concentration can deter diversification, limit investment opportunities, and distort stock price signalling.

iv) **Stock Market Linkage to Real Sector Performance:** Stock prices and real economic activity maintain a circular relationship. Stock prices reflect a company's performance and growth prospects, affecting economic activity through wealth effects, cost of capital, and confidence or expectation effects (Guo, 2015;

Karki, 2018). Accurately assessing this linkage is essential.

v) **Stock Market Performance/Volatility:** Excessive stock market volatility can distort the signalling function of stock markets, impact savings and investment, increase the cost of capital, and deter economic growth (Levine & Zervos, 1996; Arestis et al., 2001; Diebold & Yilmaz, 2012). While some volatility is necessary for price discovery, excessive volatility can have adverse economic consequences.

Based on the reviews, a "developed" stock market could be defined as one that is "sufficiently large and liquid relative to the size of its economy, possesses a non-concentrated market capitalization, and demonstrates adequate linkage to the performance of the real economic sector." Creating a stock market development index by combining these factors is feasible, although the weighting of each remains a subject of debate. Stock exchanges play a vital role in stock market development and economic growth. Their primary functions include matching buyers and sellers of securities and facilitating price discovery. These services contribute significantly to economic growth (Minier, 2009; Wu, et. al., 2010; Slimane, 2012).
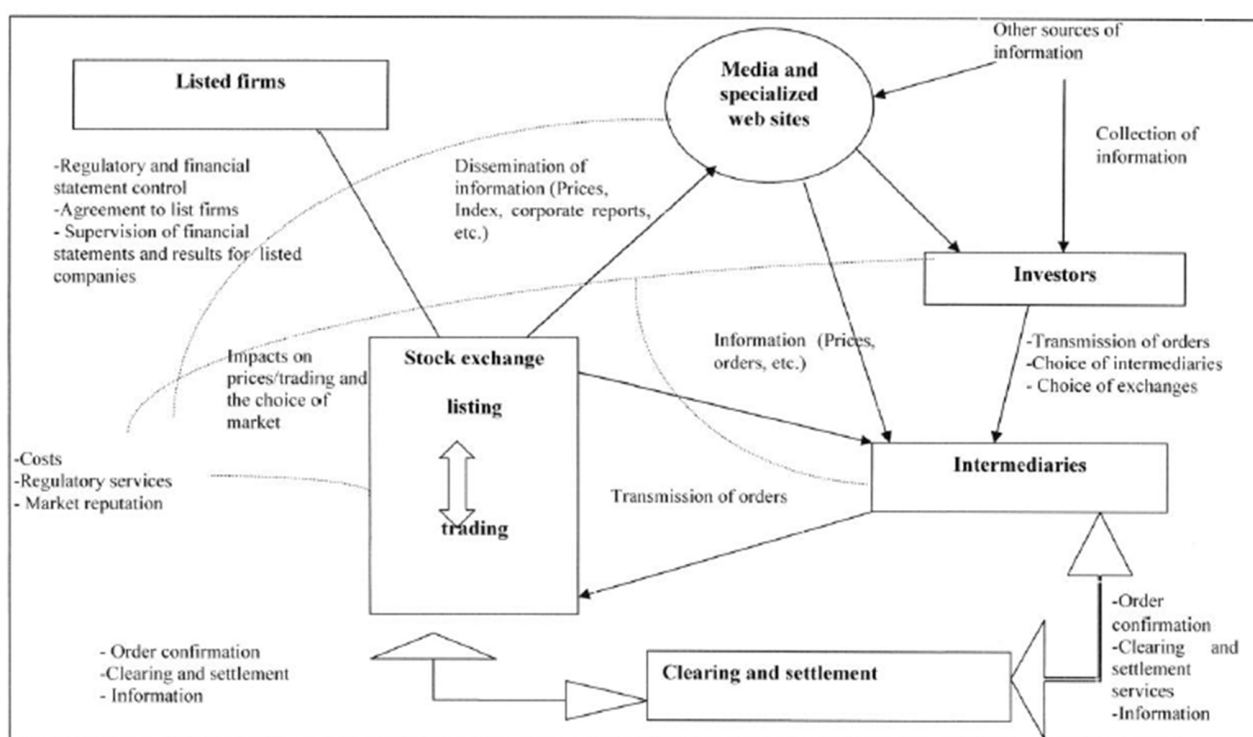

Figure 1: *General Description of Exchange Functioning (Slimane, 2012)*

Determinants of Stock Market Development

The exploration of the determinants of stock market development has gained substantial attention in recent years. This area of research has witnessed a growing body of empirical work, with theoretical attempts, such as the pioneering work by Calderon-Rossell (1990), gradually emerging. Calderon-Rossell's partial equilibrium model marked the initial step towards establishing a financial theory of stock market development, albeit with limitations, particularly in considering the potential impacts of government policies and institutional factors. Broadly, the literature on stock market development identifies two categories of factors influencing it: "macroeconomic factors" and "institutional factors". These two sets of factors are interconnected, with the evolution of the institutional environment reflected in macroeconomic conditions, and a favorable macroeconomic climate facilitating institutional development (Adarov & Tchaidze, 2011).

Macroeconomic Factors: In delving into macroeconomic factors, various dimensions are critical in shaping the landscape of stock market development. *Economic development levels*, for instance, have been found to correlate positively with the depth and maturity of stock markets, reflecting the symbiotic relationship

between economic advancement and financial market sophistication (Rajan & Zingales, 2003; La Porta et al., 2006). Similarly, *financial openness and liberalization* have been shown to stimulate stock market activity by fostering transparency, accountability, and investor confidence (Levine & Zervos, 1998b; Henry, 2000; Edison & Warnock, 2008). Moreover, factors such as *GDP growth, inflation rates, privatization initiatives, and the size of the economy* all contribute significantly to the development trajectory of stock markets (Boyd et al., 2001; Claessens et al., 2001; Perotti & Oijen, 2001; Mishkin, 2001; Ahn, et. al., 2015). Further, *domestic savings and banking sector development* play a role in fostering stock market development, with a particularly nonlinear relationship developing over time (El-Wassal, 2005; Andrianaivo & Yartey, 2010).

Institutional Factors: Institutional factors play a pivotal role in shaping the environment within which stock markets operate. The quality of the legal framework, particularly regarding investor protection and property rights, emerges as a critical determinant of stock market development, with common law systems often found to be more conducive to capital market growth (La Porta et al., 1998, 2006). Moreover, regulatory mechanisms aimed at ensuring the compulsory disclosure of reliable information and enhancing investor confidence in brokers have been observed to influence the impacts on stock market participation and trading dynamics (Allen, et. al., 2012). The dynamic relationship between political stability and the magnitude of political risk emerges as another critical determinant of stock market dynamics, influencing expected returns and, consequently, the cost of equity (Acharya et.al., 2017). Furthermore, initiatives aimed at strengthening property rights, credit protection, and investor safeguards through legal and regulatory reforms have been identified as instrumental in nurturing the development of corporate securities markets (Galindo & Micco, 2004; Djankov et al., 2005). Access to international markets and the liberalization of capital accounts are pivotal in broadening the investor base, enhancing market efficiency, and creating pressure for structural reforms within stock markets (Claessens et al., 2001). Additionally, the presence of institutional investors, such as mutual funds, pension funds, and insurance companies, and individuals' impulsive behaviors provide stability and demand in the securities market ecosystem, thereby augmenting competitiveness and operational efficiency (Impavido et al., 2003, Joshi et al., 2023). Lastly, the quality of institutions, encompassing elements such as political stability, adherence to the rule of law, democratic accountability, and bureaucratic efficiency, plays a fundamental role in shaping stock market development (Chami et al., 2010).

Stock Market Development and Economic Growth

Hailemariam and Guotaithe (2014) demonstrated a statistically significant relationship between stock market development and economic growth, both through direct channels and indirectly by stimulating investment behavior. This relationship was established empirically using data spanning 17 emerging market and 10 developed market economies over the period from 2000 to 2011, analyzed through the generalized method of moments (GMM) for dynamic panel data. To account for country-specific effects, the model was further stratified for developed and emerging market economies. The model employed for this study is summarized as:

$$GDP_{it} = \alpha_i + \gamma_t + \delta_1 (CAP)_{it} + \delta_2 (STV)_{it} + \delta_3 (STR)_{it} + \phi_1 (FDI)_{it} + \phi_2 (M2)_{it} + \varepsilon_{it}$$

In the model, α_i captures country-specific effects, such as initial endowments, while γ_t, represents common period-specific effects, including general technical progress. The term ε_{it} denotes independent disturbances, with subscripts i and t indicating country and time period, respectively. Variables such as GDP reflect the annual growth rate, CAP signifies the value of listed shares divided by GDP, and STV corresponds to the total value of shares traded on the stock market divided by GDP. Additionally, STR represents the value of total shares traded divided by market capitalization, M_2 denotes the average annual growth rate in money supply, and FDI quantifies the amount of foreign direct investment and portfolio inflows and outflows divided by GDP. The fundamental factors serve as the framework on which strong and resilient stock market ecosystems are built, playing a crucial role in shaping investor confidence, market efficiency, and overall economic growth.

Research Outline

Understanding the nature and dynamics of the stock market is the primary goal of this research. To facilitate an efficient evaluation, it is required to employ a certain set of search keys. Choong's (2013) technique selects keywords that address the underlying concept of data.

Literature Search Criteria

The study uses a methodical strategy for literature searches, including electronic database searches and backward and forward reference searches to ensure the inclusion of all relevant works (Eduardsen & Marinova, 2020). The Dimensions bibliometric database, a well-known scholarly resource from Digital Science, is used in the study due to its extensive academic coverage and robust impact statistics (Thelwall, 2018). The study ensures comprehensive coverage of relevant research by identifying key concepts of stock market development keywords and using advanced search queries in VOSviewer, providing the framework for analytical and meaningful findings.

Data Analysis

The data analysis was done using data from 1990 to 2023 with peer-reviewed research papers from the Dimensions database and employing VosViewer for analysis. The data analysis part involves several crucial metrics including co-authorship analysis, citation analysis, bibliographic coupling analysis, and co-citation analysis. The analysis was complemented by the creation of visual bibliometric maps that vividly illustrate the relationships between authors, keywords, and publications, facilitating an in-depth understanding of the field's evolution over time. This comprehensive approach to data analysis enabled the identification of pivotal research, key thematic areas, and significant trends in the study of stock markets, highlighting its development as an economic agency and offering insights into its complex dynamics.

Co-Authorship Analysis

The co-authorship analysis conducted as part of the study reveals complicated patterns of collaboration and scholarly networking within the domain of stock market research from 1990 to 2023. Utilizing VosViewer for visualization, this analysis highlighted the dense networks of authors, institutions, and countries that have joined together around key themes and questions in stock market studies, indicating a vibrant community of collaboration. By mapping these connections, we gained insights into the central figures who play pivotal roles in advancing research through joint efforts, as well as the geographical and institutional landscapes of collaboration.

Co-Authorship- Authors

The co-authorship analysis done for the study on our research, with specific parameters- a maximum of 25 authors per document, a minimum of one document and one citation per author, and a selection of 1,000 authors aims to map the collaboration patterns among scholars. This approach enables the identification of key authors and their networks. It highlights the most influential contributors and the dynamics of scholarly collaboration within the field. By setting these criteria, the analysis offers a broad yet focused overview of the academic landscape, highlighting the interconnectedness of researchers and their collective impact on advancing stock market studies. We have tabulated the top 20 authors with the highest total link strength. However, the map is provided for all the 1000 authors selected.

Table 1: *Co-Authorship- Authors Analysis*

Rank	Author	Documents	Citations	Total Link Strength
1	Folke, Carl	3	1182	63
2	Osterblom, Henrik	4	643	45
3	Lubchenco, Jane	3	1865	44
4	Daily, Gretchen C.	2	982	43

| Rank	Author	Documents	Citations	Total Link Strength
5	Polasky, Stephen	2	982	43
6	Rockström, Johan	2	982	43
7	Galaz, Victor	3	534	42
8	Mccormack, Phillipa C.	2	79	42
9	Novaglio, Camilla	2	79	42
10	Crona, Beatrice I.	3	509	41
11	Carpenter, Stephen R.	2	486	41
12	Gordon, Line J.	2	486	41
13	Levin, Simon A.	2	486	41
14	Scheffer, Marten	2	486	41
15	Walker, Brian H.	2	486	41
16	Adriaanse, Paulien	2	17	40
17	Aldrich, Annette	2	17	40
18	Berny, Philippe	2	17	40
19	Coja, Tamara	2	17	40
20	Duquesne, Sabine	2	17	40
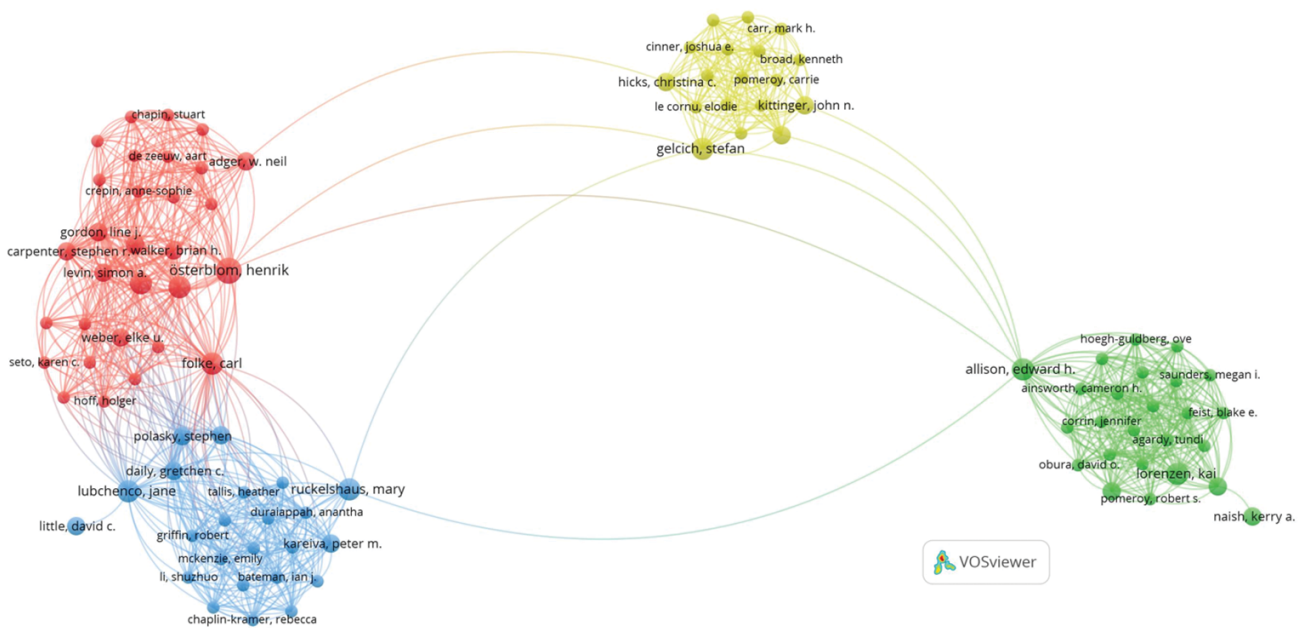
Figure 2: *Bibliometric Map of Co-authorship Authors from VosViewer using author names.*

Co-Authorship- Organizations

The organization-based co-authorship analysis, drawing on data from 1990 to 2023, focuses on mapping the collaborative networks among institutions involved in stock market research. By setting the parameters to include a maximum of 25 organizations per document, at least one document, and one citation per organization, and selecting 1,000 organizations for analysis, this approach comprehensively captures the state of institutional collaboration. This methodology allows for the identification of leading organizations that play pivotal roles in the research community by facilitating an understanding of how knowledge and expertise in the field are distributed across various institutions. Table 2 shows the top 20 organizations with the highest total link strength, as well as their publications and citations.

Table 2: *Co-Authorship- Organizations Analysis*

| Rank	Organization	Documents	Citations	Total Link Strength
1	Stanford University	22	3317	144
2	Stockholm University	21	3211	127
3	University of Queensland	28	1534	126
4	Imperial College London	24	1694	123
5	University of Oxford	35	1414	122
6	Harvard University	29	2752	119
7	University of Washington	21	1932	115
8	University of York	16	527	110
9	University of Western Australia	9	647	90
10	University of California, Davis	15	1412	88
11	Mayo Clinic	7	298	88
12	University of British Columbia	21	1208	85
13	Royal Swedish Academy of Sciences	10	2873	83
14	University of Copenhagen	15	742	82
15	University of Exeter	18	1028	79
16	Wageningen University & Research	14	3065	77
17	London School of Hygiene & Tropical Medicine	17	935	77
18	University of Technology Sydney	15	1144	75
19	University of Calgary	8	323	75
20	The Nature Conservancy	10	1176	74
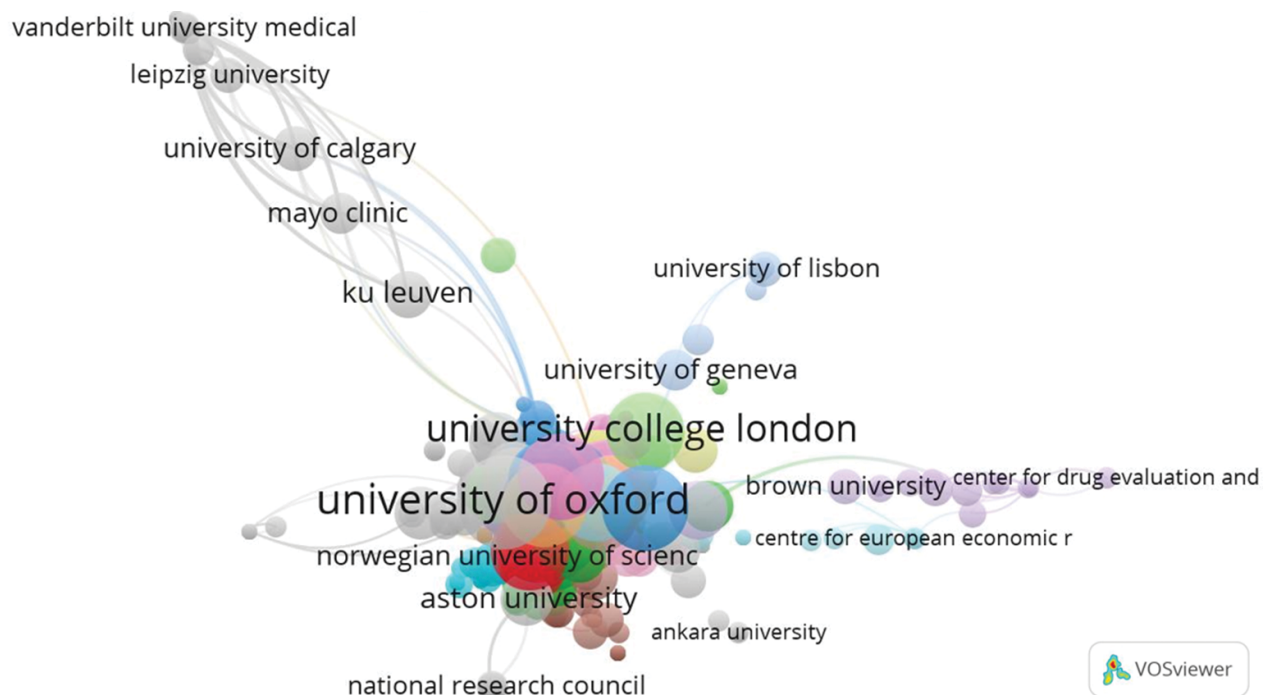
Figure 3: *Bibliometric Map of Co-authorship Organizations from VosViewer using Organization Names.*

Co-Authorship- Countries

The co-authorship analysis focusing on countries, utilizing data spanning from 1990 to 2023, aims to explain the global collaboration network in stock market research. By applying criteria that include up to 25 countries per document, with each country having at least one document and one citation, and examining 125 countries,

this analysis provides a panoramic view of international research partnerships and contributions. This approach identifies key countries leading in stock market studies and highlights the global nature of scholarly collaboration. It further illustrates how nations contribute to and share in the collective knowledge pool of financial markets. It showcases the extent of cross-border academic partnerships, reflecting the worldwide effort to understand and analyze stock market dynamics. Table 3 shows the top 20 countries by total link strength, as well as their publications and citations.

Table 3: *Co-Authorship- Countries Analysis*

| Rank	Country	Documents	Citations	Total Link Strength
1	United States	688	28904	814
2	United Kingdom	435	22313	797
3	China	495	11631	393
4	Australia	191	8879	381
5	Germany	147	7171	363
6	Canada	158	6422	294
7	Switzerland	81	3276	267
8	France	89	5186	264
9	Sweden	71	7009	259
10	Italy	114	3918	242
11	India	138	3354	241
12	Netherlands	91	6094	201
13	Norway	51	1843	201
14	Malaysia	73	2028	177
15	South Africa	62	3364	153
16	Spain	68	3317	140
17	Belgium	40	2427	135
18	Denmark	44	2348	130
19	Japan	38	1355	122
20	Pakistan	76	1537	117
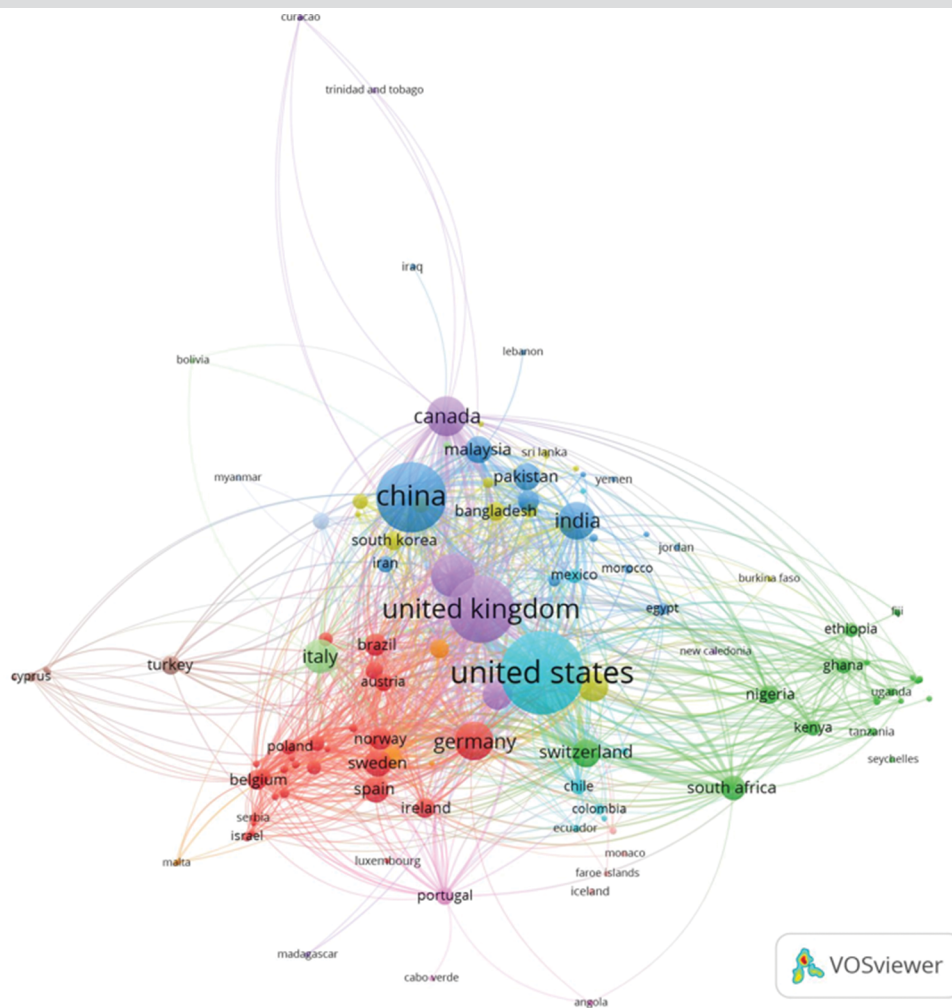
Figure 4: *Bibliometric Map of Co-authorship Countries from VosViewer using Country Names.*

Citation Analysis

Citation analysis in the context of our study on "Nature and Dynamics of Stock Market as an Economic Agency" serves as a powerful tool to evaluate the impact and influence of scholarly work within the field. By examining the patterns of citations received by peer-reviewed articles from 1990 to 2023, this analysis helps identify the most seminal works and authors in stock market research. It focuses on which studies have had the greatest influence in shaping understanding and discussions about the stock market as an economic entity.

Citation Analysis- Authors

The citation analysis- authors within the realm of stock market research from 1990 to 2023, is designed to assess the impact and reach of researchers' contributions in the field. By setting the parameters to include up to 25 authors per document, requiring at least one document and one citation per author, and analysing 1,000 authors, this analysis offers a comprehensive overview of the most influential voices in stock market studies. This approach enables the identification of authors whose work has significantly shaped academic and practical understanding of stock markets, by quantifying the extent to which their research has been acknowledged and referenced. Table 4 shows the top 20 authors with the highest number of citations and publications.

Table 4: *Citation Analysis- Authors*

Rank	ID	Author	Documents	Citations	Total Link Strength
1	5270	Lubchenco, Jane	3	1865	121

| Rank	ID	Author	Documents	Citations	Total Link Strength
2	2781	Folke, Carl	3	1182	201
3	7125	Pretty, Jules	1	1126	1
4	1971	Daily, Gretchen C.	2	982	99
5	7053	Polasky, Stephen	2	982	99
6	7567	Rockström, Johan	2	982	99
7	8946	Troell, Max	2	946	24
8	994	Boatman, N.D	1	944	0
9	1070	Borralho, R.J.	1	944	0
10	1402	Carvalho, C. Rio	1	944	0
11	2432	Eden, P	1	944	0
12	8329	Snoo, G.R.De	1	944	0
13	8495	Stoate, C	1	944	0
14	5100	Little, David C.	2	891	22
15	1263	Buschmann, Alejandro H.	1	883	22
16	1265	Bush, Simon R.	1	883	22
17	1362	Cao, Ling	1	883	22
18	3466	Hardy, Ronald W.	1	883	22
19	4523	Klinger, Dane H.	1	883	22
20	6284	Naylor, Rosamond L.	1	883	22
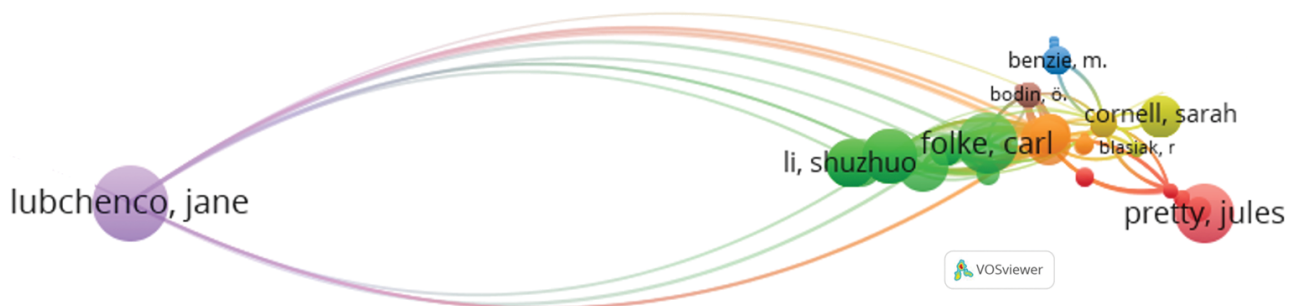
Figure 5: *Bibliometric Map of Citation Analysis- Authors from VosViewer using Author's Names.*

Citation Analysis- Organizations

The citation analysis focusing on organizations involved in stock market research by utilizing data from 1990 to 2023, aims to map the influence and scholarly impact of institutions within this field. By setting the analysis parameters to allow for a maximum of 25 organizations per document, and requiring at least one document and one citation per organization with a total of 1,000 organizations analyzed, this approach provides a comprehensive view of the academic and practical contributions made by various institutions. This methodology enables the identification of organizations whose research outputs have been most cited and, therefore, most influential in shaping the discourse and understanding of stock market dynamics. Table 5 lists the top 20 organizations with the highest total link strength, citations, and publications.

Table 5: *Citation Analysis- Organizations*

Rank	ID	Organization	Documents	Citations	Total Link Strength
1	2841	Stockholm University	21	3211	320
2	2823	Stanford University	22	3317	262
3	2560	Royal Swedish Academy of Sciences	10	2873	236
4	3581	university of wisconsin–madison	11	967	174

| Rank	ID	Organization	Documents	Citations	Total Link Strength
5	2325	Oregon State University	8	2505	150
6	3673	Wageningen University & Research	14	3065	146
7	3456	University of Queensland	28	1534	114
8	1257	Harvard University	29	2752	110
9	3602	Université Catholique de Louvain	5	627	110
10	3434	University of Oxford	35	1414	101
11	2953	The Nature Conservancy	10	1176	96
12	851	Duke University	12	927	96
13	1396	Imperial College London	24	1694	95
14	3572	University of Washington	21	1932	94
15	2424	Princeton University	9	538	94
16	3514	University of Technology Sydney	15	1144	83
17	3219	University of Cambridge	13	1155	81
18	1692	Jiangsu University	24	462	79
19	3790	Yale University	24	1410	78
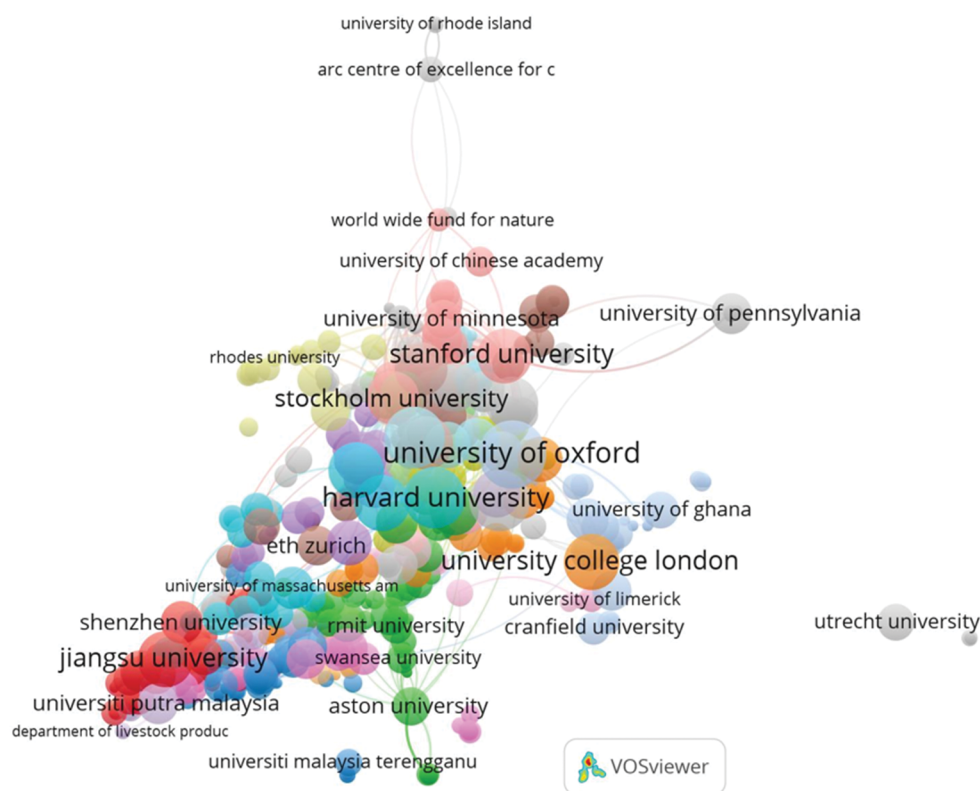
Figure 6: *Bibliometric Map of Citation Analysis- Organizations from VosViewer using Organization Names.*

Citation Analysis- Countries

The citation analysis based on countries, analyzing data from 1990 to 2023 within the field of stock market research, seeks to evaluate the global impact and contribution of countries to the scholarly discourse on stock markets. By applying parameters that permit up to 25 countries to be represented in each document, requiring at least one document and one citation per country, and focusing on 125 countries, this analysis provides a broad overview of the international influence and collaboration in stock market studies. This approach identifies countries whose academic and research institutions have produced highly cited work, indicating a significant contribution to the

advancement and understanding of stock market mechanisms and their economic implications. Table 6 shows the top 20 countries with the highest total link strength, papers, and citations.

Table 6: *Citation Analysis- Countries*

| Rank	ID	Country	Documents	Citations	Total Link Strength
1	122	United States	688	28904	569
2	121	United Kingdom	435	22313	516
3	5	Australia	191	8879	313
4	23	China	495	11631	311
5	110	Sweden	71	7009	242
6	21	Canada	158	6422	157
7	79	Netherlands	91	6094	149
8	43	Germany	147	7171	139
9	48	India	138	3354	123
10	69	Malaysia	73	2028	123
11	40	France	89	5186	112
12	54	Italy	114	3918	100
13	105	South Africa	62	3364	97
14	9	Belgium	40	2427	91
15	111	Switzerland	81	3276	78
16	31	Denmark	44	2348	78
17	87	Pakistan	76	1537	63
18	56	Japan	38	1355	60
19	107	Spain	68	3317	59
20	85	Norway	51	1843	57
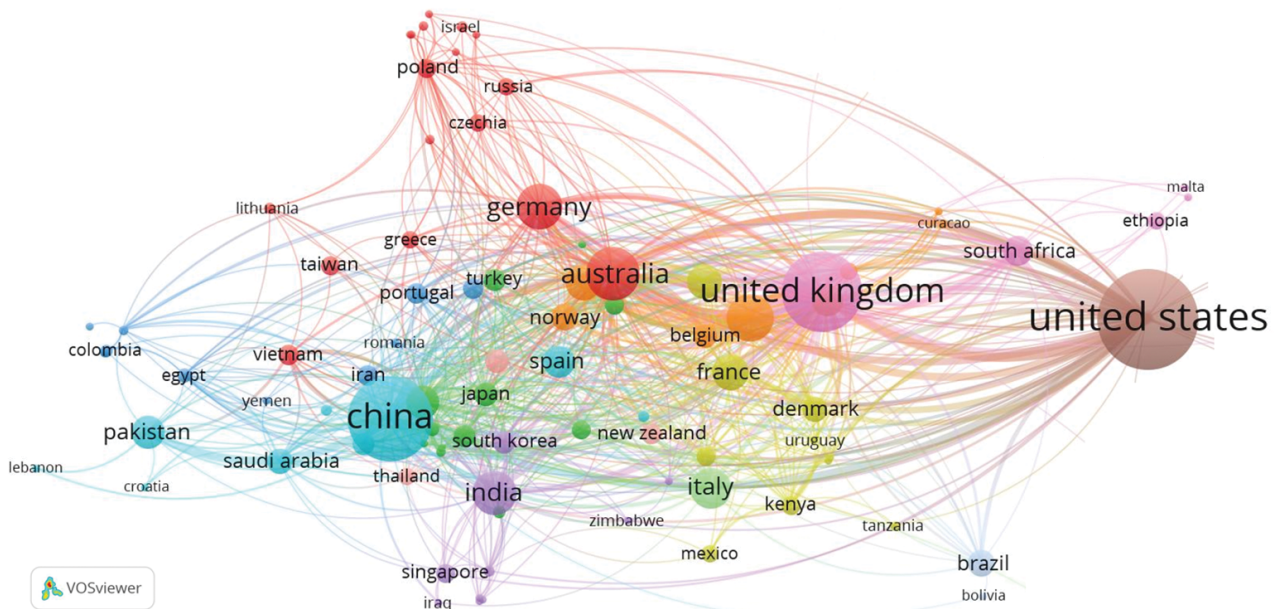
Figure 7: *Bibliometric Map of Citation Analysis- Countries from VosViewer using Country Names.*

Bibliographic Coupling

Bibliographic coupling in the context of research on "Nature and Dynamics of Stock Market as an Economic Agency" involves analyzing documents that cite common references, indicating a thematic or methodological similarity between the works. Bibliographic coupling, for our study, can highlight emerging trends, key themes,

and methodological approaches within the stock market research domain, revealing the evolution of thought and areas of concentrated inquiry.

Bibliographic Coupling- Authors

In the bibliographic coupling analysis with a focus on authors within the domain of stock market research, specific parameters are set to explore the connections based on shared references in their publications. This analysis, covering data from 1990 to 2023, sets a framework where up to 25 authors can be included per document, and each author must have at least one document and one citation to their name, with a total of 1,000 authors selected for the study. This approach enables the identification of authors who base their work on similar foundational literature, thus revealing clusters of researchers working within interconnected thematic or methodological realms. Table 7 lists the top 20 authors by total link strength, publications, and citations.

Table 7: *Bibliographic Coupling- Authors*

| Rank	ID	Author	Documents	Citations	Total Link Strength
1	2781	Folke, Carl	3	1182	14173
2	5270	Lubchenco, Jane	3	1865	13628
3	10292	Osterblom, Henrik	4	643	13315
4	2907	Galaz, Victor	3	534	12303
5	1885	Crona, Beatrice I.	3	509	11886
6	1390	Carpenter, Stephen R.	2	486	11691
7	3168	Gordon, Line J.	2	486	11691
8	4919	Levin, Simon A.	2	486	11691
9	7909	Scheffer, Marten	2	486	11691
10	9300	Walker, Brian H.	2	486	11691
11	1971	Daily, Gretchen C.	2	982	11522
12	7053	Polasky, Stephen	2	982	11522
13	7567	Rockström, Johan	2	982	11522
14	9491	Weber, Elke U.	2	286	9100
15	1501	Chapin, F. Stuart	1	286	9038
16	2014	Dasgupta, Partha	1	286	9038
17	2893	Gaffney, Owen	1	286	9038
18	3702	Hoff, Holger	1	286	9038
19	4761	Lamont, Michèle	1	286	9038
20	8012	Seto, Karen C.	1	286	9038
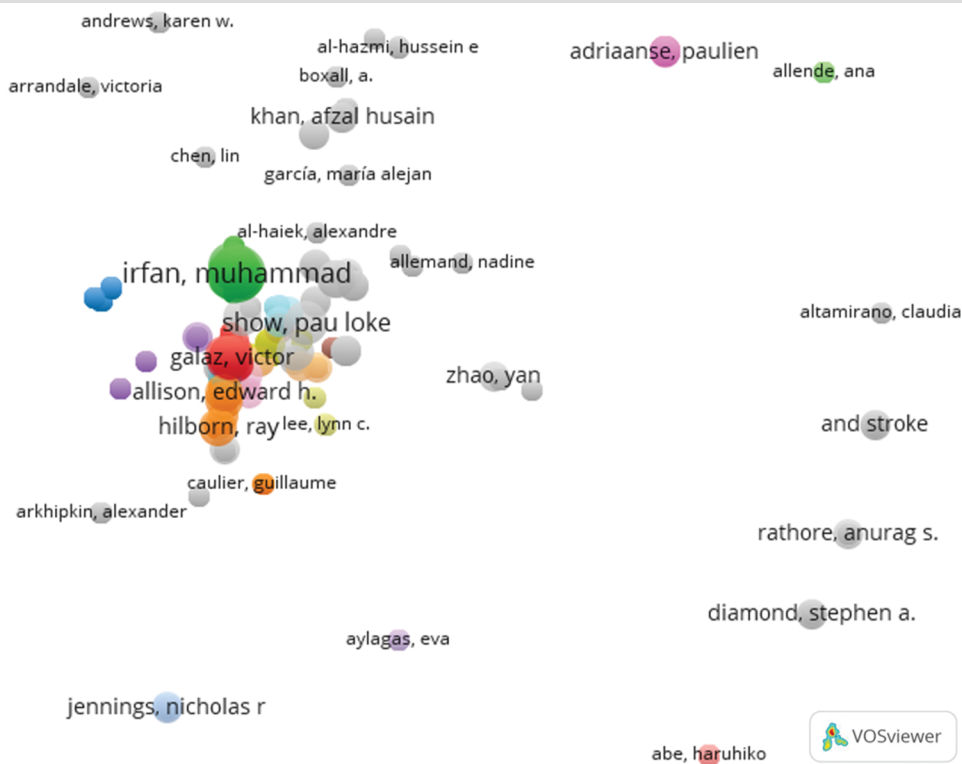
Figure 8: *Bibliographic Coupling- Authors*

Bibliographic Coupling- Organizations

In the bibliographic coupling, analysis focused on organizations engaged in stock market research, the chosen parameters are designed to explain the scholarly connections between institutions based on the common references cited in their publications. This analysis, which spans from 1990 to 2023, incorporates up to 25 organizations per document, with a minimum requirement that each organization is associated with at least one document and one citation, examining a total of 1,000 organizations. This method reveals the research networks formed by organizations that draw on similar foundational works, highlighting how these institutions contribute to shared areas of interest within the stock market domain. The top 20 organizations with the highest number of citations, publications, and total link strength are shown in Table 8.

Table 8: *Bibliographic Coupling- Organizations*

Rank	Organization	Documents	Citations	Total Link Strength
1	Stanford University	22	3317	23934
2	Stockholm University	21	3211	26714
3	Wageningen University & Research	14	3065	17514
4	Massachusetts Institute of Technology	14	2934	5840
5	Royal Swedish Academy of Sciences	10	2873	19496
6	Harvard University	29	2752	19585
7	Oregon State University	8	2505	15183
8	University of Vermont	7	2106	5386
9	Leiden University	9	2080	5304
10	University of Washington	21	1932	10592
11	Imperial College London	24	1694	11759
12	University College London	24	1572	6653
13	University of Queensland	28	1534	20145

Rank	Organization	Documents	Citations	Total Link Strength
14	University of Michigan–Ann Arbor	14	1427	8046
15	University of Oxford	35	1414	16377
16	University of California, Davis	15	1412	14183
17	Yale University	24	1410	13628
18	Shanghai Jiao Tong University	10	1270	6309
19	Colorado State University	10	1230	13233
20	University of Helsinki	8	1228	4385

Figure 9: *Bibliometric Map of Bibliographic Coupling- Organizations from VosViewer using Organization Names.*

Bibliographic Coupling- Countries

In the bibliographic coupling analysis focusing on countries in the context of stock market research, the methodology employs specific criteria to explore scholarly linkages based on the common literature cited across different countries' publications. This analysis covers research from 1990 to 2023 and allows for up to 25 countries to be associated with each document. Each country must have contributed to at least one document and received at least one citation, with an analysis encompassing up to 125 countries. This approach identifies the interconnectedness of research efforts at the national level, revealing how countries are intellectually linked through their reliance on similar foundational studies. It highlights the global collaboration and knowledge exchange networks, showcasing countries that frequently appear together in bibliographic couplings as leaders in certain areas of stock market research. The top 20 countries with the highest total link strength, most papers, and citations are shown in Table 9.

Table 9: *Bibliographic Coupling- Countries*

Rank	ID	Country	Documents	Citations	Total Link Strength
1	96	United States	686	5472	60369
2	15	China	527	3738	49221
3	95	United Kingdom	223	2322	42701
4	3	Australia	150	1514	32548
5	41	Italy	127	1115	28307
6	35	India	189	2335	27255
7	82	Spain	83	1012	20582
8	53	Malaysia	83	1224	17781
9	70	Portugal	38	222	16233
10	74	Saudi Arabia	108	667	15717
11	64	Pakistan	91	781	15578
12	13	Canada	121	1338	14236
13	71	Qatar	19	176	13391
14	20	Denmark	27	224	13114
15	28	Germany	78	678	11517
16	81	South Korea	87	557	11307

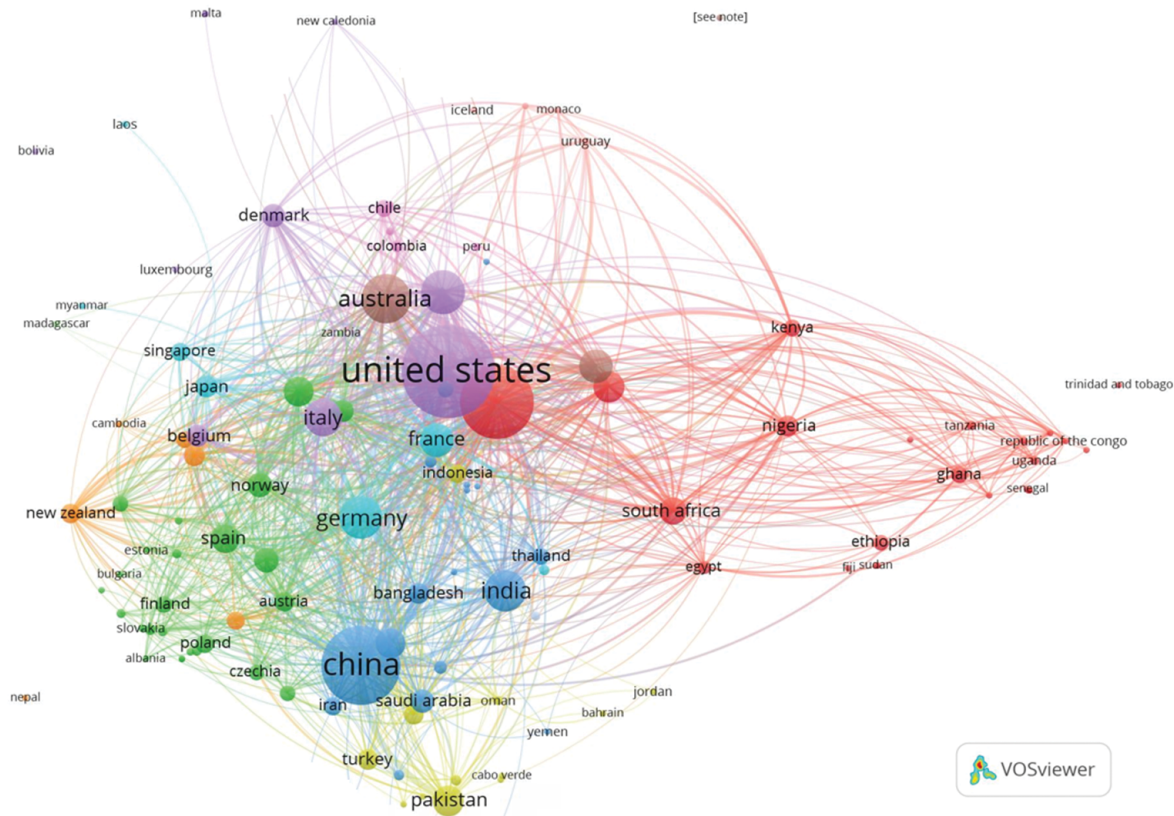| Rank	ID	Country	Documents	Citations	Total Link Strength
17	26	France	59	615	10306
18	59	Netherlands	48	499	8862
19	87	Taiwan	44	352	8660
20	91	Turkey	46	384	6689

Figure 10: *Bibliometric Map of Bibliographic Coupling- Countries from VosViewer using Country Names.*

Results and Discussions

The results from the bibliometric and bibliographic coupling analysis reveal significant insights into the nature and dynamics of stock market research from 1990 to 2023. The co-authorship analysis highlighted extensive collaboration networks, identifying key authors, organizations, and countries that have been pivotal in advancing stock market studies. It was observed that collaboration is not only prevalent but also spans across geographical boundaries, indicating a robust global research community focused on stock markets. Citation analysis further underscored the influence of certain seminal works and authors, with a select group of studies receiving widespread recognition across the field, shaping the academic discourse on stock markets. Bibliographic coupling, on the other hand, offered a subtle view of the research landscape, showing how studies are interconnected through shared references, revealing clusters of research focused on specific themes such as market efficiency, regulatory impacts, and technological advancements in trading. These thematic clusters suggest a convergence of research interests over time, highlighting areas of intense scholarly focus and potential gaps for future research.

A Framework for Stock Market Development and Operations

The stock market operates as a fundamental marketplace where the dynamics of supply and demand intersect, influencing its growth and development. While supply and demand form the foundational elements, additional factors are essential for a well-developed stock market to thrive. El-Wassal's (2013) framework for stock market development identifies four broad factors: supply factors, demand factors, institutional factors, and economic
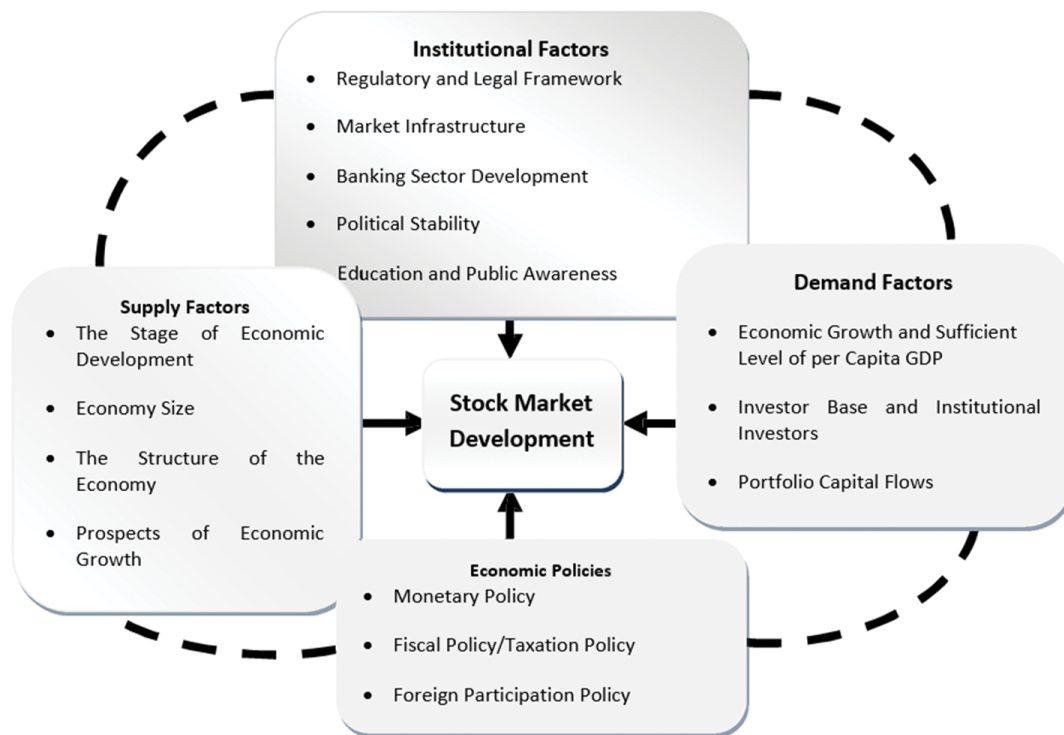
policies.

Figure 11: *Framework for Stock Markets Development and Operations (El-Wassal, 2013)*

Supply Factors

The decision of firms to issue shares and enter the stock market is influenced by various costs and governance requirements. Issuing equity incurs costs such as dividends, expected returns for investors, and issuance costs, alongside additional governance and transparency demands. Macro factors impacting share supply include:

a. **Stage of Economic Development:** Underdeveloped economies face challenges such as volatile investment environments, weak institutions, and low per capita income, hindering stock market development (Atkeson et al., 2017; Adhikari et al., 2021).

b. **Size of the Economy:** The viability of a stock market depends on the economy's size, with smaller economies potentially lacking the critical mass for deep and liquid markets (Adelegan & Radzewicz-Back, 2009).

c. **Economic Structure:** Economic composition influences stock market development, with economies dominated by small enterprises favoring banking finance over equity issuance (Roc, 1996).

d. **Economic Growth Prospects:** Positive economic growth rates stimulate company expansion, encouraging equity issuance and increasing share supply (Sudweeks, 1989; Ahn et. al., 2015).

Demand Factors

Investors drive the demand side of the stock market, seeking higher returns, transparent information disclosure, and liquidity (Acharya et al., 2017). Macroeconomic factors influencing demand include:

a. **Economic Growth and Per Capita GDP:** Higher economic growth rates and per capita GDP levels expand the investor pool, enhancing liquidity and attracting more companies to list shares (Roc, 1996).

b. **Investor Base and Institutional Investors:** A diversified investor base, including institutional investors, fosters market competition, enhances liquidity, and promotes price discovery (Ong & Iorgova, 2008). The composition of the investor base depends on public policy decisions and requires structural, fiscal, and

regulatory changes, closely tied to a country's financial system's sophistication and development (Árvai & Heenan, 2008).

c. **Portfolio Capital Flows:** Foreign participation in stock markets improves market efficiency through institutional and regulatory reforms and enhances liquidity, although with considerations for volatility (Errunza, 2002; Ahn et al., 2015). Additionally, the development of the banking sector and the presence of a bond market significantly influence both supply and demand for shares.

Institutional Factors

Institutional factors constitute the bedrock of stock market development, encompassing regulations, governance standards, and infrastructure crucial for market efficiency and investor confidence. These factors play a pivotal role in shaping the operational landscape of stock markets, facilitating transparency, reducing transaction costs, and enhancing market liquidity, thereby fostering a conducive environment for firms seeking financing and investors seeking returns. Institutions, comprising regulatory frameworks, legal systems, and market infrastructure, exert substantial influence on stock market dynamics (North & Weingast, 1989). Their impact is twofold: fostering economic growth and promoting investor confidence. A robust regulatory and legal framework is fundamental, ensuring transparency, fair trading, and investor protection across various market segments (Billmeier & Massa, 2007). Such frameworks encompass mechanisms for issuer disclosure, intermediary regulation, and corporate governance standards, critical for maintaining market integrity and investor trust. Key components within institutional factors include:

a. **Regulatory and Legal Framework:** Effective regulations govern the conduct of market participants, ensuring fair practices, transparency, and accountability. Regulatory bodies oversee public issuers, market intermediaries, customer satisfaction, and asset management products, safeguarding investor interests and market stability (Elliott & Carvajal, 2007; Ghimire & Karki, 2022). Shareholder protection laws and corporate governance standards are pivotal, minimizing risks of market manipulation and ensuring management accountability (Shleifer & Vishny, 1986; La Porta et al., 1999, 2006; Claessens et al., 2007). Additionally, a supportive infrastructure for contract enforcement and dispute resolution reinforces investor confidence and market credibility (Rubio, 2001; Bhattarai et al., 2020).

b. **Market Infrastructure:** A robust financial infrastructure is indispensable for seamless securities trading, clearing, and settlement. Efficient payment systems, modern trading platforms, and reliable credit-rating agencies enhance market efficiency and liquidity even in times of pandemics and disasters (Árvai & Heenan, 2008, Karki, 2020, 2022). Moreover, intermediaries such as dealers and brokers play a crucial role in facilitating share exchange, attracting liquidity, and promoting market depth (Chami et al., 2010). Electronic trading systems and credit-rating agencies boost transparency and accessibility, fostering investor participation and market vibrancy (Jain, 2005).

c. **Other Institutional Factors:** The development of the banking sector is intricately linked with stock market growth, offering complementary financial services and bolstering overall market development (Allen et al., 2012, Yadav et al., 2019). Political stability is imperative, as instability can undermine investor confidence and deter long-term investments (Roc, 1996). Moreover, education and public awareness campaigns contribute to investor confidence by fostering financial literacy and market understanding (Roc, 1996; Maharjan et al., 2022). Access to quality information and the encouragement of new companies to enter the market are also crucial for market vibrancy and investor trust (Roc, 1996; Chami et al., 2010). Further, the dominance of family business can limit the supply of shares available on the stock market, potentially hindering its development (Chami et al., 2010). Policymakers should encourage a continuous influx of new companies into the market.

Economic Policies

Economic policies constitute a vital pillar of stock market development, shaping investor behavior, market dynamics, and overall market efficiency. These policies, spanning monetary, fiscal, institutional investor, and

foreign participation domains, play a pivotal role in fostering a conducive environment for robust stock market growth and stability.

a.   **Monetary Policies:** Prudent monetary policies are essential for promoting stock market development by ensuring economic stability and mitigating information asymmetry during periods of macroeconomic volatility (Sun, 2013). Interest rates, influenced by monetary policies, significantly impact equity attractiveness in investors' portfolios. Real returns on equities, relative to other investment options, are crucial for investor participation. Stable and low inflation rates bolster investor confidence and attract both domestic and foreign investors (Adjasi & Yartey, 2007; Bhandari et al., 2021). Moreover, rational exchange rate policies are vital for attracting foreign portfolio investment and ensuring market stability.

b.   **Fiscal/Taxation Policies:** Taxation policies exert a substantial influence on investor behavior in stock markets by affecting after-tax returns. Uneven tax structures can divert investor interest away from equities towards alternative investments. Prudent corporate tax policies are critical for stock market development, as excessive taxation can diminish after-tax profits available for dividends, thereby discouraging investor participation (Sudweeks, 1989; Bao et al., 2016). Additionally, tax incentives for going public can incentivize companies to list, thereby expanding the equity supply.

c.   **Institutional Investors Policy:** Institutional investors, such as mutual funds and pension funds, play a significant role in stock market development, subject to policies governing their operations. Restrictions on institutional investment options or portfolio allocations can hinder stock market growth (Sudweeks, 1989; Chen et al., 2017). Balancing institutional presence with investor protection safeguards is essential for fostering market development.

d.   **Foreign Participation Policy:** Foreign portfolio investment plays a crucial role in enhancing stock market liquidity, broadening the investor base, and reducing the cost of capital for local companies (Stulz, 1999; Errunza, 2002). Liberalizing stock markets can lead to increased share prices and improved information availability (Kim & Singal, 2000; Edison & Warnock, 2008; Bae et al., 2006). However, policies must ensure investor protection and mitigate currency risk to attract foreign investment sustainably (Sudweeks, 1989; Atkeson et al., 2017).

While these factors significantly contribute to stock market development, it's essential to acknowledge the market's inherent complexity and unpredictability. The multifaceted nature of the stock market, coupled with various investor types and market dynamics, underscores the importance of adaptive policymaking (Levy et al., 1995). Thus, policymakers must navigate this complexity diligently to foster a resilient and thriving stock market ecosystem. These factors form the cornerstone of stock market development, providing the necessary framework for market integrity, investor protection, and efficient operation. By fostering transparency, accountability, and investor confidence, robust institutions pave the way for vibrant and resilient stock markets, driving economic growth and prosperity.

Conclusion

This study emphasizes the significance of integrating a bibliometric analysis framework into the study of stock market dynamics. This approach has provided a detailed understanding of the research area, identifying key trends, research gaps, and emergent topics within the domain of stock market studies. The use of VosViewer for visual mapping and analysis, together with data extraction from the Dimensions database from 1990 to 2023, has provided a unique perspective of the field. Through visual mapping and analysis of collaboration patterns, citation networks, and thematic clusters, the study highlights the evolving nature of research in this field, underscoring the importance of interdisciplinary collaboration and innovation in addressing complex financial phenomena. The analytical review highlights the fundamental measures of stock market development, encompassing stock market size, liquidity, concentration, linkage to real sector performance, and volatility. The study emphasizes the pivotal role of macroeconomic and institutional factors as primary determinants shaping stock market development dynamics. Aligning with El-Wassal's (2013) framework, the consensus underscores four overarching factors—supply, demand, institutional, and economic policies—as universally acknowledged pillars influencing stock

market evolution. The findings suggest that future research should focus on leveraging diverse methodologies and data sources to further explain the multifaceted relationship between stock market dynamics and economic development. While thematic and bibliometric reviews are robust, this study may be limited as it does not consider other alternative methods like cognitive analysis, which Devkota et al. (2023) propose. However, bibliometric analysis remains essential for its quantitative insights. The integration of bibliometric analysis not only enriches the academic discourse but also offers practical insights for policymakers, investors, and practitioners, guiding informed decision-making and strategy formulation in the face of global financial challenges.

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