

# Mapping Sovereign Wealth Fund Strategies for Energy Transition and Sustainable Development: A Two-Decade Bibliometric Analysis

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## ABSTRACT

This paper provides a systematic overview of the development of scholarly research on SWF strategies by examining key thematic patterns, prominent contributors, institutional involvement, and long-term publication dynamics through a bibliometric lens. The study is based on a dataset of 171 peer-reviewed articles retrieved from the Scopus database, covering the period from 2008 to 2025. Multiple bibliometric techniques including citation analysis, co-citation mapping, bibliographic coupling, co-authorship analysis, and keyword co-occurrence were applied using VOSviewer and the Bibliometrix package to ensure analytical rigor and transparency. The results identify five dominant research clusters within the SWF literature: macroeconomic and political dimensions, ESG and sustainability-oriented strategies, institutional investment behavior, financial performance outcomes, and country-specific or contextual perspectives. Although academic interest in SWFs has grown over time, the literature remains fragmented, with limited international collaboration and insufficient coverage of developing and resource-dependent economies. This study is subject to certain limitations, as it relies solely on publications indexed in the Scopus database, which may result in the underrepresentation of recent high-impact studies due to citation delays or database constraints. Despite these limitations, the findings offer meaningful insights for policymakers, academics, and fund managers by outlining prevailing research trends, identifying underexplored areas, and highlighting opportunities for deeper interdisciplinary and cross-national collaboration. Overall, this study delivers a comprehensive bibliometric synthesis of SWF strategy research and proposes future research directions to support more sustainable and strategically aligned sovereign wealth management practices.

**Keywords:** SWF, Bibliometric Analysis, Scientometrics, VOSviewer, Co-citation Analysis, Investment Strategy

**JEL Classifications:** G23; G11; C88; B40

## 1. INTRODUCTION

Sovereign Wealth Funds (SWFs) have become central actors in contemporary global finance, functioning as government-owned investment vehicles tasked with stewarding national wealth that is commonly derived from natural resource revenues or persistent fiscal surpluses (Griffith-Jones and Ocampo, 2010; Kunzel et al.,

2010). In the aftermath of the 2008 global financial crisis, the role of SWFs has broadened considerably. Beyond their traditional functions of macroeconomic stabilization and intergenerational savings, many funds now actively pursue objectives related to economic restructuring, strategic positioning in global markets, and long-term sustainable development (Aguilera et al., 2015; Lenihan, 2014). By 2025, the combined assets under management

of SWFs exceeded USD 10 trillion, underscoring their growing importance in safeguarding fiscal sustainability, mitigating macroeconomic volatility, and promoting intergenerational equity (Prequin, 2016; Andersen et al., 2025). Parallel to this expansion in practice, scholarly engagement with SWF policies has intensified and diversified over the past two decades. Early academic contributions were largely concerned with the financial behavior of SWFs, particularly their stabilizing and counter-cyclical investment patterns during periods of market distress (Shabbir, 2009; Ciarlone and Miceli, 2016). Over time, however, the literature has shifted toward a more nuanced understanding of SWFs as heterogeneous institutions whose strategies are shaped by differences in governance frameworks, funding sources, political mandates, and domestic socio-economic contexts (Aggarwal and Goodell, 2018; Bodie and Brière, 2013). This evolution reflects growing concerns regarding transparency, accountability, and the tension between financial performance and state-driven strategic objectives (Truman, 2008; Mehrpouya, 2015).

One of the most visible developments in recent SWF scholarship is the increasing emphasis on Environmental, Social, and Governance (ESG) considerations within sovereign investment strategies (Makarenko et al., 2024; Andersen et al., 2025). Prominent funds, notably Norway's Government Pension Fund Global, have emerged as reference points for responsible investment practices by integrating exclusion criteria, active ownership, and public oversight mechanisms into portfolio management (Habermann and Steindl, 2025). Nevertheless, the literature also highlights persistent challenges, including inconsistent ESG disclosure, risks of greenwashing, and difficulties in aligning sovereign investment practices with the broader Sustainable Development Goals (Klein et al., 2024; Farrell and Löw Beer, 2019). In addition to sustainability concerns, the geopolitical implications of SWF activity have attracted growing academic attention. Research focusing on China and Gulf Cooperation Council countries illustrates how SWFs are frequently employed as instruments of economic statecraft, particularly through strategic investments in sectors such as energy, advanced technology, and large-scale infrastructure (Haberly, 2011; Kamiński, 2017). These patterns reveal the dual nature of sovereign capital, which simultaneously seeks financial returns and advances national strategic interests, thereby complicating debates surrounding governance, legitimacy, and market neutrality (Bernstein et al., 2013; Cuervo-Cazurra et al., 2023; Megginson, 2018; Murtinu et al., 2023). Despite the expanding body of literature, methodological limitations remain a recurring concern in SWF research. Scholars frequently point to constraints related to limited data availability, inconsistent definitions of SWFs, and an overreliance on short-term event studies that fail to capture longer-term structural impacts (Martínek, 2021; Alosaimi and Alfraih, 2023). In response, recent studies advocate the adoption of more robust empirical designs, including panel-based approaches, spatial econometric techniques, and dynamic modeling frameworks, to better reflect the complexity and persistence of sovereign investment behavior (Debarsy et al., 2017; Gangi et al., 2019). Against this backdrop, a comprehensive bibliometric investigation is warranted to systematically map the intellectual landscape of SWF strategy research between 2008 and 2025. Bibliometric methods offer a transparent and replicable means

of identifying dominant research themes, tracing their evolution over time, and uncovering collaboration patterns among authors, institutions, and countries (Ouni et al., 2020; Nowacki et al., 2020). Accordingly, this study addresses four core research questions: (1) What thematic trends have characterized SWF strategy research during the period 2008–2025? (2) Which authors, institutions, and countries have played leading roles in shaping this literature? (3) How have citation structures and scholarly collaboration networks evolved over time? and (4) What unresolved gaps and future research directions emerge from the existing body of work? Drawing on Scopus-indexed publications spanning nearly two decades, this study contributes to a deeper understanding of how SWF strategies have adapted to shifting economic environments, geopolitical pressures, and sustainability imperatives. Moreover, the findings provide valuable insights for policymakers, academics, and practitioners by offering a structured evidence base to inform future research agendas and sovereign investment strategies, particularly in resource-dependent economies navigating post-extractive development pathways (Gelb et al., 2014; Mohaddes and Raissi, 2017).

## 2. LITERATURE REVIEW

Over recent decades, SWFs have attracted growing attention from both academics and policymakers as their presence in global financial markets and domestic economic systems has expanded significantly. Operating as state-owned investment entities, SWFs are typically created to manage excess public revenues most commonly derived from hydrocarbons, trade surpluses, or foreign exchange reserves with the aim of supporting long-term fiscal sustainability, economic development, and broader strategic priorities (Rozaanov, 2005; Truman, 2008; Megginson and Fotak, 2015). Reflecting this growing relevance, scholarly investigations into SWF behavior now span multiple disciplines, including finance, economics, international business, political science, and public administration, highlighting the inherently interdisciplinary nature of sovereign investment activities (Clark and Monk, 2010; Balding, 2012; Alhashel, 2015; Bortolotti et al., 2015).

As the volume and diversity of SWF-related research have increased, bibliometric analysis has emerged as a critical methodological approach for tracking the conceptual development of the field. Bibliometric methods employ a combination of statistical and computational techniques to analyze publication outputs, citation relationships, and knowledge flows, thereby offering systematic insights into how scholarly ideas are generated, disseminated, and interconnected (McCain, 1996; Aria and Cuccurullo, 2017; Donthu et al., 2021). Among these approaches, citation analysis remains one of the most widely applied tools, enabling the assessment of research influence through citation frequencies (Culnan, 1987). Complementing this, co-citation analysis explores how often pairs of studies are cited together, providing evidence of shared intellectual foundations and thematic closeness within the literature (McCain, 1990; Ramos-Rodriguez and Ruiz-Navarro, 2004; Zupic and Čater, 2015). Bibliographic coupling represents another key technique in bibliometric research, linking publications based on common reference lists and thereby facilitating the identification of emerging and persistent research

streams (Kessler, 1963). In addition, keyword co-occurrence analysis supports thematic exploration by detecting recurring concepts and research priorities through patterns in author-defined keywords (Pilkington and Liston-Heyes, 1999; Börner et al., 2003). These analytical procedures are frequently operationalized using visualization and analysis tools such as the Bibliometrix package in R and VOSviewer, which assist researchers in examining the intellectual architecture and relational structure of a research domain (van Eck and Waltman, 2010). For SWF studies, such tools are particularly valuable given the sector's intersection with diverse areas including public finance, corporate governance, sustainability, and macroeconomic policy (Börner et al., 2005; Chen et al., 2015).

The robustness and versatility of bibliometric methodologies have been demonstrated across a wide range of academic fields. Prior studies have successfully applied these techniques to synthesize knowledge in strategic management (Nerur et al., 2008), corporate governance (Ferreira et al., 2014), innovation and technological change (Fagerberg et al., 2012), operations management (Pilkington and Meredith, 2009), and public finance research (Merigó et al., 2024; Dzikowski, 2018). Within the context of SWF scholarship, bibliometric analyses have begun to illuminate emerging areas of interest, including environmental, social, and governance (ESG) integration, climate-related financial risks, state capitalism, and questions of institutional legitimacy (Monk, 2009; Clark et al., 2013; Bahoo et al., 2020; Amiri and Majd, 2021). More broadly, bibliometric studies provide a structured means to examine how SWF investment strategies have evolved over time, to map the geographical distribution of academic contributions, and to identify both well-established themes and underexplored research gaps. Seminal works, such as those by Bernstein et al. (2013) and Kotter and Lel (2008), have laid important foundations for understanding governance arrangements, transparency concerns, and ownership structures associated with SWFs. Building on this foundation, more recent scholarship has increasingly focused on the engagement of SWFs with sustainability objectives, digital transformation, and geopolitical considerations, particularly in response to global shocks such as the COVID-19 pandemic (Chhaochharia and Laeven, 2009; Gintschel and Scherer, 2008; Sun and Hesse, 2021; Cuervo-Cazurra et al., 2023). Given the growing scale, diversity, and conceptual complexity of the literature, a comprehensive bibliometric review of SWF strategy research is both timely and necessary. Such an approach offers a systematic framework for evaluating scholarly output, identifying dominant and emerging thematic trajectories, and revealing unresolved gaps in existing research. Accordingly, this study justifies the application of an in-depth bibliometric analysis centered on the strategic dimensions of Sovereign Wealth Funds, drawing on Scopus-indexed publications published between 2008 and 2025 (Johnson-Calari and Rietveld, 2007; Gelb, 2011; Al-Hassan et al., 2013).

### 3. DATA AND METHODOLOGY

#### 3.1. Study Design and Data Collection

The methodological design follows a structured three-stage procedure that is commonly applied in bibliometric research to

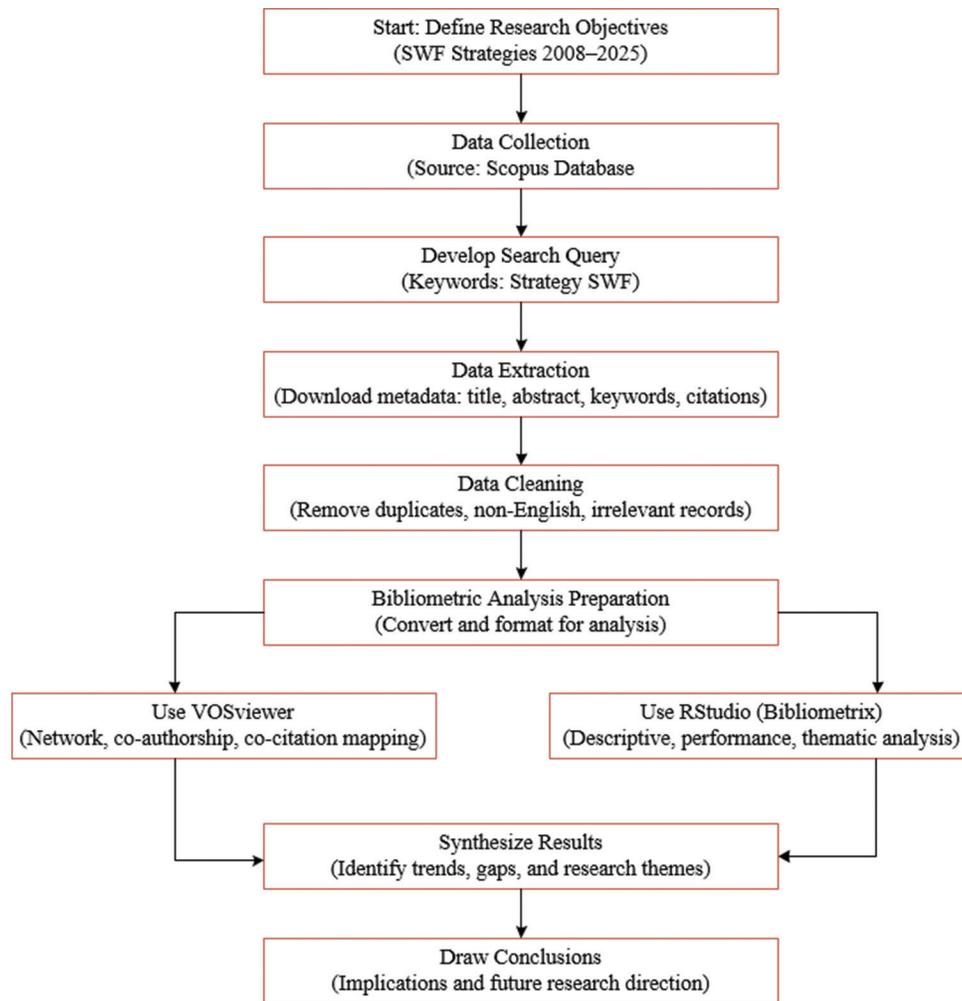
ensure analytical rigor and transparency (Paltrinieri et al., 2019). This approach enables a systematic examination of scholarly contributions related to SWF strategies and policy orientations. The process consists of: (1) Data retrieval and refinement, (2) Data preparation and thematic categorization, and (3) Advanced bibliometric analysis and conceptual visualization. Bibliographic data were collected from the Scopus database through carefully refined keyword searches, including terms such as “*strategy sovereign wealth fund*,” applied to titles, abstracts, and author keywords (Bernstein et al., 2013; Donthu et al., 2021). To enhance dataset quality, duplicate records, non-relevant documents, and non-English publications were removed through a combination of automated filtering procedures and manual screening. In addition, expert judgment was incorporated via a structured brainstorming process to improve keyword precision and ensure conceptual relevance across the dataset (Zhang et al., 2019; Kose et al., 2021). An overview of the research workflow is illustrated in Figure 1, which summarizes the sequential stages from the formulation of research objectives and data extraction, through data cleaning, to the execution of bibliometric analyses using VOSviewer and RStudio-based tools.

#### 3.2. Method Applied

This study adopts a mixed-methods design that combines quantitative bibliometric techniques with qualitative interpretative analysis to organize and interpret the collected data. The analytical framework incorporates several core bibliometric procedures, including citation-based assessment, keyword grouping, and thematic identification through bibliographic coupling and co-citation techniques (Pilkington and Meredith, 2009; Naikosou et al., 2026). In parallel, a spatial analysis was conducted to examine the geographical distribution of scholarly output, allowing the identification of leading countries and regions contributing to SWF research and highlighting both global and region-specific patterns of knowledge production (Rozanov, 2005; Truman, 2008). To explore the underlying intellectual configuration of the field, advanced mapping techniques were employed. These included co-authorship analysis to assess collaboration structures, keyword co-occurrence analysis to reveal dominant and emerging research topics, and network visualization to depict relational patterns within the literature (van Eck and Waltman, 2014; Bahoo et al., 2020). In addition, hierarchical clustering methods, operationalized through dendrograms, were used to trace the temporal evolution of research themes. This approach enabled the identification of a shift in scholarly focus from foundational governance and transparency issues toward newer areas such as ESG-oriented investment strategies and technology-enabled sovereign investment practices (Merigó and Yang, 2017; Cuervo-Cazurra et al., 2023).

#### 3.3. Tools of Analysis

The empirical analysis was conducted using three complementary software tools: RStudio, VOSviewer, and Microsoft Excel. RStudio, in conjunction with the Bibliometrix package, served as the primary platform for data processing, computation of bibliometric indicators, and examination of trends related to authorship, sources, and keyword usage (Aria and Cuccurullo, 2017; Donthu et al., 2021; Adityawarman et al., 2025; Magalhaes

**Figure 1:** Research workflow (Mota et al., 2026)

and Mota, 2026). VOSviewer was utilized to generate visual bibliometric networks, including maps of co-authorship, co-citation relationships, and thematic clusters. These visual representations facilitated an intuitive interpretation of structural linkages among authors, institutions, and research themes (van Eck and Waltman, 2010; Börner et al., 2003). Microsoft Excel supported preliminary data preparation, descriptive statistical analysis, and the application of Bradford's Law to identify core journals within the SWF literature. Its use ensured transparency in data handling and provided a practical means of organizing and validating the dataset prior to advanced bibliometric modeling (Zupic and Čater, 2015; Kessler, 1963).

### 3.4. Types of Analysis

To capture a comprehensive picture of the SWF research landscape, the study applied four distinct but complementary bibliometric analyses. First, performance analysis examined publication output and citation trajectories over time to identify the most productive authors, institutions, and countries. Measures of scholarly influence, including the H-index and G-index, were employed to assess author-level impact (Bailey and Katz, 2011; Sun et al., 2021). Second, citation analysis was conducted to determine the most frequently cited documents, authors, and journals, thereby highlighting foundational and highly influential

contributions within the field (Dewenter et al., 2010; Bennedsen and Nicoló, 2017). Third, network-based analysis investigated the structural relationships among publications through co-authorship networks, bibliographic coupling, and co-citation mapping. This approach facilitated the identification of intellectual linkages, collaboration patterns, and thematic cohesion across the SWF research community (Clark and Monk, 2010; Huang and Raghunandan, 2020). Finally, thematic and hierarchical analyses were employed to examine the dynamic evolution of research topics over time. Using dendrogram-based clustering, the study categorized thematic groups and visualized their developmental trajectories, enabling the identification of emerging areas such as sustainability-oriented investment, impact finance, and digitally driven sovereign investment strategies (Bortolotti et al., 2015; Merigó and Yang, 2017).

## 4. RESULTS AND DISCUSSION

The bibliometric analysis is based on a corpus of 171 publications retrieved from the Scopus database, encompassing studies published between 2008 and 2025 (Table 1). These documents are distributed across 136 distinct academic outlets, reflecting the fragmented yet diverse nature of scholarly contributions in the field of SWF strategy research. Such dispersion indicates that the topic

has been addressed from multiple disciplinary and institutional perspectives rather than being concentrated within a limited set of journals. The temporal analysis indicates an average annual publication growth rate of  $-1.68\%$ , pointing to fluctuations and an overall lack of consistent expansion in research output over the examined period. Despite this irregular pattern, the literature demonstrates a relatively high level of academic impact, with an average of 10.11 citations per article. This suggests that, while publication volume has not grown steadily, the contributions that do exist have achieved meaningful visibility and influence within the scholarly community. With respect to authorship patterns, the dataset includes contributions from 303 individual researchers, of which 58 publications are single-authored. The observed international collaboration rate of  $18.13\%$  indicates a moderate degree of cross-border scholarly interaction. Although this level of collaboration reflects some global engagement in SWF strategy research, it also highlights substantial opportunities to strengthen international research networks and foster more extensive collaborative efforts across countries and institutions.

### 4.1. Key Research Themes and Trends (2008-2025)

Figure 2 presents the trajectory of annual scientific output by illustrating the number of publications released each year over the period 2008-2025. The pattern of publication activity is marked by pronounced fluctuations rather than steady growth, indicating variable levels of scholarly attention to SWF strategy research across time. Notable surges in research output are observed in 2011, with 20 published studies, followed by additional peaks in 2016 (12 publications), 2021 (17 publications), and 2023 (15 publications). These intervals correspond to phases of intensified academic focus on SWF-related issues. In contrast, periods of reduced research activity are evident in 2013, when only four

publications were recorded, and in 2019, with five publications. A further decline is projected for 2025, with three publications identified at the time of data collection. Such downturns suggest temporary contractions in scholarly output, which may be attributable to publication lag effects, shifts in research priorities, or changes in the broader academic and policy environment. Despite these short-term variations, the overall trajectory suggests a gradual increase in research production over the longer term. The cyclical nature of the observed trend points to external influences shaping academic engagement, including fluctuations in global financial conditions, evolving investment and fiscal policy debates, and the emergence of new governance and sustainability agendas affecting SWF.

Figure 3 illustrates the yearly average citation counts, highlighting variations in the scholarly impact of publications released between 2008 and 2025. The data reveal pronounced citation peaks in 2013, with an average of 43 citations, and in 2016, with 29 citations, indicating that studies published in these years achieved particularly strong academic visibility and influence. Earlier in the period, publications from 2009 and 2010 also recorded relatively high citation averages of 19 citations each, reflecting sustained scholarly engagement during the initial phase of the timeline. By contrast, several years including 2012, 2018, and 2022 exhibited noticeably lower citation averages, suggesting more limited immediate academic uptake. The absence of citations for publications dated 2024 and 2025 is likely attributable to citation lag, as these works have had insufficient time to be discovered, disseminated, and referenced within the academic community.

Figure 2: Annual scientific production

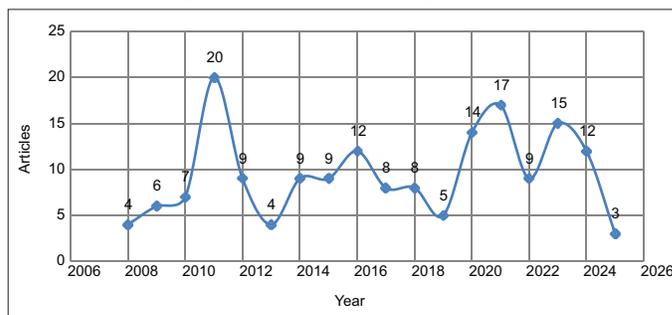


Figure 3: Average citations per year

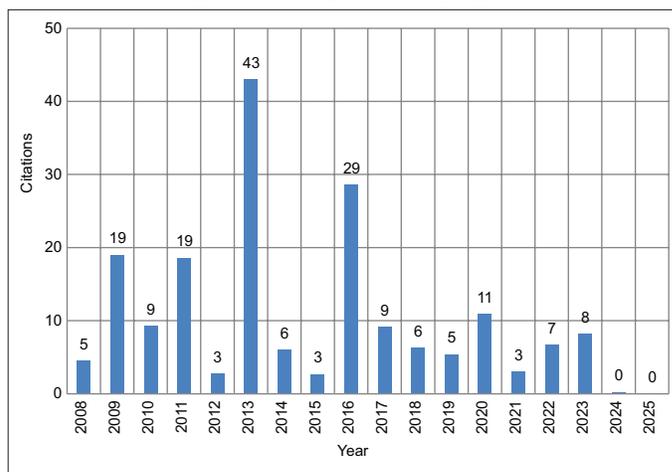


Table 1: Summary of the review

Description	Results
Main information about data	
Timespan	2008-2025
Sources (Journals, Books, etc)	136
Documents	171
Annual growth rate %	-1.68
Document average Age	8
Average citations per doc	10.11
References	8417
Document contents	
Keywords plus (ID)	287
Author's keywords (DE)	501
Authors	
Authors	303
Authors of single-authored docs	58
Authors collaboration	
Single-authored docs	65
Co-Authors per Doc	1.99
International co-authorships %	18.13
Document types	
Article	115
Book	9
Book chapter	24
Conference paper	9
Note	2
Review	11
Short survey	1

Overall, the uneven citation distribution underscores that research impact is concentrated in specific publication years, while more recent contributions have yet to realize their full citation potential.

Figure 4 presents a Three-Field Plot (Sankey Diagram) that visualizes the connections among cited references (CR), authors (AU), and author keywords (DE) within the body of SWF research. The left-hand side of the diagram highlights the most frequently cited foundational works, including studies by Beck and Fidora (2008), Balding (2008), and Aizenman and Glick (2008), which have played a pivotal role in shaping the conceptual development of the field. These references serve as key intellectual anchors that continue to inform subsequent research. The central segment of the diagram features influential authors, such as Legrenzi M. and Scalera V. G., whose scholarly contributions span multiple thematic domains and reflect their sustained engagement with core and evolving issues in SWF studies. Their positioning within the network illustrates how individual researchers act as bridges between foundational literature and diverse research topics. On the right-hand side, dominant research themes are represented by frequently occurring keywords, including *sovereign wealth funds*, *investment strategy*, *governance*, and *corporate transparency*, underscoring the primary analytical focus of the literature. In contrast, emerging topics such as ESG-oriented investment practices and the implications of the COVID-19 pandemic for SWFs appear less prominently, indicating areas that remain comparatively underexplored. Collectively, the figure offers a comprehensive visualization of the intellectual structure of SWF research by linking seminal references, leading contributors, and central thematic concerns, while simultaneously pointing to promising directions for future scholarly inquiry.

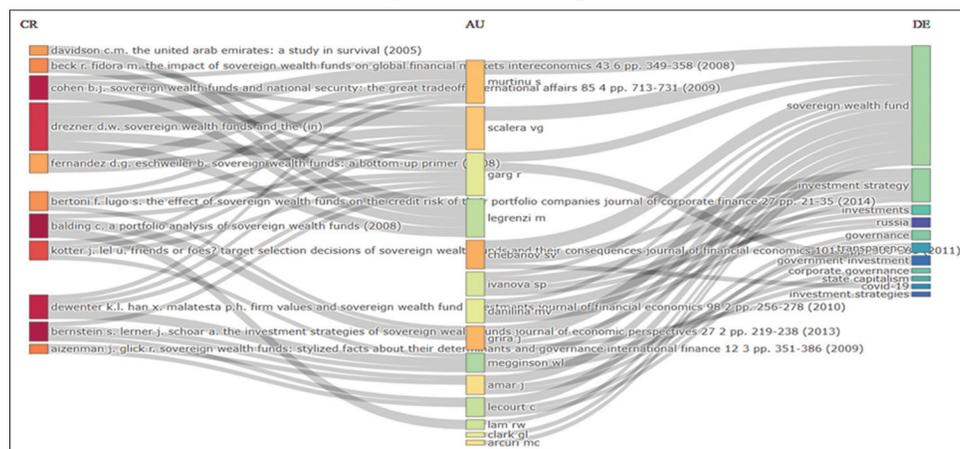
4.1.1. Cartographic analysis (keyword co-occurrence)

The cartographic analysis based on keyword co-occurrence was employed to identify and classify the dominant thematic areas within the literature on SWF strategies. A minimum occurrence threshold of four was applied, resulting in the selection of 27 keywords derived from 27 relevant publications. These keywords were subsequently grouped into five distinct thematic clusters, which are visually represented through different colors red, green, blue, yellow, and purple according to the strength and frequency

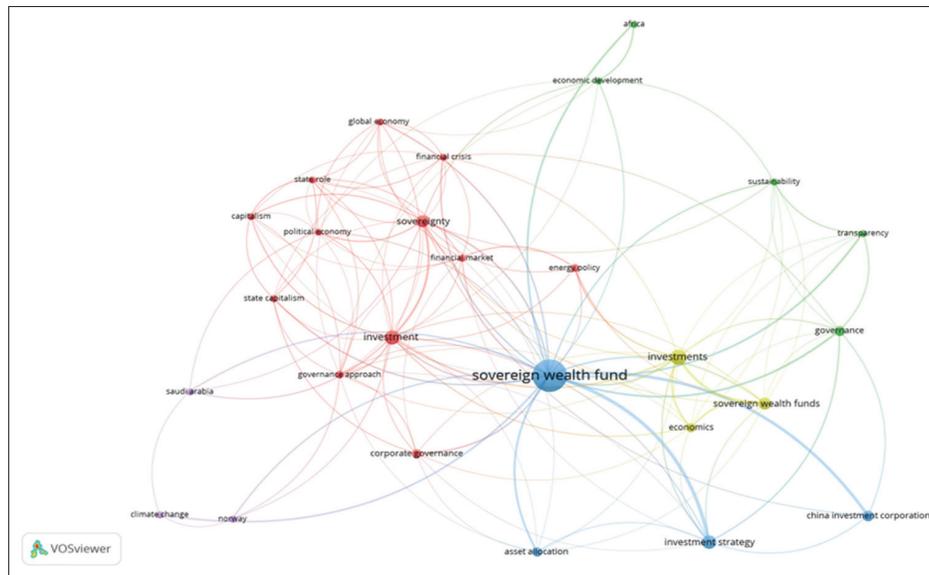
of their co-occurrence relationships. Detailed information on keyword frequency and linkage intensity is provided in Table 5, while Figure 5 and Table 2 illustrate the clustering outcomes for SWF strategy research published between 2008 and 2025. The five clusters collectively reflect the multidimensional structure of the SWF research landscape. Cluster 1 (Red) concentrates on macroeconomic and political dimensions, encompassing topics such as the role of SWFs in global financial markets, governance frameworks, and the dynamics of state capitalism. Cluster 2 (Green) centers on sustainability-oriented themes, linking SWFs to sustainable development objectives and ESG (Environmental, Social, and Governance) considerations, with particular attention to emerging regions, including Africa. Cluster 3 (Blue) focuses on institutional and strategic aspects, highlighting fund-level investment behavior and asset allocation decisions, exemplified by studies on entities such as the China Investment Corporation. Cluster 4 (Yellow) addresses financial performance and broader economic implications, including investment returns and the macroeconomic effects of SWF activities. Lastly, Cluster 5 (Purple) captures country-specific and climate-related issues, illustrating how funds from countries such as Norway and Saudi Arabia engage with environmental and climate challenges. Taken together, these clusters demonstrate the breadth and interconnected nature of SWF scholarship, revealing a balance between well-established research themes and emerging areas of academic interest that continue to shape the evolution of the field.

Figure 6 presents a thematic map that organizes research topics related to SWF strategies according to two key analytical dimensions: thematic density, which reflects the degree of internal development of a research theme, and thematic centrality, which captures its level of connectivity and importance within the broader knowledge domain. Based on these dimensions, the map is structured into four distinct quadrants, each representing a different stage of thematic relevance and maturity. Themes located in the upper-right quadrant, commonly referred to as *motor themes*, represent areas that are both highly developed and strongly connected to the overall research field. In the context of SWF studies, this quadrant includes topics such as governance practices, financial management frameworks, and social responsibility, all of which serve as core pillars shaping the intellectual foundation of the literature. The lower-right quadrant,

Figure 4: Three-field plot



**Figure 5:** Keyword co-occurrence network of SWF strategy literature



**Table 2: Keyword, occurrences and total link strength in SWF strategy research (2008 2025)**

No	Keyword	Occurrences	Total link strength
<b>Cluster 1 (Red): Geopolitics, state capitalism, and global financial dynamics</b>			
1	Capitalism	4	4
2	Corporate governance	6	4
3	Energy policy	5	4
4	Financial crisis	4	4
5	Financial market	4	4
6	Global economy	4	4
7	Governance approach	5	5
8	Investment	15	14
9	Political economy	4	4
10	Sovereignty	11	11
11	State capitalism	4	4
12	State role	4	4
<b>Cluster 2 (Green): Sustainable development and emerging markets</b>			
1	Africa	4	3
2	Economic development	4	3
3	Governance	7	6
4	Sustainability	4	3
5	Transparency	4	4
<b>Cluster 3 (Blue): Institutional strategy and asset allocation</b>			
1	Asset allocation	6	4
2	China investment corporation	8	7
3	Investment strategy	13	12
4	Sovereign wealth fund		
<b>Cluster 4 (Yellow): Financial performance and economic impacts</b>			
1	Economics	6	6
2	Investments	18	15
3	Sovereign wealth funds	11	10
<b>Cluster 5 (Purple): Climate, geography, and country-specific focus</b>			
1	Climate change	4	3
2	Norway	4	3
3	Saudi Arabia	4	4

labeled *basic themes*, encompasses concepts that are central to SWF research but exhibit comparatively lower levels of conceptual development. Topics such as investment activities, sovereign wealth funds as institutions, and broader economic considerations fall within this category, indicating their foundational role alongside continued opportunities for theoretical and empirical refinement. The upper-left quadrant corresponds to *niche themes*, which are characterized by high internal coherence but limited integration with other research areas. This group includes specialized topics such as decision-making processes, country-specific studies focused on Norway, and issues related to social justice. While these themes demonstrate analytical depth, their weaker connections suggest that they remain relatively isolated within the wider SWF research landscape. Finally, the lower-left quadrant represents *emerging or declining themes*, encompassing topics such as cost structures, optimization approaches, and private equity involvement. The positioning of these themes reflects their currently limited development and peripheral role, implying that they may either be gaining initial scholarly attention or gradually losing prominence. Overall, the thematic map offers a comprehensive overview of how key research areas within SWF strategy studies differ in terms of maturity and relevance, providing valuable insights into both established knowledge domains and potential directions for future scholarly inquiry.

Figure 7 displays a word cloud visualizing the 100 most frequently occurring keywords in the SWF literature. Terms such as *investment*, *governance*, and *financial market* appear with the greatest prominence, indicating their central position within the research discourse. The distribution of keywords highlights the wide thematic coverage of SWF studies, encompassing financial analysis, economic considerations, policy-related discussions, and issues of institutional design and management.

**4.2. Influential Authors, Institutions, and Countries**

Table 3 summarizes the ten most highly cited publications within the Sovereign Wealth Fund (SWF) literature. Among these, studies

Figure 6: Thematic map

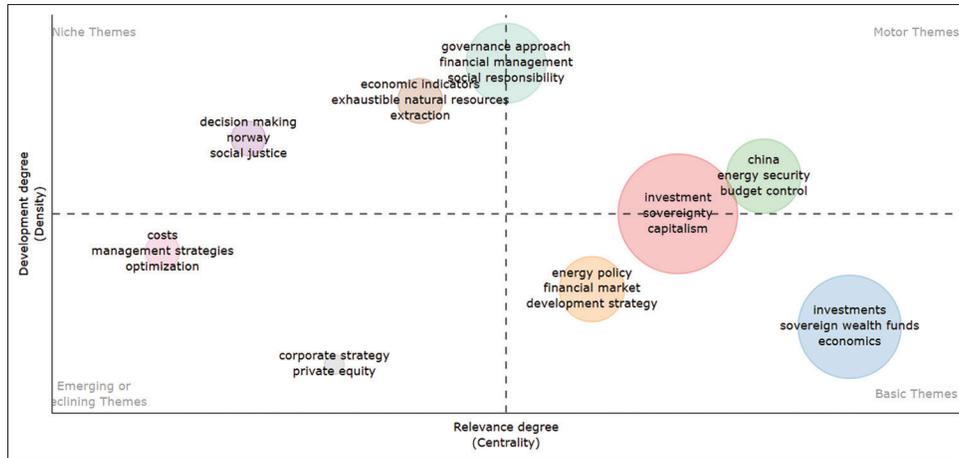


Figure 7: Word clouds of 100 most popular keywords plus



authored by Bernstein et al. (2013), Norris (2016), and Kotter and LeI (2011) emerge as particularly influential, having substantially shaped scholarly discussions on sovereign investment strategies, state ownership structures, and the behavioral characteristics of SWFs. These contributions have served as key reference points for subsequent empirical and conceptual research in the field. Author-level performance indicators are presented in Table 4, including measures such as the H-index and cumulative citation counts. These metrics highlight the academic prominence of scholars such as Grira, Chebanov, and Megginson, whose work demonstrates both sustained research productivity and notable citation impact. Their contributions reflect a combination of theoretical depth and empirical relevance that has resonated strongly within the SWF research community.

Figures 8-10 provide an overview of the primary publication outlets and institutional affiliations associated with SWF research. Although the literature is not dominated by a single journal, outlets such as *Environment and Planning A* and the *International Review of Financial Analysis* have consistently published studies in this domain, as detailed in Table 5. At the institutional level, the

University of Sussex Business School stands out as a significant contributor, reflecting its sustained engagement with issues related to sovereign investment and state-led finance.

The geographical distribution of research output, illustrated in Figures 11 and 12, identifies the United States, the United Kingdom, Italy, and Singapore as leading contributors to the SWF literature. Despite this concentration of scholarly production, citation impact is unevenly distributed across countries. Several nations exhibit relatively high publication volumes but attract more modest citation counts, suggesting variations in research visibility, thematic focus, or integration within the broader international literature.

Figure 8 displays the distribution of the most relevant publication outlets in the SWF literature, illustrating how research on this topic is dispersed across a wide range of academic journals. The majority of journals have contributed only one or two articles, while even the most productive outlet accounts for approximately five publications. This broad dispersion across journals covering business studies, economics, political economy, and governance

**Table 3: Top ten most cited articles related to strategy SWF**

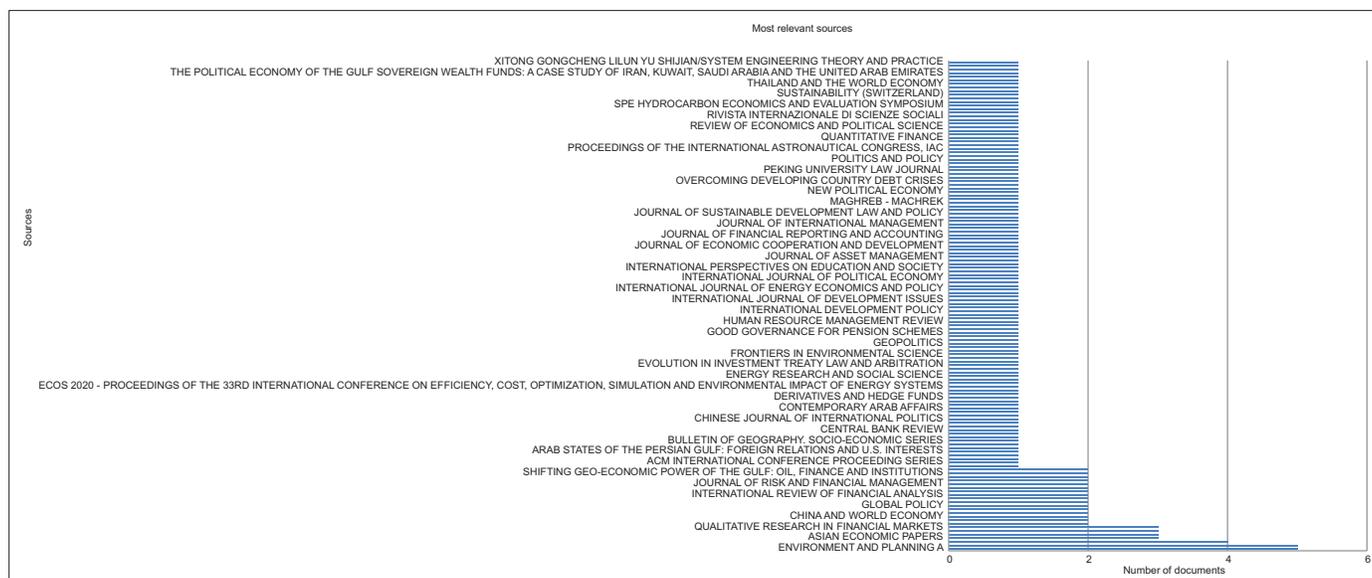
Authors	Title	Year	Journal	Citation
Norris	Chinese economic statecraft: Commercial actors, grand strategy, and state control	2016	Chinese Economic Statecraft: Commercial Actors, Grand Strategy, and State Control	234
Bernstein et al.	The investment strategies of sovereign wealth funds	2013	Journal of Economic Perspectives	128
Kotter and Lel	Friends or foes? Target selection decisions of sovereign wealth funds and their consequences	2011	Journal of Financial Economics	114
Bahoo et al.	Sovereign wealth funds: Past, present and future	2020	International Review of Financial Analysis	72
Haberly	Strategic sovereign wealth fund investment and the new alliance capitalism: A network mapping investigation	2011	Environment and Planning A	49
Boubakri et al.	Sovereign wealth funds targets selection: A comparison with pension funds	2016	Journal of International Financial Markets, Institutions and Money	42
Verhoeven	The politics of African energy development: Ethiopia's hydro-agricultural state-building strategy and clashing paradigms of water security	2013	Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences	37
Yeung	From national development to economic diplomacy? Governing Singapore's sovereign wealth funds	2011	Pacific Review	37
Murtinu and Scalera	Sovereign Wealth Funds' Internationalization Strategies: The Use of Investment Vehicles	2016	Journal of International Management	35
Kenderdine and Han	International Capacity Cooperation Financing China's Export of Industrial Overcapacity	2018	Global Policy	34

**Table 4: Top ten most authors' impact**

No	Author	h_index	g_index	m_index	TC	NP	PY_start
1	J. Grira	3	3	0.3	61	3	2016
2	S. V. Chebanov	2	3	0.25	10	4	2018
3	G. L. Clark	2	2	0.125	33	2	2010
4	W. L. Megginson	2	2	0.333	62	2	2020
5	A. Montambault Trudelle	2	2	0.667	13	2	2023
6	S. Murtinu	2	3	0.182	44	3	2015
7	A. Paltrinieri	2	2	0.222	79	2	2017
8	V. G. Scalera	2	3	0.182	44	3	2015
9	M. Shemirani	2	2	0.133	13	2	2011
10	F. Wu	2	2	0.111	19	2	2008

The H-index measures how many papers (h) an author has that have been cited at least h times. The G-index reflects the number of top publications (G) that have received at least G<sup>2</sup> citations in total. The M-index is the H-index divided by the number of years since the author's first publication. Te stands for total citations, Np is the number of papers published, and Py\_Start is the starting year of publication

**Figure 8: Most relevant sources**



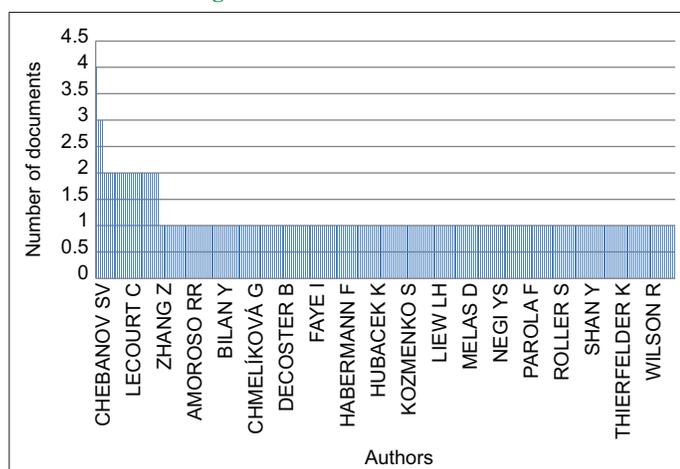
highlights the inherently interdisciplinary nature of SWF research. At the same time, the lack of a clearly dominant journal suggests that scholarly output remains fragmented, pointing to opportunities for greater concentration and visibility within specialized or

flagship outlets. Figure 9 presents the distribution of scholarly contributions at the author level, revealing a similarly decentralized pattern of authorship. Chebanov S. V. emerges as the most prolific contributor in terms of publication count, followed by Danlima

M. V. and Paltrinieri A., underscoring their sustained engagement with SWF-related research. In contrast, the majority of authors are represented by a single publication, indicating a broad but fragmented community of contributors. This pattern suggests that while the field attracts diverse scholarly participation, there remains considerable potential to strengthen collaborative networks and consolidate expertise through sustained research partnerships.

Figure 10 depicts the institutional landscape of SWF research by identifying the affiliations with the highest levels of publication output. The horizontal axis represents the volume of publications, while the vertical axis lists the associated academic institutions. Among these, the University of Sussex Business School stands out as the most prolific contributor, whereas the majority of other universities are represented by only one or two publications. This uneven distribution of institutional output reflects a fragmented

Figure 9: Most relevant authors.



research environment, suggesting the need for stronger inter-institutional collaboration and highlighting the potential for establishing more specialized research centers dedicated to the study of sovereign wealth fund strategies.

Figure 11 illustrates the country-level distribution of publications on SWF strategies, differentiating between Single-Country Publications (SCP) and Multiple-Country Publications (MCP). The United States and the United Kingdom appear as the leading contributors in terms of publication volume, with most of their outputs originating from domestically based research collaborations. Several other countries, including China, Italy, and Germany, also exhibit substantial research activity, largely driven by authors affiliated with institutions within their respective national boundaries. By contrast, countries such as Singapore, the United Arab Emirates, and Canada show a more even balance between nationally produced studies and internationally co-authored publications. Taken together, these patterns suggest that SWF research remains predominantly rooted in national research environments, while the presence of MCPs signals a gradual expansion of cross-border scholarly collaboration within the field.

Figure 12 presents the distribution of citation impact across countries, offering insights into the relative scholarly influence of SWF research at the national level. Countries are displayed along the horizontal axis, while cumulative citation counts are shown on the vertical axis. The United States records the highest citation total at 318, followed by Italy (182), Singapore (114), Australia (89), and Hong Kong (77), indicating a strong concentration of academic influence within these research hubs. Other countries, such as Canada, the Netherlands, and Lebanon, achieve moderate citation levels, whereas several nations including Kuwait, Indonesia, and Saudi Arabia do not register any citations within the analyzed dataset. This uneven citation distribution highlights disparities in

Figure 10: Most relevant affiliations



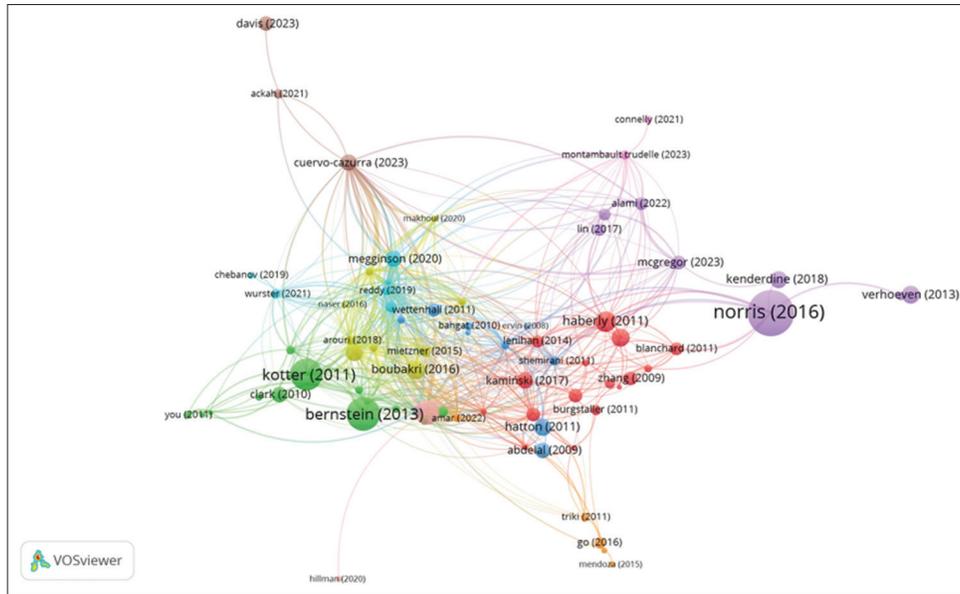
Table 5: Top ten sources' impact

No	Source	h_index	g_index	m_index	TC	NP	PY_start
1	Environment and Planning A	4	5	0.25	113	5	2010
2	Energy Policy	3	3	0.176	49	3	2009
3	International Finance Review	3	3	0.2	42	3	2011
4	Journal of Financial Regulation and Compliance	3	5	0.176	28	5	2009
5	China and World Economy	2	2	0.111	36	2	2008
6	Global Finance Journal	2	2	0.222	38	2	2017
7	Global Policy	2	2	0.125	43	2	2010
8	International Review of Financial Analysis	2	2	0.333	80	2	2020
9	Journal of International Financial Markets, Institutions and Money	2	2	0.2	50	2	2016
10	Qualitative Research in Financial Markets	2	3	0.118	12	3	2009

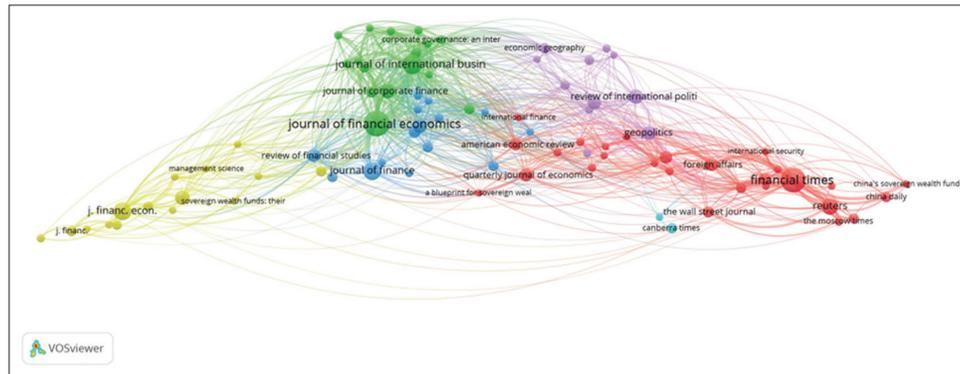
The H-index represents the number of papers (h) that have been cited at least h times, indicating an author's impact. The G-index considers the top G articles that together received at least G<sup>2</sup> citations, offering a broader measure of productivity. The M-index is the H-index divided by the number of years the author has been active, reflecting the consistency of impact over time. Tc stands for total citations, Np refers to the number of papers published, and Py\_Start denotes the year the author began publishing



**Figure 14:** Bibliographic coupling network of SWF strategy publications



**Figure 15:** Source co-citation network of SWF strategy literature



**Figure 16:** Co-authorship network of authors in SWF strategy research

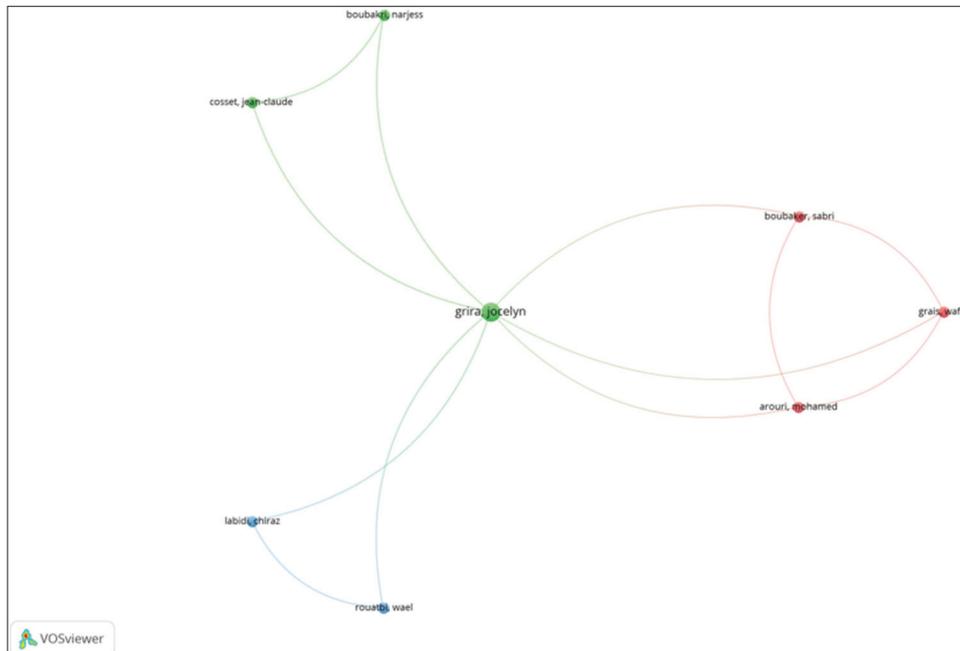
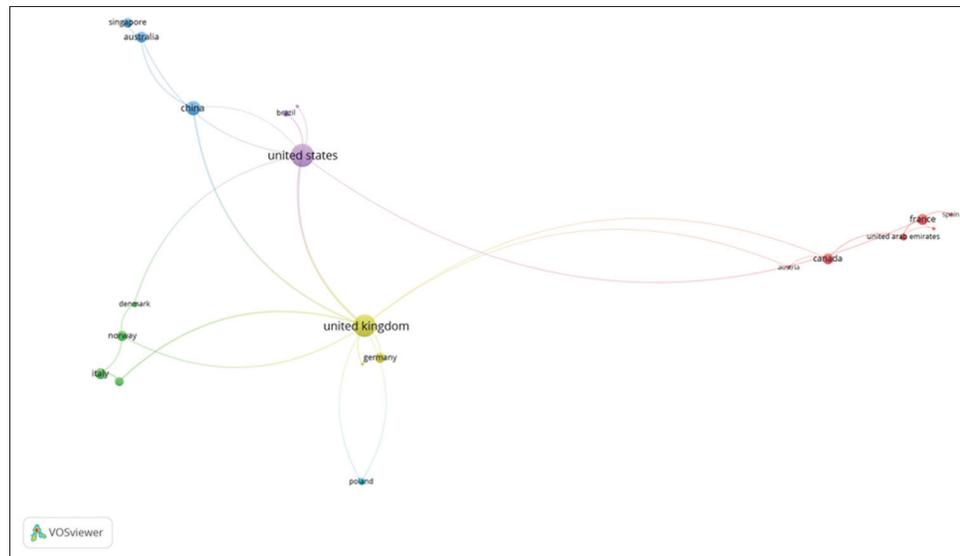


Figure 17: Co-authorship by countries



#### 4.3.1. Bibliographic coupling

Bibliographic coupling analysis was employed to assess the degree of intellectual interconnectedness among studies on SWF strategies by examining shared reference patterns. Consistent with the methodological framework proposed by van Eck and Waltman (2014), documents were used as the unit of analysis, and a fractional counting approach was applied. Unlike full counting methods which can disproportionately amplify the influence of publications with numerous co-authors fractional counting assigns proportional weights to each contribution, thereby reducing bias associated with heavily co-authored works. This approach enables a more balanced representation of intellectual linkages across the dataset. To further refine the analysis and improve interpretive clarity, a minimum threshold of three citations per document was imposed. As a result, 85 publications were selected from the original pool of 171 documents for inclusion in the bibliographic coupling network. This filtering process ensured that the analysis focused on studies with a demonstrable level of scholarly recognition, thereby enhancing the robustness and relevance of the resulting network structure.

Figure 14 presents a bibliographic coupling network generated using VOSviewer to visualize the intellectual configuration of research on SWF strategies. In this network, individual documents are represented as nodes, with node size reflecting citation frequency. The strength of bibliographic connections is indicated by the thickness of the links between nodes, where stronger links correspond to a higher number of shared references. Distinct clusters, differentiated by color, illustrate thematic groupings within the literature. For instance, the green cluster comprising studies such as Bernstein et al. (2013) and Kotter (2011) primarily addresses issues related to governance structures and investment performance. By contrast, the purple cluster, which includes works by Norris (2016) and Kenderdine (2018), places greater emphasis on geopolitical considerations and state capitalism. The network also captures emerging lines of inquiry, particularly ESG-oriented research, as reflected in more recent contributions such as Cuervo-Cazurra et al.

(2023). Several studies, including those by Bernstein et al. (2013), Norris (2016), and Bahoo (2020), occupy highly central positions, underscoring their foundational role in shaping the SWF research domain. Overall, the visualization highlights both the fragmented and interconnected nature of knowledge production within this field.

#### 4.3.2. Co-citation analysis

A co-citation analysis was conducted to examine the relational structure among frequently cited sources in the SWF literature, following the methodological approach outlined by Kim and McMillan (2008). This technique assesses how often pairs of documents are cited together, thereby revealing perceived conceptual linkages and shared thematic orientations. To ensure analytical robustness, a minimum citation threshold of ten was applied, resulting in a subset of 86 articles for analysis. These sources were subsequently organized into five distinct clusters. The co-citation network, constructed using VOSviewer, visually represents these relationships by positioning frequently co-cited sources in close proximity, forming tightly connected clusters. The resulting configuration indicates that, although SWF research is disseminated across a wide range of journals, scholars consistently rely on a common core of influential references (Table 6). This pattern reflects a high degree of intellectual cohesion among key publications and provides insight into the underlying conceptual structure of the SWF research field as shaped by shared bibliographic foundations. Figure 15 presents a source co-citation network related to research on SWF strategies, generated using VOSviewer. In this visualization, nodes correspond to journals or publication sources, with node size indicating citation frequency. The connections between nodes reflect the extent to which pairs of sources are cited together, while color-coded clusters represent groups of sources that share common thematic orientations. Notably, the blue and green clusters consist primarily of core finance and economics journals, including outlets such as the *Journal of Financial Economics* and the *Journal of Finance*, underscoring the strong theoretical grounding of SWF research in financial and economic analysis. In contrast, the red cluster

is dominated by policy- and media-oriented sources, such as the *Financial Times* and *Reuters*, highlighting their relevance in discussions surrounding geopolitical considerations and the practical dimensions of sovereign investment activity. The remaining purple and yellow clusters capture linkages with political science, governance, and management literature, further demonstrating the interdisciplinary scope of SWF scholarship. Overall, the network illustrates how SWF research integrates insights from a wide range of academic and policy-oriented sources, effectively bridging theoretical perspectives with applied policy discourse.

#### 4.3.3. Co-Authorship Analysis

To explore patterns of collaboration within the SWF research community, a co-authorship analysis was conducted using both countries and individual authors as units of analysis. The examination was carried out in two stages. First, collaboration networks were analyzed at the country level to assess the extent and structure of cross-national research partnerships in SWF-related studies. A minimum inclusion threshold of one publication and one citation per country was applied to ensure comprehensive

representation of all contributing nations. This inclusive criterion facilitated the identification of three distinct international collaboration clusters, reflecting the global dispersion of research activity and revealing the cooperative networks that underpin the development of Sovereign Wealth Fund scholarship.

Figure 16 illustrates the author-level co-authorship network within the field of SWF strategy research, constructed using VOSviewer. In this network, each node corresponds to an individual researcher, while the connecting links indicate collaborative ties formed through joint publications. Node size reflects the volume of publications attributed to each author, and distinct colors denote separate clusters of scholarly collaboration. Consistent with the criteria applied in the country-level analysis (Figure 17), a minimum requirement of one publication and one citation per author was adopted. This filtering process yielded a set of 25 publications, which were subsequently grouped into five collaboration clusters based on observed patterns of co-authorship. The resulting network reveals a research community characterized by fragmentation alongside signs of gradual consolidation. Emerging clusters of collaborating authors are particularly evident in countries such

**Table 6: Synthesizes the research findings**

No	Aspect	Description
1	Research Analysis and Interpretation	This study examined a total of 171 publications on SWF strategies published between 2008 and 2025, drawing on data retrieved from the Scopus database. A comprehensive set of bibliometric methods—including co-citation analysis, bibliographic coupling, keyword co-occurrence analysis, and co-authorship mapping was employed to identify influential scholars (such as Bernstein, Norris, and Bahoo), prominent institutions, and high-impact journals within the field. The analysis identified five major thematic clusters: (1) Macroeconomic and political dynamics (red), (2) Sustainable development and ESG-related issues (green), (3) Institutional strategy and asset allocation (blue), (4) Financial performance and market outcomes (yellow), and (5) Climate policy and country-specific case studies (purple). Among the most frequently occurring keywords were, most frequently occurring keywords were <i>sovereign wealth fund</i> , followed by <i>investments</i> and <i>investment strategy</i> . Findings from the co-citation and bibliographic coupling analyses further confirm the interdisciplinary nature of SWF research, which integrates perspectives from finance, economics, governance studies, and geopolitics.
2	Research Trends	The analysis of temporal trends indicates a marked rise in scholarly attention to SWFs beginning around 2010, with notable peaks in publication activity observed in 2011, 2016, and 2021. Citation patterns reveal that academic influence tends to intensify during and following major global disruptions, particularly the 2008 global financial crisis and the COVID-19 pandemic. Core research themes such as investment strategies, governance mechanisms, and the role of SWFs in global financial markets continue to dominate the literature. More recently, however, there has been a discernible shift toward topics related to ESG considerations and climate finance, reflecting growing concerns over sustainability, accountability, and transparency in sovereign investment practices. At the same time, the geographical scope of SWF research has expanded, with countries including the United States, the United Kingdom, China, and Italy emerging as leading contributors in terms of both publication output and citation impact.
3	Research Gaps	Despite the expanding body of literature on SWFs, several important gaps remain. First, research focusing explicitly on ESG integration and climate-oriented investment strategies remains relatively limited, despite their increasing relevance within sustainable finance debates. Second, SWFs operating in developing and resource-dependent economies such as Timor-Leste and countries in sub-Saharan Africa are insufficiently examined, constraining the broader applicability of existing findings. Third, collaboration patterns within the literature are highly fragmented, with a predominance of single-country studies that restrict opportunities for cross-national comparison. Fourth, there is a noticeable scarcity of dynamic and forward-looking modeling approaches that assess the long-term fiscal sustainability and macroeconomic effects of SWFs. Finally, comparative analyses of Islamic SWFs and alternative ethical investment frameworks remain underdeveloped, even as values-based and faith-aligned investing gains prominence globally.
4	Future Research Directions	Building on these findings, several directions for future research are proposed. First, greater scholarly attention should be devoted to ESG integration and impact investing within SWF portfolios, particularly in the context of post-pandemic economic recovery. Second, future studies should prioritize in-depth, country-specific case analyses focusing on emerging markets and resource-rich developing economies that are currently underrepresented in the literature. Third, researchers are encouraged to apply advanced quantitative frameworks such as Dynamic Stochastic General Equilibrium (DSGE) models to evaluate the macroeconomic and fiscal implications of SWFs over the long term. Fourth, further investigation is needed into the political economy and governance structures shaping SWF behavior, including comparative analyses across different political regimes. Fifth, increased emphasis should be placed on the role of SWFs in supporting digital transformation and green transitions, particularly through investments in renewable energy, artificial intelligence infrastructure, and sustainable technologies. Finally, strengthening international co-authorship and interdisciplinary collaboration is essential to advance theoretical development and enhance the policy relevance of future SWF research.

Source: Authors' elaboration

as the United States, the United Kingdom, Singapore, and Italy, suggesting the early formation of cross-border academic networks. These patterns indicate that, while collaboration in SWF research remains uneven, there is a growing foundation for more integrated and internationally connected scholarly communities.

## 5. CONCLUSION AND LIMITATIONS

### 5.1. Conclusion

This study presents a bibliometric examination of 171 Scopus-indexed publications on SWF strategies published between 2008 and 2025. The analysis identifies five dominant thematic clusters: macroeconomic governance, ESG and sustainability, institutional investment strategies, financial performance, and country-specific or climate-related issues indicating a clear shift from conventional fund management perspectives toward more interdisciplinary approaches that integrate economic, political, and social considerations. Research activity and thematic diversification intensified following major global shocks, particularly the 2008 financial crisis and the COVID-19 pandemic, underscoring the growing strategic role of SWFs in supporting economic resilience and long-term fiscal stability. The findings also reveal a concentrated yet decentralized knowledge structure, where a limited group of authors, institutions, and countries most notably the United States, the United Kingdom, Italy, and Singapore account for a substantial share of scholarly influence. Despite thematic convergence, collaboration networks remain fragmented and largely national in scope. Significant research gaps persist, including limited attention to ESG frameworks, advanced quantitative policy modeling, ethical and Islamic investment approaches, and SWFs in developing or resource-dependent economies. Addressing these gaps through comparative, interdisciplinary, and internationally collaborative research is essential to enhance both the theoretical depth and policy relevance of future SWF strategy studies.

### 5.2. Limitations

Despite its contributions, this study is subject to several limitations. First, the analysis relies exclusively on data retrieved from the Scopus database, which may exclude relevant studies indexed in other platforms such as Web of Science, Google Scholar, or regional academic repositories. Second, the use of citation-based indicators may disadvantage recently published but potentially influential studies that have not yet accumulated sufficient citations. Third, the keyword-driven clustering process may be affected by inconsistencies in keyword selection and terminology, which could influence the precision of thematic classification. Finally, the literature analyzed remains heavily skewed toward research conducted in advanced economies, with comparatively limited representation from regions such as sub-Saharan Africa and Southeast Asia. To mitigate these limitations, future studies should consider integrating multiple bibliographic databases, expanding empirical coverage to include underrepresented regions, and complementing bibliometric techniques with qualitative content analysis. Such approaches would enable a more nuanced understanding of the evolving strategies, governance structures, and policy roles of SWFs across diverse economic and institutional contexts.

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