

Private Equity and Sustainability – A Bibliometric Analysis of Research

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Abstract

Objectives – The objectives of this paper are to explore the research in the area of Private Equity and Sustainability under the following two broad perspectives:

Authors who are profusely contributing to this field of study

The areas or the themes which are connected to the topic under study

Design – To achieve the above-mentioned objectives bibliometric analysis is carried out with the help of VOSviewer software. The Web of Science database is utilized for the study with the search words Private Equity and Sustainability.

Model –To know who are the authors who are most cited, co-citation analysis using cited authors as the unit of analysis is employed. Co-occurrences analysis is used to know the topics around which most of the research works are concentrated.

Result and conclusion– Ostrom et.al, Cumming et.al, Ostrom and Elinor, are the most cited authors with 50, 23 and 22 citations respectively. Sustainability, Equity and Sustainable development are the words which co-occurred with other words in the analysis.

Practical implications -This paper is useful to the prospective researchers or scholars who can set this as their base paper before embarking upon the new vistas in this emerging field nationally and globally.

Social implications –This paper may be useful to the business entrepreneurs who would like to know the research linkages between Sustainability and Private equity.

Originality/value– This paper is first of its kind to the best of authors knowledge attempting to study the intellectual structures of authors linking private equity and sustainability and trending areas of research in this field.

Research limitations – This study is conducted only with the papers published in the Web of Science database and two techniques of science mapping are only used.

Keywords – Private Equity, Sustainability, Bibliometric Analysis

JEL Classification: G30, Q010

Introduction

Private Equity (PE) is a kind of alternative investment that primarily invests in privately held companies. This is such an equity capital that is not publicly quoted on a public exchange. It involves investing through illiquid, long-term partnerships, also referred to as funds that are formed by private equity firms. It consists of investors and funds that make investments directly into private companies or buyout public companies that gradually lead to delisting of public equity. The retail and institutional investors contribute towards the capital of private equity. The funds raised through private equity can be used to finance new technologies, meet working capital requirements within an owned company, acquire other companies or to fortify a balance sheet. (Satyanarayana S.V and Saritha M, 2023). The motivation for the investors to contribute to private equity funds is that they want to leverage on the investment opportunities that are otherwise not available through other avenues. (Cumming D et al., 2023).

Sustainability (Mitchell Grant and Daniel Thomas Mollenkamp, 2023) As per the “United Nations Brundtland Commission, 1987, Sustainability is defined as “meeting the needs of the present without compromising the ability of future generations to meet their own needs”. Sustainability is divided into three core concepts: economic, environmental and social. Economic sustainability is concerned with preserving the natural resources both renewable and non-renewable which are used as physical inputs in the economic production process. Environmental sustainability focuses on preserving the atmosphere or soil for the continuity of the economic production and human life to thrive. Social sustainability emphasizes on the people's angle of economic system. It aims to eradicate poverty, hunger and fight against inequality.

As adversity arising out of climate change, biodiversity loss and pollution are becoming widespread, the world is shifting to embark on sustainable practices and policies

mainly through the implementation of sustainable business practices and increasing the investments focused on green technology. Business policies aimed towards sustainability 1) should be in a position to understand the impact of any present business practice or policy taken on the future humans, ecosystems and the wider economy 2) should emphasize to stop the depletion of natural or physical resources in order to make them available in the long-run. 3) minimize their environmental footprints for the preservation of resources.

Businesses can plan and execute sustainability strategies in the similar way they do with other strategies. The companies need to first identify a shortcoming which is stifling the company to be sustainable. Then secondly frame the goals and metrics to measure the achievements and finally implement the strategy. It is not always possible that the strategy once set will work automatically. There is always the need to revisit and re-evaluate the strategy in the light of changing situations.

There might be a dilemma that whether sustainability results in some benefits. There are social and financial benefits to the company following sustainability path. The social benefits are promoting the welfare of human beings by preserving the natural resources. Financial benefits will accrue in the form of savings if the company implements measures to cut down waste and pollution. It further improves the long-term viability of the business enterprise and the credibility of the company in the minds of people will go up.

The benefits will not come without challenges to achieve sustainability. One such challenge is implementation issues. Though many business executives consider sustainability as one of their core business values but only a few of them take up serious actions to achieve sustainability objectives.

Background literature

There is a general notion emanating from the literature that public shareholders play a crucial role when there is a need to change corporate policy and performance towards sustainability but it is also understood that private equity also plays a pivotal role effecting the non-financial policies

and performance of firms and in promotion of socially acceptable and environmentally friendly activities (Bert Scholtens 2006). It is evident that the assets under management in private equity industry is expected to be double in 2026 from 2021 figures where it was \$6.3 trillion and expected to cross \$11 trillion in 2026. Given the growth trajectory, it is understood that the society will not be in a position to handle climate change and other tough challenges without the robust engagement and involvement from private equity firms and their investee companies. It is the high time now that the challenges relating to climate change should be addressed in order for the private equity industry and other economic activities to flourish. (Robert G. Eccles et al., 2022). Besides the private equity industry, the bond market classified bonds aligning with sustainability goals into 4 categories, green, social, sustainable and sustainability-linked. It is understood that in the fourth quarter of 2021 asset managers based in the European Union received 64 percent of their asset inflows which are based on ESG (Environment, Social and Governance) fundamentals. (de Mariz, Frederic, 2022). There may be a dilemma that will sustainability disclosure lead to higher operating performance and enhanced firm valuation. It is observed in the paper by (Avis Devine et al., 2023) that in case of Real estate investment trusts (REITs) sustainability disclosure has led to positive results by increasing the operating performance and firm valuation as well as an inclination to hold eco-friendly and certified buildings. (Devine A., et al., 2022) explored the relationship between private equity real estate fund performance and voluntary environmental, social, and governance (ESG) disclosures. It is inferred that the disclosure practice and performance are associated with the price appreciation component of fund total returns but not with the income component. (Long, F.J., Johnstone, S. 2023) as part of their works concerning the classification of common approaches to ESG investment practices in Asian private equity presents “Deep ESG” as one of the approaches that implements ESG and sustainability metrics more comprehensively than existing frameworks. In another research work by (Daniel C. Esty, Cort Todd 2020) presents important concepts, trends, risk frameworks for the sake of investors knowledge investing in stocks,

bonds, private equity, infrastructure projects and impact investing besides it presents the present situation of sustainable finance with special focus on the data, guidelines, legal standards and principles necessary to make ESG reporting more reliable and sustainable investing more popular.

Research Gap

Bibliometric analysis in the field of finance was undertaken by (Durisin&Puzone, 2009; Linnenluecke, Chen, Ling, Smith, & Zhu, 2017; Xu et al., 2018). There are only a very few research works focussed on bibliometric analysis concerning private equity. The research work by (Cumming D et al., 2023) portrays exhaustively through bibliometric review a multi-dimensional research view of private equity and venture capital and future research agenda. In another work by (Sharma et al. 2023) presents the developing trends in private equity and future research areas surrounding private equity. In a research work by (Mundi and Kumar, 2023) relating to alternative investments using bibliometric review seeks to present through their study, performance analysis covering production timeline, country-wise contributions, investigation of sources, affiliations, the geography of researchers and citations of studies on alternative investments. The present study is novel in its kind examining the research linkages between private equity and sustainability in terms of authors contributing to this field and the areas around which most of the research is revolving through bibliometric analysis.

Objectives of study

As understood from the research gap that the present study is novel in its kind, the following objectives are set to be achieved through this study:

1. Authors who are profusely contributing to this field of study
2. The areas or the themes which are connected to the topic under study

Methodology

In order to achieve the set objectives, the Bibliometric analysis using VOSviewer software is employed. The Web of Science database is utilized for the study. Without

applying any filters, the words Private Equity and Sustainability were inputted in the search criteria and the displayed results were 497. The analysis is taken up for the entire 497 research works.

On the basis of the methodology given by (Donthu et.al 2021) Bibliometric analysis is conducted in two parts 1) Performance analysis and 2) Science mapping of existing literature

Performance analysis presents the trends in the publications. Science mapping establishes the relationship between research items. Research items are objects of study such as authors, publications, words used, countries, affiliations, citations etc. The techniques under science mapping are: citation analysis, co-citation analysis, bibliographic coupling, co-word analysis, and co-authorship analysis.(Donthu et.al 2021)

Co-citation Analysis is a technique that adopts cited references, cited sources and cited authors as the unit of analysis to establish the relationship between research constituents. The present study undertakes Co-citation analysis with the unit of analysis as cited authors. Taking the minimum number of 5 citations of an author in a publication, total of 381 authors relationship is established.

Co-occurrence analysis traces the words or the topics which are frequently used in the analysis. It tries to establish the topics around which most of the research is concentrated and its linkages. The authors key words are the unit of analysis used under co-occurrences analysis.

Findings:

It is observed that since 2002 till 2008, the publications were below 10 (See Table 1).The maximum number of 67 publications were in the year 2021 followed by 57 and 58 in 2022 and 2023 respectively.

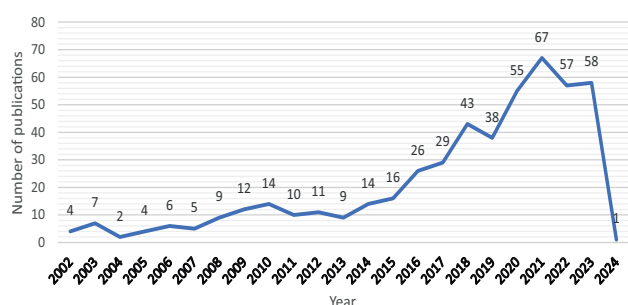
Table 1 Year wise publications

Year	Publication	Year	Publication	Year	Publication	Year	Publication
2002	4	2008	9	2014	14	2021	67
2003	7	2009	12	2015	16	2022	57
2004	2	2010	14	2016	26	2023	58
2005	4	2011	10	2017	29	2024	1
2006	6	2012	11	2018	43		
2007	5	2013	9	2019	38		

Source – Author's compilation from database

Fig.1 Year-wise publications

Chart showing year wise publications



Co-citation Analysis –As per the VOS Viewer Manual 1.6.20 (Nees Jan van Eck and Ludo Waltman, 2023). A co-citation link denotes a link between two items that are both cited by the same document. 381 authors are cited together

are various points of time in the same document. The strength of their relationship is established through the link strength. Higher the link strength, stronger is their relationship.

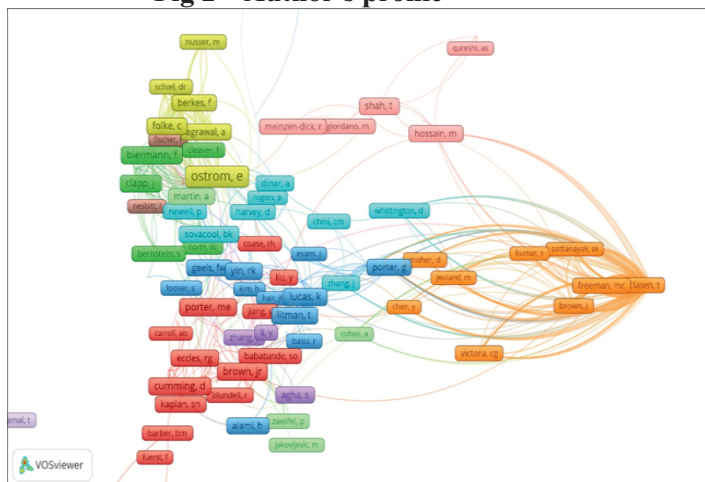
381 authors are segregated into 14 clusters. Ostrom et.al, Cumming et.al and Ostrom and Elinor et.al (See Table 2) are the most cited authors contributing to this field. Their citations are 50, 23 and 22 respectively. Nwogugu et.al and Bakker et.al have 20 and 19 citations respectively. Ostrom et.al are connected with 109 links and the total link strength is 443. Cumming who belongs to the second cluster is connected with 62 links, is the prolific author in the field of private equity and has the highest link strength of 472 among all the other authors in the study.

Table 2 – Author's Profile – Most cited authors

d	label	x	y	cluster	Weight <Links>	Weight <Total link strength>	Weight <Citations>
13880	ostrom, e	-0.1626	0.4606	4	109	443	50
4516	cumming, d	-0.3947	-0.6558	1	62	472	23
13881	ostrom, elinor	-0.2975	0.785	4	39	256	22
13582	nwogugu, m	-0.2372	-0.6012	1	52	225	20
1446	bakker, k	0.0125	0.4112	6	55	104	19
19348	wright, m	-0.3273	-0.6686	1	50	183	19

Source – Author's compilation from VOSviewer

Fig 2 – Author's profile



Source- Author's compilation from VOSviewer

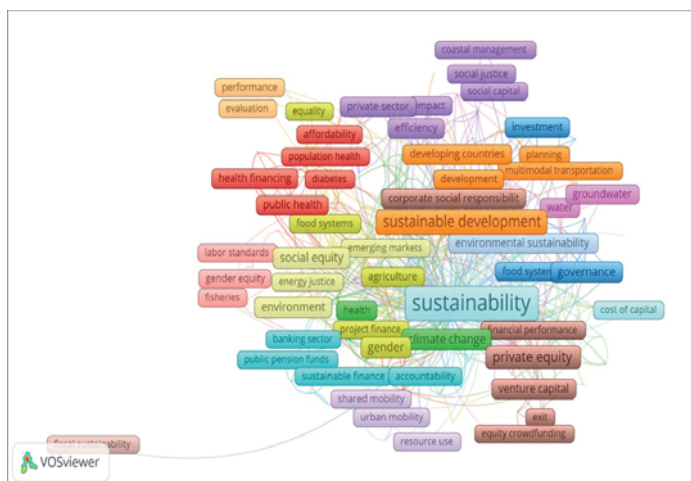
Co-Occurrences analysis– Co-Occurrence analysis provides an idea on the topics where most of the research is concentrated. It can also provide a trigger point to researchers to commence the new research. The words Sustainability, Equity and Sustainable development are frequently used and majority of the studies are focusing on these themes. They have the link strength of 77, 75 and 32 respectively. (Table 3). The average publication years are 2017 and 2018. Highest number of 54.3 citations are received for the word sustainable development.

Table 3 – Co-occurrences

label	weight<Links>	weight<Total link strength>	weight<Occurrences>	score<Avg. pub. year>	score<Avg. citations>
Sustainability	77	112	71	2017.6479	16.831
Equity	75	116	50	2017.06	21.54
Sustainable development	32	33	20	2018.2	54.3
Private equity	15	24	16	2019.25	5.0625
accessibility	11	17	10	2021.6	8.5

Source - Author's compilation from VOSviewer

Fig. 3 Co-occurrences



Source - Author's compilation from VOSviewer

Conclusion

The present study draws upon the authors who are most cited in the topic under study and the areas where most of the research is concentrated. Unlike the erstwhile notion of the private equity investors where maximizing the return on their investment was the most prominent objective, this study tries to present that there is a mindset change in the private equity investors. Private equity firms are showing interest to adopt sustainability as one of their core values in their investee companies. For the sustainability objectives to be achieved, private equity investors also have a role to play. The research relating to private equity and sustainability is still evolving and there are also challenges relating to accomplishment of sustainability objectives by business enterprises.

Limitations of study - The present study is an attempt to study only two techniques of science mapping i.e co-citation and co-occurrence analysis. The citation analysis and bibliometric coupling is not taken up in this study. As the total number of publications in this area less than 500, 497 till date, there is much scope for further research in varied dimensions.

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