

Research Trends in Public Budgeting for Half A Century

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Abstract

The varying approaches and formats chosen by budget documents and the budgeting process from time to time can be explained by the complexity and diversity of budgeting functions, notably those of public budgets. Due to the vast amount of 982 articles by 1968 - August 2022 of research on public budgets in the Scopus database, it may be possible to determine research trends in this area through bibliometric analysis. Although the public budget publications' annual growth rate is small (7.88%), it demonstrates a positive increase yearly. The findings show the interest of various fields in researching public budgeting. It often investigates the connections between public budgeting and fiscal policy, public spending, participatory budgeting, and public debt from an economic point of view. Political science, sustainability, public administration, climate change, effectiveness, public services, performance, the public sector, and the European Union are all related to public budget studies. Researchers have expanded their research over the past three years by taking the Covid-19 epidemic into account as one of the catalysts for adjustments to public budgets in various nations.

Keywords: Bibliometric Analysis, Public Budgeting, Public Budget Functions, Public Sector, Research Trend

Introduction

One of the pillars of financial management is budgeting, a formal and quantitative embodiment of an organization's strategic plan. According to Kenno et al. (2021), budgets guide managers and staff to ensure that motivation and efforts are properly focused on achieving strategic goals and objectives. Budgeting has traditionally been a process by which organizations historically decide how much and for what to spend through a budgeting process, thereby preventing overspending by limiting spending to available revenue. Accordingly, budgets are created considering the institutions that make decisions, decision-makers' preferences, and the collective political decisions made in response to available information (Jones et al., 2009).

According to Kenno et al. (2021), global public sector reform highlights the significant relationship between budgeting and strategic planning in public sector financial management. Many studies have been published in this field, where scholars have investigated public budgets for different public institutions or organizations. Over time, public budgets have evolved to become instruments for planning, controlling, providing stimulus for the social and economic environment, and ensuring transparency and stakeholder involvement (Sicilia & Steccolini, 2017). Because of this, the public budget is one of the most important economic instruments in government, which is used to guide social and economic growth, ensure sustainability, and improve people's quality of life (Dewi et al., 2022).

Budgeting research has a long history in management accounting (Kenno et al., 2018), where it is currently used in all organizations. Budgeting is a topic that attracts a variety of academic fields due to its general character, including political science, public administration, accounting, psychology, management, and organizational studies (Sicilia & Steccolini, 2017; Hermanto et al., 2022). It shows that the topic of budgeting research studies has expanded and varied according to actual conditions.

One of the budgeting research's topics is the public budget, which examines activities within the government. According to Sicilia and Steccolini (2017), public budgeting is a process by which the government decides how much to spend on what, limits spending for available income, and prevents excessive spending. Over time, public budgets carry out political, economic, managerial, and

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Received: 9 November 2022, Revised: 2 December 2022, Accepted: 5 December 2022, Published: 10 December 2022

Cite this: Prayoga, A. Y. (2022). Research Trends in Public Budgeting for Half A Century. *Innovation Business Management and Accounting Journal*, 1(4), 104–116. <https://doi.org/10.56070/ibmaj.v1i4.19>



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accountability functions because they have bargaining power for planning and control and ensure transparency and stakeholder engagement (Anessi-Pessina et al., 2020; Sicilia & Steccolini, 2017).

Many scholars are now driven by this phenomenon to study public budgets for various public institutions or organizations in varying conditions. For example, a study by Kenno et al. (2021) investigated the systematic, structural, procedural, and reputational differences associated with using budgeting for strategic planning in 38 Canadian universities as a form of public sector institution. Their findings indicate that budgeting is a common practice in institutions for a variety of purposes, including regulation compliance, strategic planning, control, and communication (Kenno et al., 2021). Another example is a review of European public budgeting studies conducted by Anessi et al. (2016), which shows that most of the public budgeting studies in Europe over the last two decades use New Public Management (NPM) as the analysis context and the main conceptual framework. Sicilia and Steccolini (2017) argued that, as a consequence of the wave of managerial reforms over the last few decades, there is a vast need and scope to explore the budgeting process in the public sector.

The factual conditions of the world also affect the public budget process, as demonstrated by Anessi et al. (2020), where COVID-19 raises new challenges in the form of developing new competencies for budgeting, re-budgeting, reporting processes, and formats according to current conditions. According to Sicilia and Steccolini (2017), public budgeting entails the complexity and diversity of functions that shape the structure of documents and budget procedures, involving interdependent rationality, logic, competence, professional identity, and scientific knowledge from time to time.

Budgeting is used in all types of organizations, including the public sector, and is a growing topic of accounting research in quantity and quality. Traditionally, the public sector budget consists of two main parts, namely 1) financing and how revenue will be obtained and 2) expenditures that are relevant at the time of budgeting, such as costs and public services (Andrew, Baker, Guthrie, & Martin-Sardesai, 2020). The results of a review conducted by Kenno et al. (2021) indicate that research on budgeting has developed by focusing on how to use budgeting for control, assessment, and strategic planning. The topic covers various aspects related to the public interest in a country. A review conducted by Sicilia and Steccolini (2017) shows that the role of public budgets has expanded from planning and control to becoming a tool for political, economic, managerial, and accountability functions. In politics, the public budget becomes a tool for bargaining and allocating power. In contrast, in the economic field, it becomes a driving force for changes in the economic and social environment. In accountability, public budgets are used to ensure transparency and stakeholder involvement. Sicilia and Steccolini (2017) argue that budgeting has been the subject of interest in multiple disciplines, including political science, public administration, accounting, psychology, management, and organizational studies, in which various rationalities, logics, competencies, and professional identities interact. It shows the need to formulate a state-of-the-art to get an overview of what and how to research public budgets in depth.

The availability of many articles in the field of public budgets has the potential to review the productivity of publications in this area. Analyzing the potential and gaps in an area, including budgeting, can be done by reviewing a large number of scientific articles. Currently, along with the development of text processing technology, literature reviews can be carried out systematically with the help of computer algorithms. Kenno et al. (2018) used the search term "budget" in the ABI Inform and ProQuest databases and found that, as of 2017, 651 articles had been published. A qualitative analysis of these articles shows that in the early 1990s and 2000s, many management accounting journals provided significant opportunities to publish budgeting research (Kenno et al., 2018). Mattei, Grossi, and A.M. (2021) used a systematic literature review (SLR) to investigate trends in public sector auditing research in SCOPUS and Web of Science (WoS). In the initial search, they found 429 articles which later became 199 articles after a selection process based on inclusion/exclusion criteria. The research findings showed how academic interest in public-sector auditing has increased and broadened. According to Mattei, Grossi, and A.M. (2021), this may demonstrate how the public sector has changed in recent decades due to the institutional logic that has emerged as a result of changes that have taken classic public administration, new public management and continued public governance.

In addition to literature review, analysis of the potential and limitations of research can also be carried out using bibliometric analysis. It is a quantitative analytic that evaluates the connections and impacts between articles using mathematical and statistical methods. With the aid of bibliometric methods, Zupic and Čater (2015) stated researchers could base their conclusions on aggregated

bibliographic information created by other experts in the field who share their thoughts through writing, collaboration, and citation. Bibliometric analysis has gained tremendous popularity in various research fields in recent years. Its popularity can be attributed to the advancement, availability, and accessibility of bibliometric software and scientific databases, its reliability in handling large amounts of scientific data, and its high research impact (Donthu et al., 2021). Additionally, bibliometric analysis propagates quantitative rigor into traditional literature reviews and assists new researchers in quickly understanding the research's structure (Zupic and Čater, 2015).

Bibliometric analysis has been employed in some economics research articles. Zupic and Čater (2015) conducted a citation and co-citation analysis to map the intellectual structure of the journal *Organizational Research Methods* based on a search for articles from 2001 to 2014 in WoS. They used Pajek software to process 465 articles to extract and show data on the intellectual structure. Dewi, Gamayuni, and Oktavia (2022) used 100 articles during the 2015–2021 publication range for the bibliometric analysis of public budget publications. The data is searched from Google Scholar using Publish or Perish (PoP) software, then processed using VosViewer. The disadvantage of this study is that it limits the number of articles analyzed by selecting based on selected random sampling. So there may be a large number of articles that are important enough to be studied but ignored.

Muhtar, Rusli, & Nurasa (2022) also conducted research on bibliometric analysis for public budget publications. The data source used is SCOPUS, with a time limit of publication from 2011 to January 2022 and in English. The inclusion criteria used were the search keyword "public budget" in the title, abstract, or author's keywords until 290 articles were obtained. Muhtar, Rusli, and Nurasa (2022) do not limit the type of publication so that it is possible for articles in the press, articles published in trade journals, or articles of editorial or note type also to be included in the dataset. The bibliometric analysis by Muhtar, Rusli, and Nurasa focuses on social network analysis.

Therefore, this study conducted a bibliometric analysis to identify state-of-the-art in public budget research based on publications indexed in SCOPUS databases until August 2022 for expanding the investigation. Article selection was based on inclusion/exclusion criteria as conducted by Mattei, Grossi, and A.M. (2021) and suggested by Donthu et al. (2021) and Zupic and Čater (2015). The aims of this study are (1) to analyze the scientific production of public budgets based on the number of publications and citations and the productivity of researchers and (2) to describe trends and prominent themes in public budget publications. This research differs from previous research conducted by Dewi, Gamayuni, and Oktavia (2022) and Muhtar, Rusli, and Nurasa (2022) based on the analytical procedures and software used. The information from bibliometric analysis provides an overview of the state-of-the-art that is useful for public budget researchers to conduct theoretical and empirical research in the future.

Methods

This section describes the bibliometric analysis steps based on the procedure proposed by Donthu et al. (2021). The two previous studies, Dewi, Gamayuni, and Oktavia (2022) and Muhtar, Rusli, and Nurasa (2022), did not clearly describe the stages of bibliometric analysis carried out. Therefore, this study offers a systematic procedure for bibliometric analysis that can be adopted by other researchers. The diagram in Figure 1 illustrates the bibliometric analysis procedure, adopted from Donthu et al. (2021).

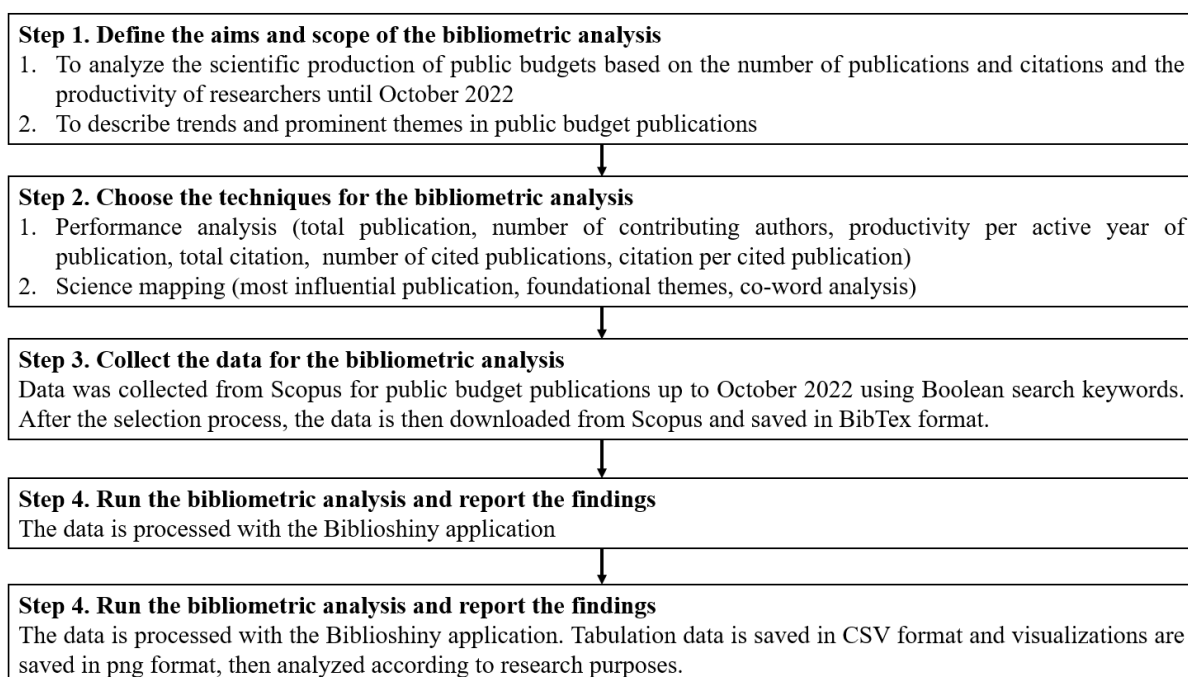


Figure 1. The bibliometric analysis procedure

Source: Adopted from Donthu et al. (2021)

The procedure consists of four steps, namely defining the aims and scope, choosing the techniques, collecting the data, and the last step is to run the bibliometric analysis and report the findings. The first step, determining the research objectives, as discussed in the background section, needs to be done to avoid data discrepancies that will waste time and data sources. The research objectives also form the basis for the next step, determining the technique for bibliometric analysis. The first objective of this research is to analyze the scientific production of public budget publications so that the appropriate technique is performance analysis. While the second goal is to describe the main trends and topics, science mapping is the appropriate technique. Performance analysis highlights a field's backdrop or research profile by describing the performance of authors, institutions, countries, and publications (Aria & Cuccurullo, 2017; Donthu et al., 2021). Meanwhile, science mapping examines the intellectual exchanges and structural relationships between research parts by analyzing citations, co-citations, bibliographic citations, co-words, and co-authorships (Donthu et al., 2021). Consequently, this study requires the use of both techniques.

The study objectives are also the basis for defining data sources, search keywords, year ranges of publication and inclusion/exclusion criteria. Researchers must establish search phrases in the third phase so that they will produce search results that are both broad enough to support bibliometric analysis and narrow enough to stay within the designated research field or the scope of study specified in the previous step (Donthu et al., 2021). The initial search and the first selection stage were carried out using Boolean keywords, followed by a second selection based on the criterias shown in table 1 below.

Table 1. Search and select articles of public budgeting on Scopus

Phase	Criteria	Total articles
Initial search	TITLE-ABS-KEY ("public budget" OR "public budgeting")	1,324
First selection	TITLE-ABS-KEY ("public budget" OR "public budgeting") AND PUBYEAR < 2023 AND (LIMIT-TO (PUBSTAGE , "final")) AND (LIMIT-TO (DAUGYPE , "ar") OR LIMIT-TO (DAUGYPE , "ch") OR LIMIT-TO (DAUGYPE , "cp") OR LIMIT-TO (DAUGYPE , "bk")) AND (LIMIT-TO (LANGUAGE , "English")) AND (LIMIT-TO (SRCTYPE , "j") OR LIMIT-TO (SRCTYPE , "b") OR LIMIT-TO (SRCTYPE , "p") OR LIMIT-TO (SRCTYPE , "k")) AND (EXCLUDE (LANGUAGE , "Portuguese") OR	1,050

EXCLUDE (LANGUAGE , "Spanish") OR EXCLUDE (LANGUAGE , "Turkish") OR EXCLUDE (LANGUAGE , "Czech") OR EXCLUDE (LANGUAGE , "Italian") OR EXCLUDE (LANGUAGE , "Romanian") OR EXCLUDE (LANGUAGE , "French") OR EXCLUDE (LANGUAGE , "Japanese") OR EXCLUDE (LANGUAGE , "Moldavian") OR EXCLUDE (LANGUAGE , "Moldovan") OR EXCLUDE (LANGUAGE , "Russian") OR EXCLUDE (LANGUAGE , "Ukrainian")

Second selection Selection based on title and abstract according to keywords and articles with unavailable abstracts and duplicate articles were excluded from the dataset.

982

Source: Data Processed (2022)

Referring to the results of Dewi, Gamayuni, and Oktavia (2022) and Muhtar, Rusli, and Nurasa (2022), the search keyword was determined to be "public budget" or "public budgeting" . Data collection is carried out on the Scopus database for public budget publications published until August 2022. Scopus was chosen as a data source because it includes many extensive peer-reviewed and reputable publications, so it can be representative of public budgeting publications to carry out a bibliometric analysis. Additionally, data cleaning is crucial because this database wasn't created expressly for bibliometric analysis, thus researchers need to get rid of duplicates and incorrect information (Donthu et al., 2021; Zupic and Čater, 2015).

The first selection was carried out with some inclusion and exclusion criteria. Inclusion criteria include limitation of publication year before 2023, the final article in English, type of article (document, book chapter, conference paper, book), and type of publication source (journal, proceeding, book, and book series). Exclusion criteria include eliminating articles in languages other than English.

After the selection process, the data is downloaded from Scopus and saved in BibTex format. Donthu et al. (2021) advise looking through the number of publications available on the research topic to be investigated to ascertain whether the study's scope is sufficiently broad. For bibliometric analysis, a study area is deemed tiny if there are fewer than 300 papers but can be fairly substantial if there are hundreds or thousands of papers (Donthu et al., 2021). In this research, after the second selection, 932 papers were discovered. This amount was found to be sufficient for the public budgeting bibliometric analysis. Next, data is processed with the Biblioshiny application. Biblioshiny is a web application of bibliometrics-R package developed by Aria and Cuccurullo (2017) for data extraction, in which the analysis stage begins with converting Bibtex data into R data frames. Information on how to use Biblioshiny can be found at <https://www.bibliometrix.org/home/index.php/layout/biblioshiny>. Co-word analysis in this study used the author's keywords as an input. Tabulation data is saved in CSV format and visualizations are saved in png format, then analyzed according to research purposes

Results and Discussion

The data processed by Biblioshiny consists of 982 documents, 704 publication sources, and 1992 authors in the field of public budgeting for timespan from 1968 to 2022. Based on the document type, the data obtained comprised 744 articles, 34 books, 107 book chapters, and 97 conference papers. To achieve the research objectives, bibliometric analysis is carried out based on annual scientific production, three-field plots showing the relationship of authors, keywords and countries, most relevant sources, top author's production over time, word cloud, word dynamics, and co-occurrence network based on keywords. Each result is visualized as follows.

Annual Scientific Production

The growth of publications in quantity can be seen from the annual growth rate parameter and is visualized in a graph of the number of publications per year (figure 2) below.

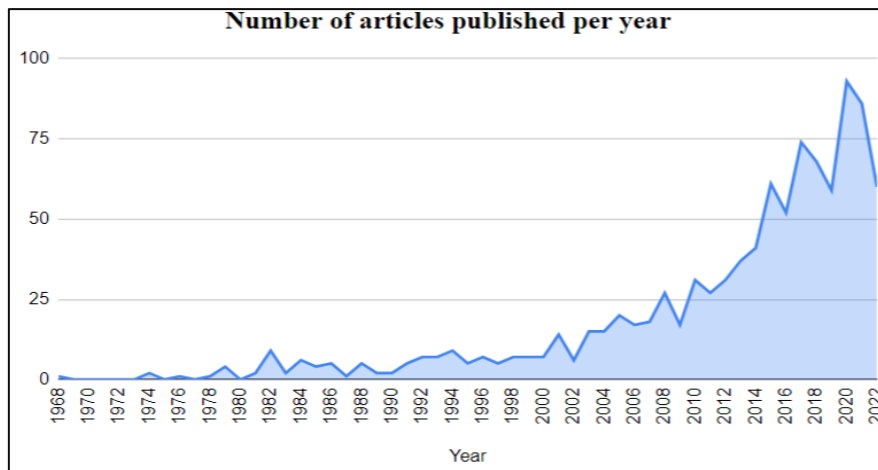


Figure 2. The growth of public budget publications indexed by Scopus (1968 - Aug 2022)

Source: Data Processed, 2022

From 1968 to August 2022, the growth of Scopus-indexed public budget publications initially increased slightly gradually but quickly flew from 2014, as shown in Figure 2, with an annual growth rate of 7.88%. Although small, the number of public budget articles increased positively, especially in 2020 it reached 93 publications. There may have been publications in this field in 1969 - 1973, 1975, 1977, and 1980, but there were no articles in Scopus that year. In August 2022, public budget publications reached 60 articles and are expected to reach 93 by the end of the year.

The Most Relevant Sources

Performance analysis, in addition to using data on the number of articles published and cited, also examines the sources of publications. Table 2 below displays a graph of the 14 of 744 sources that published the most articles about public budgeting between 1968 and August 2022. There are 730 other publication sources, but they have only published less than five public budgeting articles over the past five decades. Among the 14 most relevant sources, only one is a proceeding, namely the ACM International conference proceedings series with five public budgeting articles published since 1996.

To analyze the impact of an article on research during a certain period, the number of citations to articles published in a certain year is calculated. The influence of a publication can be measured by the number of citations it receives, based on the premise that citations show intellectual connections when one publication refers to another (Appio, Cesaroni, & Di Minin, 2014; Donthu et al., 2021). It means that a publication is more significant in the field of research the more times an article is mentioned.

Table 2. The most relevant sources of public budget publications for 1968 - Aug 2022

Sources	Number of Articles	Type & Rank Scimagojr	Publication Time Span	Publisher
Public budgeting and finance	33	Journals (Q2)	1981 - now	Wiley-Blackwell
International journal of public administration	17	Journals (Q2)	1979 - now	Taylor and Francis Ltd.
Journal of public budgeting, accounting and financial management	13	Journals (Q1/Q2)	1996, 2011 - now	Emerald Group Publishing Ltd.
Energy policy	11	Journals (Q1)	1973 - now	Elsevier
Public choice	8	Journals (Q1/Q2)	1966 - now	Springer Netherlands
Acta universitatis agriculturae et silviculturae mendelianae brunensis	7	Journals (Q4)	2007 - now	Mendel University of Agriculture and Forestry Brno
Lecture notes in computer science	7	Journals (Q2/Q3)	1937, 1955, 1973 - now	Springer Verlag
Sustainability	6	Journals	2009 - now	MDPI AG

Sources	Number of Articles	Type & Rank Scimagojr	Publication Time Span	Publisher
ACM international conference proceeding series	5	(Q1/Q2) Conferences and proceedings	1996-1997, 1999 - now	Association for Computing Machinery (ACM)
European journal of political economy	5	Journals (Q1)	1985 - now	Elsevier
Journal of public economics	5	Journals (Q1)	1975 - now	Elsevier
Policy studies journal	5	Journals (Q1)	1972 - now	Wiley-Blackwell Publishing Ltd
Public administration review	5	Journals (Q1)	1978-1983, 1985, 1988, 1996 - now	Wiley-Blackwell Publishing Ltd
Teaching public administration	5	Journals (Q2)	1979-1980, 1982-2007, 2009, 2012 - now	SAGE Publications

Source: Data Processed (2022)

The visualization of the number of citations for a public budget article published in a given year is illustrated in Figure 3 below. Figure 3 shows the total citations for articles published fluctuates in a given year. Although in 2020 the most public budget articles were published, the total citations to articles were not the most. As seen in figure 3, the publication years with the most cited articles were 2000 (7 articles with 806 citations), 2004 (15 articles with 583 citations), 2011 (27 articles with 1,544 citations) and 2017 (74 articles with 741 citations). From 1968 to August 2022, the average citation is about 200 times yearly.

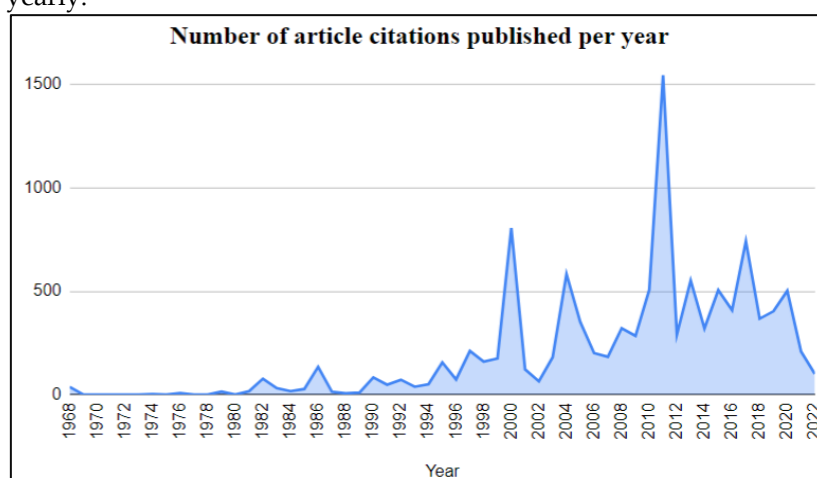


Figure 3. The growth of citation public budget publications (1968 – Aug 2022)

Source: Data Processed, 2022

Based on performance analysis, eight renowned journals with Scimagojr Ranks of Q1 or Q2 and two textbooks are among the ten sources with the most referenced articles (Table 3). The range of the publication years for the ten scientific documents is between 1990 and 2013. The publication with the highest citations (1,354 times) was a book entitled "Divided we stand: Why inequality keeps rising" published in 2011 by the Organization for Economic Co-operation and Development (OECD). This book reviews the extent to which institutional and regulatory reforms, technological advances, and economic globalization have affected the way income is distributed. Even though it has been published for more than 10 years, this book is still interesting for many researchers as can be seen from its many citations.

The journal's most cited article is "Is a finance-led growth regime a viable alternative to Fordism? A preliminary analysis," written by Robert Boyer and published in the Journal of Economy and Society by publishers Taylor and Francis. The journal has a very good reputation with a Q1 ranking category according to Scimagojr from 1999 to 2021. This article has received many citations in the

nearly 22 years since its publication in 2000. Table 3 below presents the 10 most cited articles in public budgeting publication for more than 50 years.

Table 3. Top 10 most cited of public budgeting publication for 1968 – Aug 2022

References	Year	Source title & Rank Scimago	Cited
Organisation for Economic Co-operation and Development. (2011). <i>Divided we stand: Why inequality keeps rising</i> (pp. 17-17). Paris: OECD publishing.	2011	Divided we stand: Why inequality keeps rising (Book)	1,354
Boyer, R. (2000). Is a finance-led growth regime a viable alternative to Fordism? A preliminary analysis. <i>Economy and society</i> , 29(1), 111-145.	2000	Economy and society (Q1)	577
Castles, F. G. (2004). <i>The future of the welfare state: Crisis myths and crisis realities</i> . OUP Oxford.	2004	The future of the welfare state: Crisis myths and crisis realities (Book)	400
Kickert, W. J. (1997). Public governance in The Netherlands: an alternative to Anglo-American 'managerialism'. <i>Public administration</i> , 75(4), 731-752.	1997	Public administration (Q1)	201
Jones, B. D., Baumgartner, F. R., Breunig, C., Wlezien, C., Soroka, S., Foucault, M., ... & Walgrave, S. (2009). A general empirical law of public budgets: A comparative analysis. <i>American Journal of Political Science</i> , 53(4), 855-873.	2009	American Journal of Political Science (Q1)	173
Alt, J. E., & Lowry, R. C. (2000). A dynamic model of state budget outcomes under divided partisan government. <i>Journal of Politics</i> , 62(4), 1035-1069.	2000	Journal of Politics (Q1)	133
Roubini, N., & Sala-i-Martin, X. (1995). A growth model of inflation, tax evasion, and financial repression. <i>Journal of Monetary Economics</i> , 35(2), 275-301.	1995	Journal of Monetary Economics (Q1)	126
Kempkes, G., & Pohl, C. (2010). The efficiency of German universities—some evidence from nonparametric and parametric methods. <i>Applied economics</i> , 42(16), 2063-2079.	2010	Applied economics (Q2)	111
Barr, A., & Turner, S. E. (2013). Expanding enrollments and contracting state budgets: The effect of the Great Recession on higher education. <i>The ANNALS of the American Academy of Political and Social Science</i> , 650(1), 168-193.	2013	The ANNALS of the American Academy of Political and Social Science (Q1)	96
Berry, W. D. (1990). The confusing case of budgetary incrementalism: Too many meanings for a single concept. <i>The Journal of Politics</i> , 52(1), 167-196.	1990	Journal of Politics (Q1)	81

Source: Data Processed (2022)

Since its publication by the University of Chicago Press began in 1939, the *Journal of Politics* has earned a very high reputation (Q1 for the sociology and political science category). In the journal, based on bibliometric analysis, two papers on public budgets have a lot of citations. One article entitled "The confusing case of budgetary incrementalism: Too many meanings for a single concept" was written by William D. Berry and published in 1990. Another article was written by James E. Alt and Robert C. Lowry entitled "A dynamic model of state budget outcomes under divided partisan government", since its publication in 2000 it has been cited more than 130 times. These two articles examine public budgets from political insights.

Top Author's Production Over Time

Publication productivity is also seen based on the number of articles written by 20 top public budget authors from 1981 - Aug 2022, as shown in Figure 4. The period presented in figure 4 starts from 1981 because, during 1968 - 1980, only nine articles were published and none of the authors of the article are included in the top 20 authors category. The total number of articles written by the top twenty authors is 78 papers.

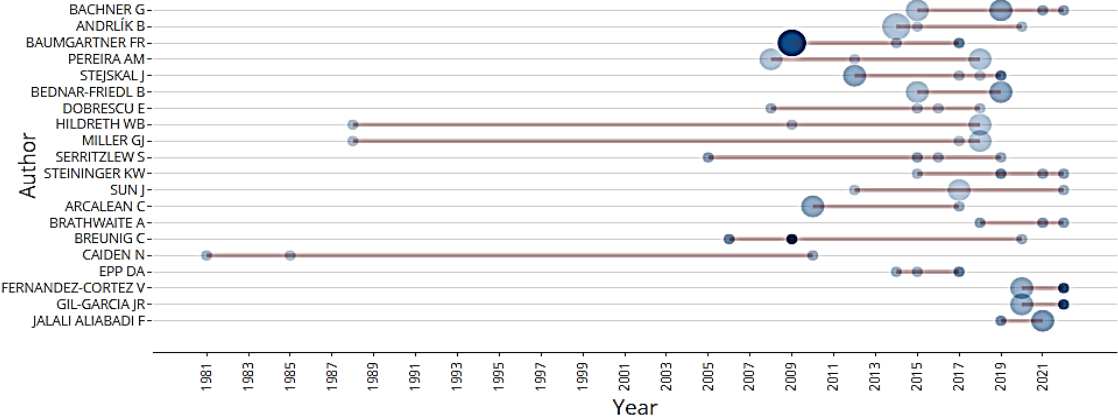


Figure 4. Top author's production of public budget publications for 1968 - August 2022
Source: Data Processed (2022)

The results of the performance analysis of 982 publications show that 1992 authors have published public budget research. It means, for more than five decades, on average, each researcher has written two articles. This research shows that a public budget writer writes a maximum of six papers. Gabriel Bachner is the author of the most (6 papers) published public budget articles from 2015 to August 2022. Although it has only been about seven years of publication in this area, Bachner's productivity is the highest. The four high-prolific authors wrote five publications each, namely Břetislav Andrlík (2014 - 2020), Frank Baumgartner (2009 - 2017), Alfredo Marvão Pereira (2008 - 2018), and Jan Stejskal (2012 - 2019). In terms of time, three authors who have written research on public budgets over the long term are Bartley Hildreth (1988 - 2018), Gerald J. Miller (1988 - 2018), and Naomi Caiden (1981 - 2010). Hildreth and Miller each published four articles, and Caiden wrote three articles.

Further tracking of the citations of articles written by the top twenty authors shows that the article written by Bryan D. Jones, Frank R. Baumgartner, Christian Breunig, and ten other researchers entitled "A general empirical law of public budgets: A comparative analysis" has been distilled by 173 times until August 2022. They examine regularities and differences in public budgeting from a comparative perspective and find differences in budget laws in each country related to differences in formal institutional structures (Jones et al., 2009). This paper was published in the American Journal of Political Science in 2009. Although this paper was published in the American Journal of Political Science in 2009, it is still the reference for many studies that examine public budgets from a legal perspective.

Word Frequencies And Dynamics

Most frequent words visualization in the bibliometric analysis shows terms or words with the most frequency from a document data set. This study uses the author's keyword as input for the analysis and shows the 20 frequent words of public budgeting publications in figure 5.

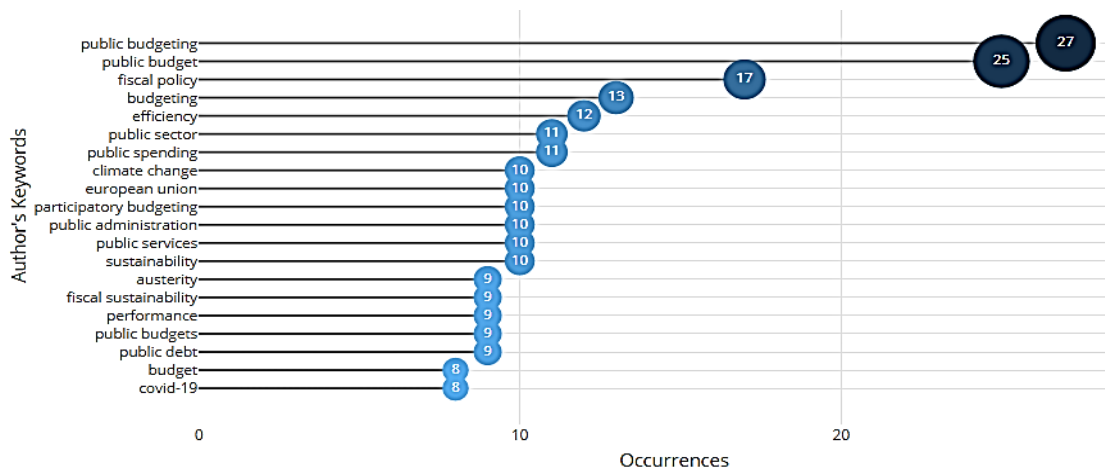


Figure 5. Most frequent words of author's keywords in public budget publications

Source: Data Processed (2022)

The word analysis in Figure 5 shows that research on public budgets covers the topics of fiscal policy, budget efficiency and performance, economic climate change, participatory budgeting, public administration and services, and state debt. The theme of COVID-19 appeared quite a lot along with the pandemic from late 2019 to 2022. The emergence of this topic shows budget researchers' interest in examining the pandemic's impact on public budgeting in various countries. The dataset in this study shows eight articles discussing this topic.

According to each word's usage in a year and comparison to other words used in a year, word dynamics describes the number of times a keyword appears in research in a given year. Figure 6 illustrates the word growth brought on by the public budgeting study theme's word dynamics. The graph in figure 6 shows the growth in using twenty keywords with a frequency of more than seven. Before 2000, these words were not used as keywords in public budget research. The trend in using these keywords has increased rapidly since 2013, except the theme of COVID-19, started appearing in 2019. The theme of COVID-19 appeared quite a lot along with the pandemic from late 2019 to 2022. The emergence of this topic shows budget researchers' interest in examining the pandemic's impact on public budgeting in various countries. The dataset in this study shows eight articles discussing this topic. For instance, the study by Andrew et al. (2020) reviews the Australian government's direct financial response to the COVID-19 pandemic. It investigates how the limitations of this response were brought about by the conditions set up by earlier neoliberal policies.

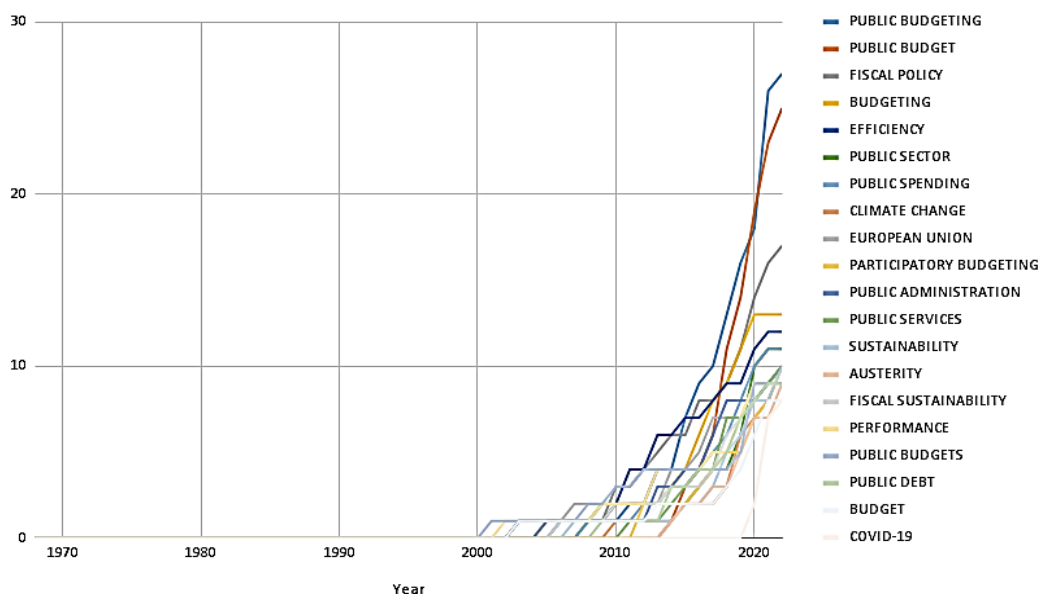


Figure 6. Word dynamics of keywords in public budget publications (1968 - Aug 2022)

Source: Data Processed (2022)

Figure 6 also shows the number of articles using each keyword yearly. The most number of papers used the keywords public budgeting (143 papers), public budget (106 papers), and public budgets (77 papers). It is natural because both are search keywords to construct the dataset in this study. Two topics or keywords in public budget research that show an increasing trend from year to year are fiscal policy and efficiency.

The topic of fiscal policy in 2003 began to be discussed in the public budget, with the publication of an article entitled "The implementation of the stability and growth pact: taking stock of the first four years" in the Journal of European Integration, published by Taylor and Francis. Horst Feldmann wrote this article to analyze what causes a country to exceed the ceiling for government deficits and asks whether there are any reasons to justify it. As of August 2022, 117 articles have examined public budgets from fiscal policy.

In 2013, the subject of public budget efficiency also got its start. "How would setting policy priorities according to cost-benefit analyzes affect the provision of road safety?" was the title of the first paper to use the phrase. It was written by Rune Elvik and appeared in the Elsevier-published Accident Analysis & Prevention Journal. The study examined the effects of prioritizing road safety strictly based on a cost-benefit analysis. Elvik found that it was discovered that the lack of resources, which arises when public budgets must be increased to make room for all cost-effective measures, was not a constraint.

Three-field plots (authors, keywords and countries)

The data analysis about the interactions between the three qualitative components is displayed in the three field plot. Authors, affiliations, nations, keywords, keywords plus, titles, abstracts, sources, references, and cited sources are among the data that can be generated to be organized into three field elements. Three elements – authors, keywords, and countries – are modelled in this study (figure 8).

Figure 8 shows that the top twenty authors, focusing on public budgeting, are also interested in climate change, efficiency, public services, performance, the public sector, and European union. However, many other topics that are becoming trends need more attention from top authors. These topics include the linkage of public budgets to fiscal policy, fiscal sustainability, public administration, public spending, participatory budgeting, and public debt.

On the other hand, the countries with the highest public budget publications are the United States, Italy, Spain, Germany, Brazil, the United Kingdom, the Czech Republic, China, Portugal, and France. The three-field plot shows the distribution of hot topics in these countries. For example, researchers in the United States also research fiscal policy, climate change, European integration, participatory budgeting, and the public sector, besides discussing public budgets in general.

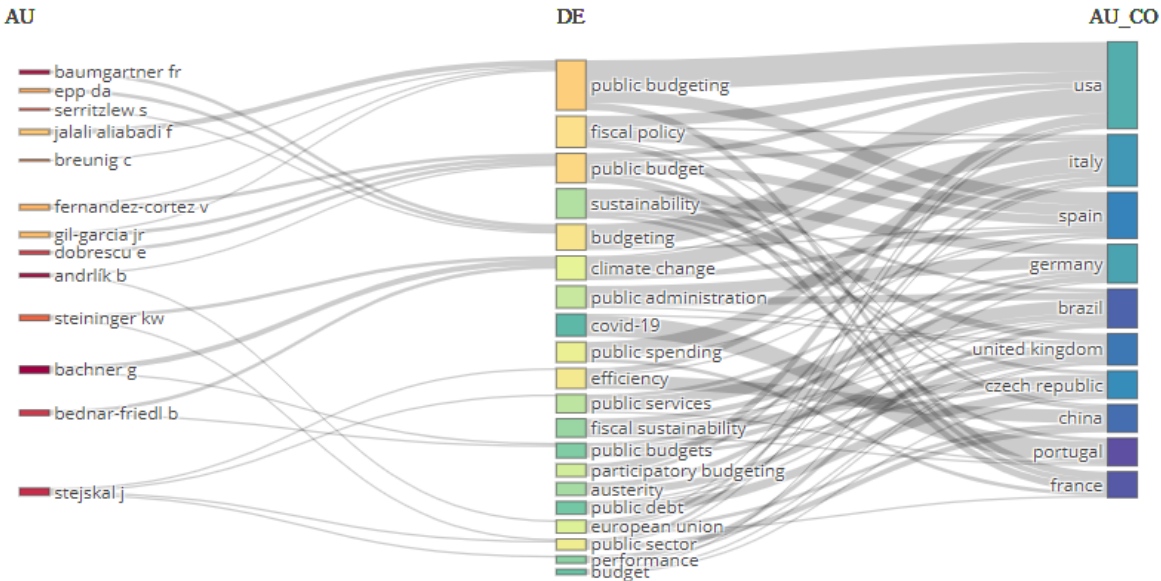


Figure 8. Three-field plot of authors, keywords and countries in public budget
Source: Data Processed (2022)

The diagram in Figure 8 shows the top 20 keywords that have caught the attention of researchers in these ten countries. It shows that some researchers, besides top writers play an important role in determining trends in public budget research topics.

Conclusion

The growth of Scopus-indexed public budget publications for 1968 - 2022 shows that works published in previous years sometimes get higher citations, so publication performance is unrelated to the publication period. The results of a bibliometric study of the most cited articles show that the issue of public budgeting is interesting to study from the economic field and outside it. An example of the most researched topic from an economic perspective is the relationship between public budgeting and fiscal policy, fiscal, public spending, participatory budgeting, and public debt. Meanwhile, the study of public budgets is linked to other fields, including political science, sustainability, public administration, climate change, efficiency, public services, performance, the public sector, and the European Union. The diversity of aspects of studying public budgets also emerged in line with the phenomena that hit the world. Over the past three years, public budget researchers have expanded their studies by considering the COVID-19 pandemic as one of the triggers for changes in public budgets in various countries. The results of this review show many publication sources suitable for public budget research. Public budget researchers can choose the most appropriate publication sources to disseminate their studies through the information in this paper. The researchers can use this information to understand public budget research plans better.

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