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Mapping the Intellectual Structure of Public Expenditure and Economic Growth Research: A Bibliometric Analysis of Wagner's Law

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Abstract

The relationship between public expenditure and economic growth has been a focal point of fiscal policy analysis for over a century, largely shaped by the competing hypotheses of Wagner's Law and Keynesian theory. This study presents a comprehensive bibliometric analysis to map the intellectual structure and research trends surrounding Wagner's Law within the broader discourse on public expenditure and economic growth. Using a systematic search in the Scopus and Web of Science databases with the keywords "Public Expenditure," "Economic Growth," and "Wagner," a total of 69 relevant documents published between 1979 and 2025 were retrieved. The merged dataset was analysed using the Biblioshiny package in R. The results reveal a modest annual growth rate of 1.52% in publications, with an average of 16.04 citations per document and a moderate international collaboration rate of 13.04%. The intellectual landscape is dominated by empirical validations of Wagner's Law across diverse economies, employing time-series econometric techniques. The findings highlight the persistent relevance of Wagner's Law in fiscal policy research, the growing methodological sophistication in empirical testing, and emerging thematic clusters linking public spending to sustainable and inclusive growth. This study contributes a data-driven overview of the evolution, influence, and research frontiers in Wagner's Law scholarship.

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KEYWORDS: Public Expenditure; Economic Growth; Wagner's Law; Bibliometric Analysis; Fiscal Policy; Bibliometrix; VOS viewer; Fiscal Sustainability

1. INTRODUCTION

Bibliometric Analysis is a quantitative technique used in the analysis of scientific research output. Alan Pritchard was the first man who coin the term Bibliometrics in 1969 in his article "Statistical Bibliography or Bibliometrics" published in "Journal of Documentation". However, it became more popular during the 1980s. Bibliometrics offer valuable information in evaluating academic research output. Public expenditure plays a pivotal role in shaping economic growth, influencing macroeconomic stability, income distribution, and infrastructure development. The debate over whether government expenditure drives or follows economic growth has been central to fiscal policy literature, primarily framed around Wagner's Law and the Keynesian hypothesis. Wagner (1893) posited that economic growth leads to an expansion in public expenditure due to the increased demand for administrative, protective, and welfare functions. In contrast, the Keynesian perspective argues that public spending acts as a catalyst for growth, especially during economic downturns. Despite extensive empirical research, the literature lacks a comprehensive bibliometric synthesis of the evolution, influence, and collaboration patterns of studies on Wagner's Law. This paper fills that gap by employing bibliometric analysis to map the intellectual and thematic structure of research spanning 1979–2025. Despite decades of empirical work, the evidence remains inconclusive and context-dependent, reflecting variations in methodological approaches, data periods, and national circumstances. To systematically uncover the structure and evolution of this literature, the present study conducts a bibliometric analysis of research explicitly connecting *public expenditure*, *economic growth*, and *Wagner's Law*. Data were retrieved from the Scopus and Web of Science databases using the search string "Public Expenditure" AND "Economic Growth" AND "Wagner." After merging and removing duplicates, a curated corpus of 69 documents spanning 1979–2025 was analysed using Biblioshiny. The findings reveal a modest yet sustained growth in publications (average annual rate: 1.52%), with scholarly contributions concentrated in countries such as Australia, Turkey, Greece, India, and the United States. The analysis also highlights the dominance of econometric methodologies, particularly *cointegration*, *Granger causality*, and *error-correction modelling,* which underpin the empirical testing of Wagner's Law across diverse contexts.

Keyword co-occurrence and thematic mapping indicate that the intellectual structure of this field is anchored around recurring clusters: *Wagner's law*, *public expenditure*, *economic growth*, *cointegration*, and *causality*. The thematic evolution suggests that while methodological sophistication has increased, theoretical integration remains fragmented. The literature continues to revolve around verifying the direction and strength of the expenditure–growth relationship rather than developing new theoretical frameworks or comparative models. By synthesising and visualising these patterns, this study contributes to a clearer understanding of how research on public expenditure and economic growth has evolved under the lens of Wagner's Law. It identifies dominant intellectual clusters, highlights underexplored areas, and provides a foundation for future empirical and policy-oriented investigations into the fiscal growth nexus.

2. METHODOLOGY

2.1 Data Sources and Search Strategy

To map the intellectual structure of research connecting public expenditure, economic growth, and Wagner's Law, the present study draws on two of the most comprehensive bibliographic databases—Scopus and the Web of Science (WoS) Core Collection. These databases were selected due to their extensive coverage of peer-reviewed journals, multidisciplinary reach, and advanced citation indexing capabilities. The search was conducted in August 2025, using the following Boolean search string applied to titles, abstracts, and keywords: "Public Expenditure" AND "Economic Growth" AND "Wagner"

This query was intentionally designed to capture literature explicitly addressing the empirical or theoretical dimensions of Wagner's Law within the broader discourse on fiscal policy and economic growth. Only *journal articles, conference papers, book chapters, and reviews* written in English were considered to ensure relevance and comparability. No restrictions were placed on document type within those categories to allow a comprehensive view of the field.

2.2 Data Cleaning and Integration:

The initial search returned 87 documents from Scopus and 54 documents from WoS. These datasets were exported in BibTeX and CSV formats, respectively, and subsequently combined into a single master file. Duplicate records identified using Digital Object Identifiers (DOIs), author names, and titles were removed using the built-in deduplication function in *Biblioshiny for Bibliometrix* (version 4.2.1). The final curated dataset comprised 69 unique documents spanning the period 1979–2025, representing the total corpus used for analysis.

2.3 Analytical tools and techniques:

Bibliometric analyses were performed using the R-based Bibliometrix package (Aria & Cuccurullo, 2017) and its graphical interface, Biblioshiny, and Vos viewer software (Van Eck & Waltman, 2009) was also used. Descriptive indicators such as annual scientific production, most relevant sources, authorship patterns, and country-level contributions were computed to provide an overview of publication trends.

To explore the conceptual and intellectual structure of the field, the following advanced bibliometric techniques were employed:

- Co-word analysis to identify the most frequent and co-occurring keywords, revealing the thematic focus and intellectual linkages.
- Thematic mapping to classify themes based on centrality and density, distinguishing between motor, basic, emerging, and niche themes.
- Trend topic analysis to visualise the temporal evolution of dominant keywords and methods.

- Co-authorship and country collaboration networks to examine the geographic and institutional distribution of research activity.

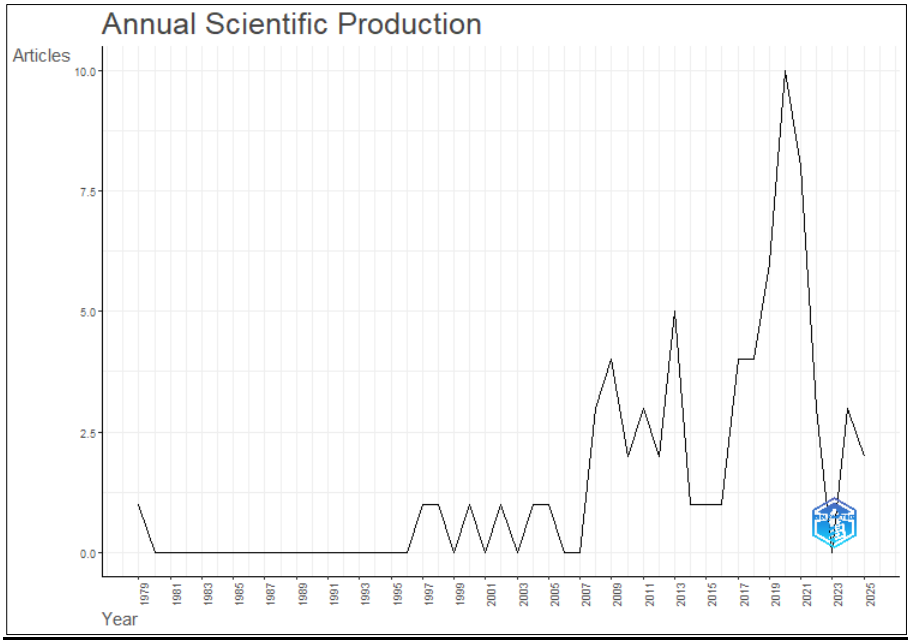
3. RESULTS AND DISCUSSION

Table 1: Descriptive Publications Trend

Category	Indicator	Value
GENERAL INFORMATION	Timespan	1979–2025
	Sources (Journals, Books, etc.)	49
	Documents	69
	Annual Growth Rate (%)	1.52
	Document Average Age	9.9
	Average Citations per Document	16.04
	References	0
DOCUMENT CONTENTS	Keywords Plus (ID)	128
	Author's Keywords (DE)	171
AUTHORS	Total Authors	150
	Authors of Single-Authored Documents	13
AUTHOR COLLABORATION	Single-Authored Documents	14
	Co-Authors per Document	2.25
	International Co-Authorships (%)	13.04
DOCUMENT TYPES	Articles	66
	Conference Papers	2
	Reviews	1

The bibliometric dataset, comprising 69 documents published between 1979 and 2025, reflects a modest but sustained scholarly interest in the relationship between public expenditure and economic growth within the framework of Wagner's Law.

The annual scientific production shows intermittent activity in the 1980s and 1990s, followed by a gradual rise from 2005 Onward, coinciding with the increasing use of advanced econometric methods in macroeconomic research. The average annual growth rate of publications is 1.52%, indicating a stable expansion of scholarly attention.



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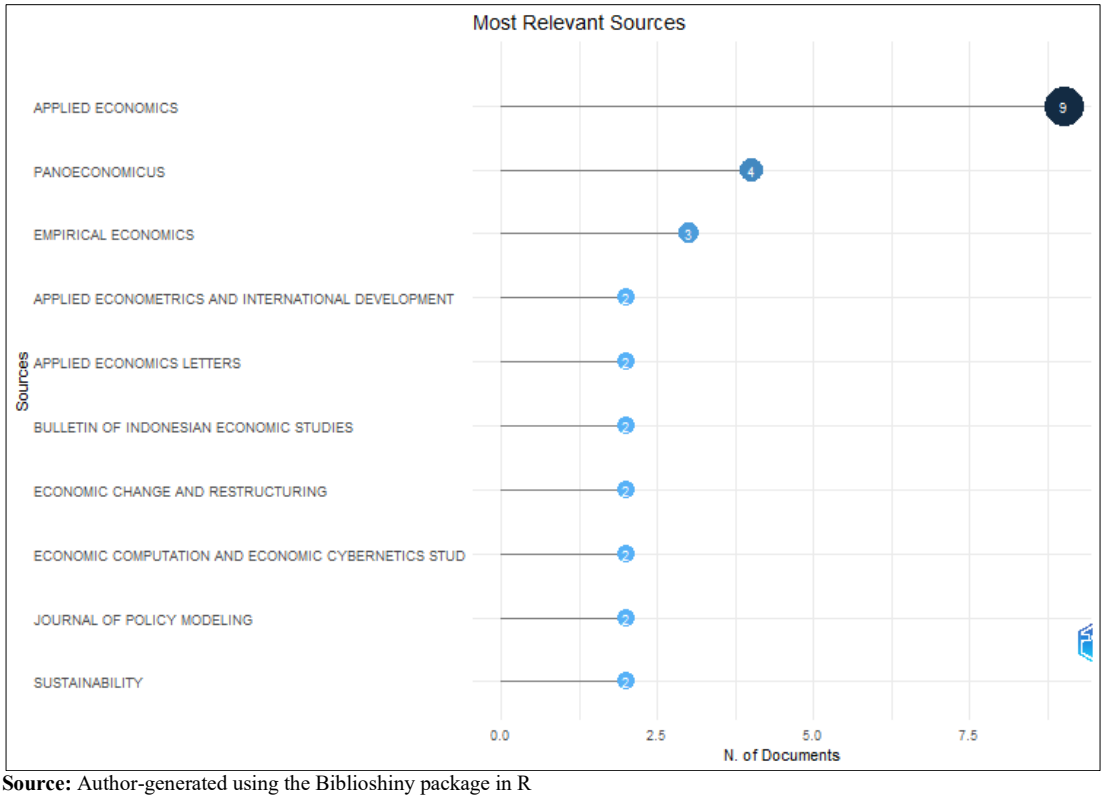

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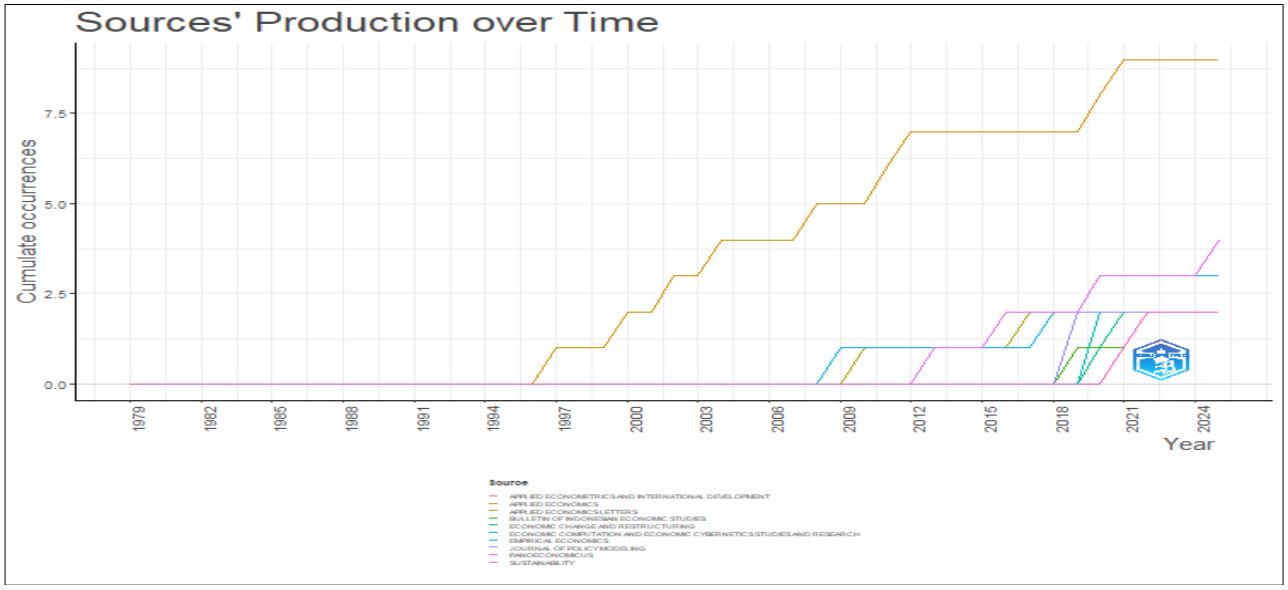
A total of 49 distinct publication sources were identified, with the most prolific being *Applied Economics*, *Panoeconomicus, and Empirical Economics*. These journals are well-established in Applied economics, signalling that the Wagner's Law debate continues to be anchored in mainstream empirical economics outlets rather than niche policy journals.



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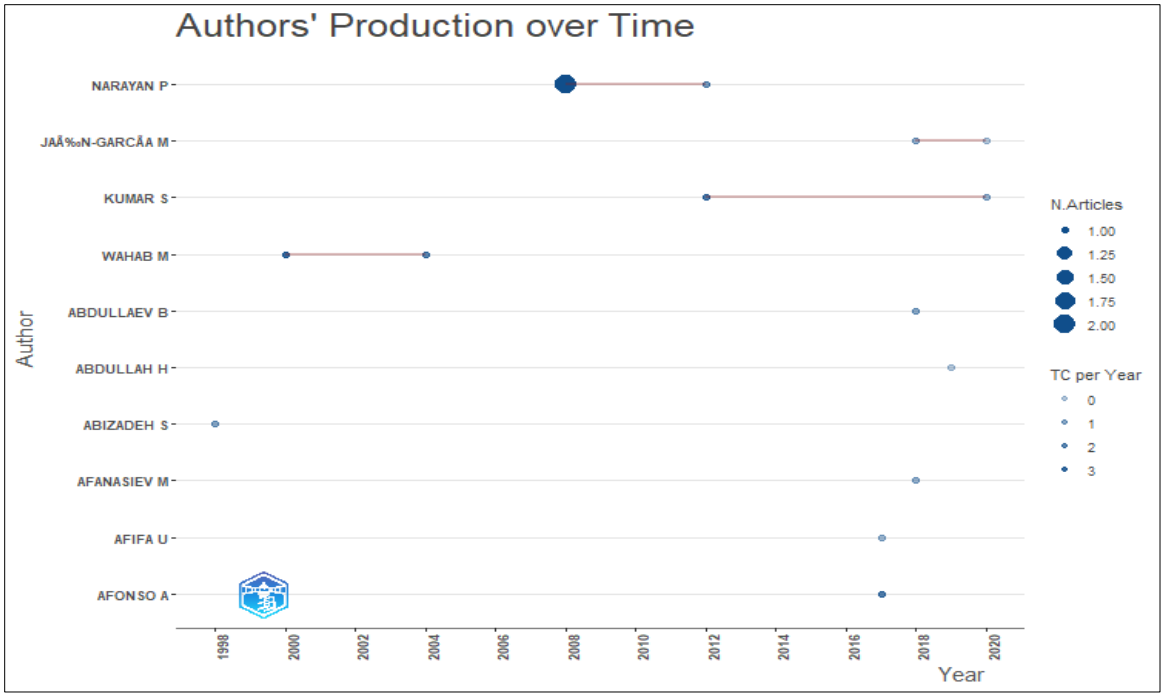

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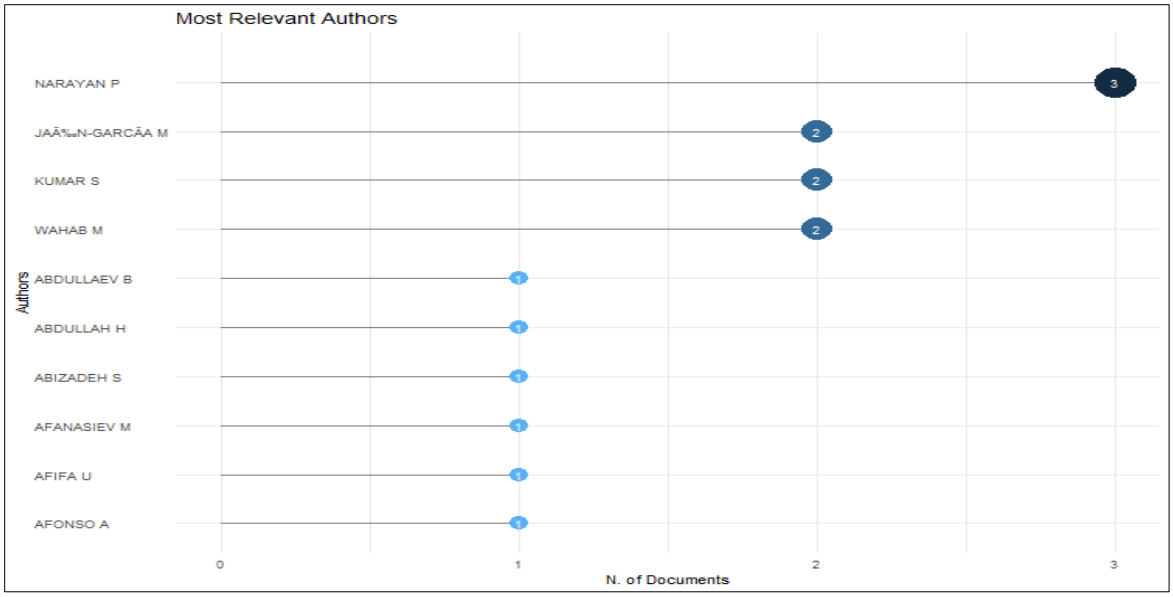

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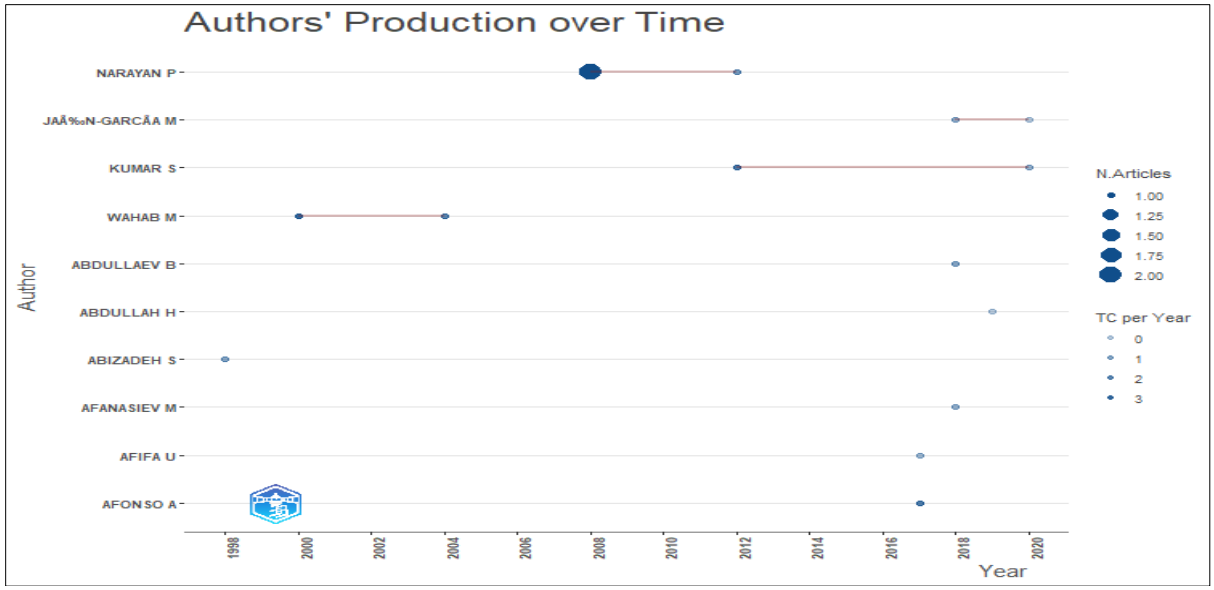

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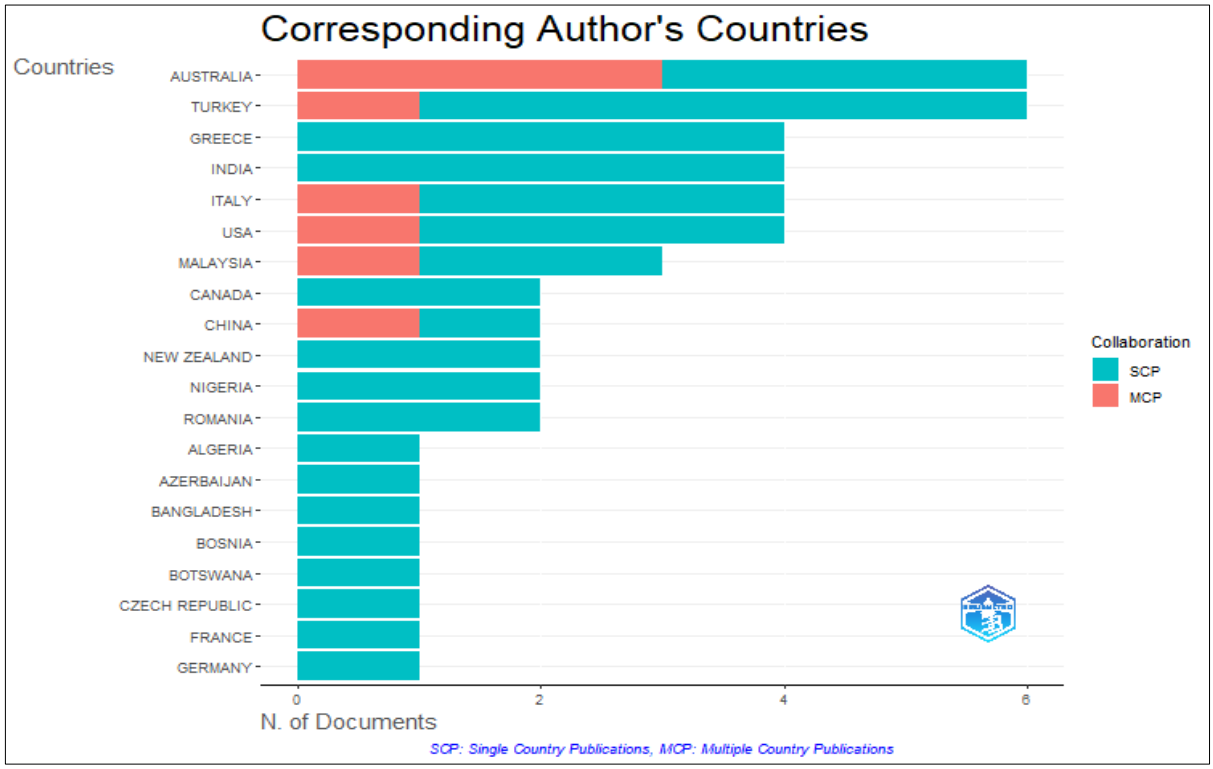

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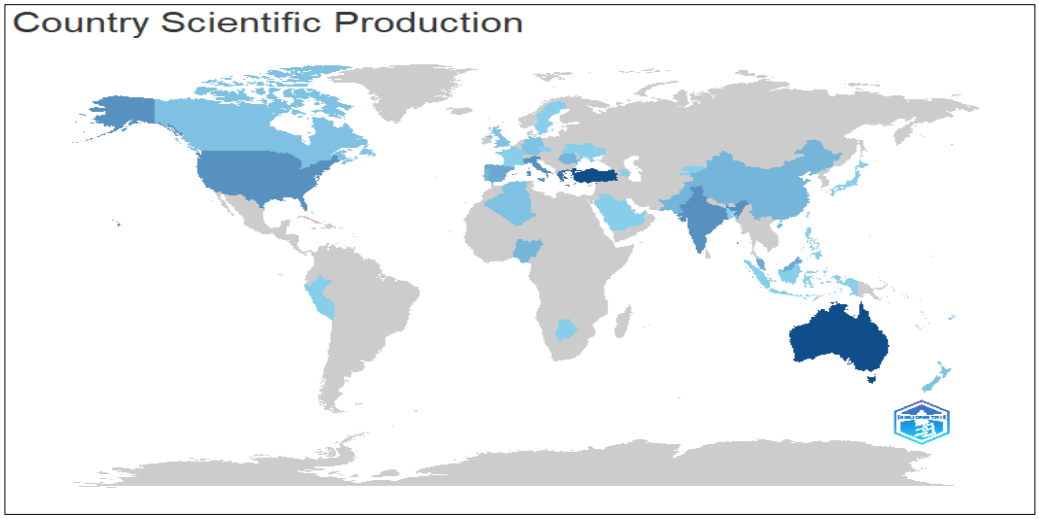
The field exhibits a moderate degree of collaboration, with an average of 2.3 authors per paper, suggesting that research in this area remains relatively individualistic compared to other economics subfields that rely heavily on large teams or co-authorship networks. Country-level analysis reveals that Australia and Turkey are the leading contributors, followed by Greece, India, Italy, and the United States. The presence of both developed and emerging economies underscores the global relevance of the expenditure–growth relationship. However, inter-country collaboration networks are relatively sparse, implying that most studies are nationally focused, often using time-series data from single-country contexts.



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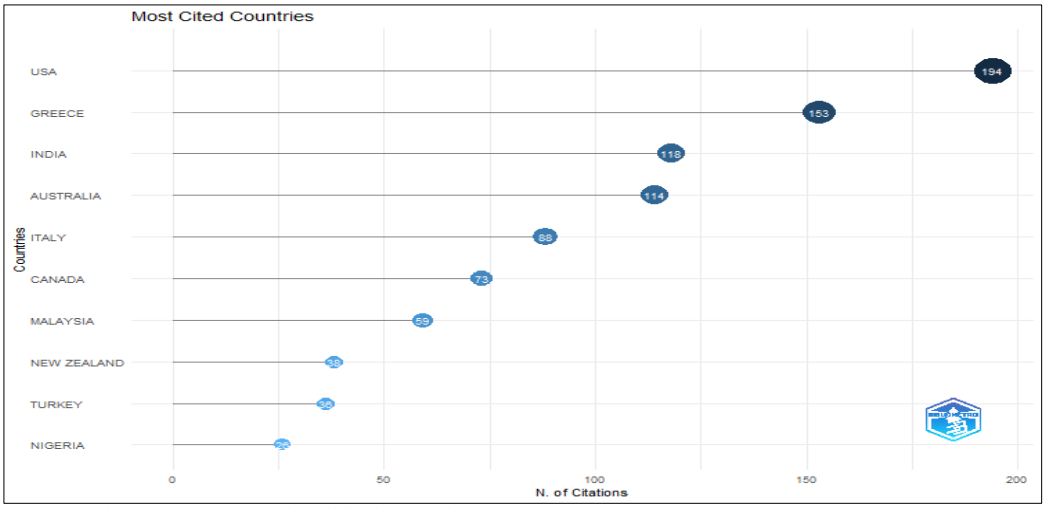

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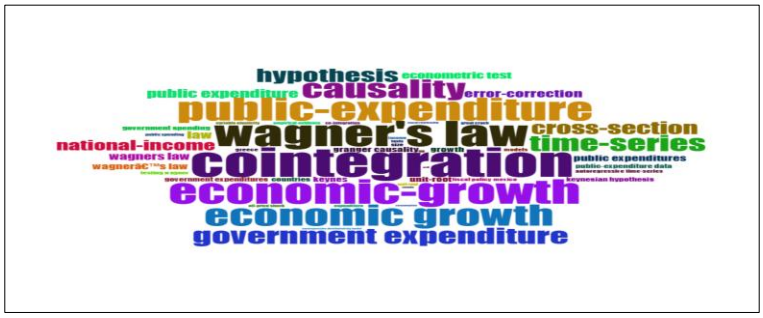
Citation analysis indicates that the most influential studies tend to be those that employ rigorous econometric testing of Wagner's Law using modern techniques such as cointegration and causality analysis. Foundational contributions that have inspired subsequent research include works examining long-run expenditure–income relationships across OECD and developing nations. These papers consistently serve as methodological. Benchmarks, explaining their high citation counts. The h-index and g-index of the dataset confirm the field's moderate but enduring impact, reflecting steady citation accumulation rather than short-lived bursts of interest. The most cited journals and authors demonstrate a balanced mix of theoretical and empirical orientations, reaffirming the interdisciplinary character of this literature.



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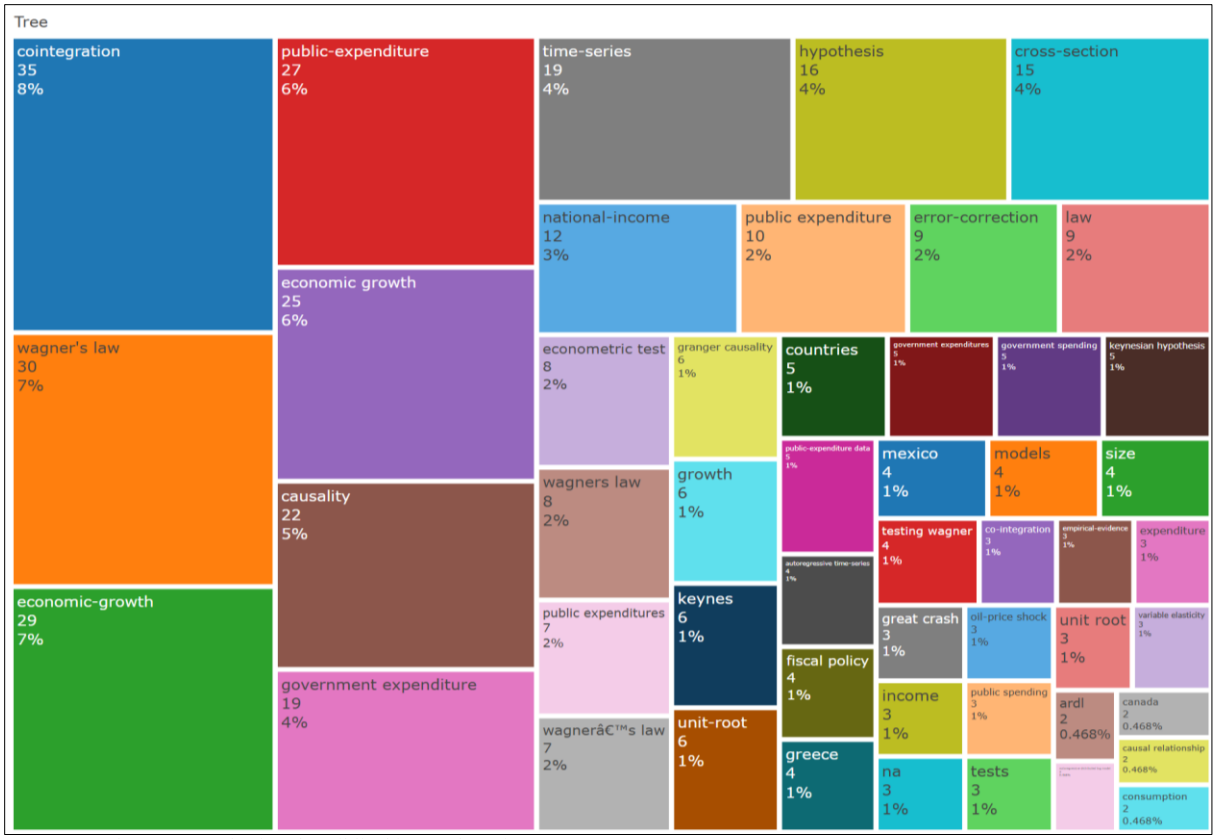

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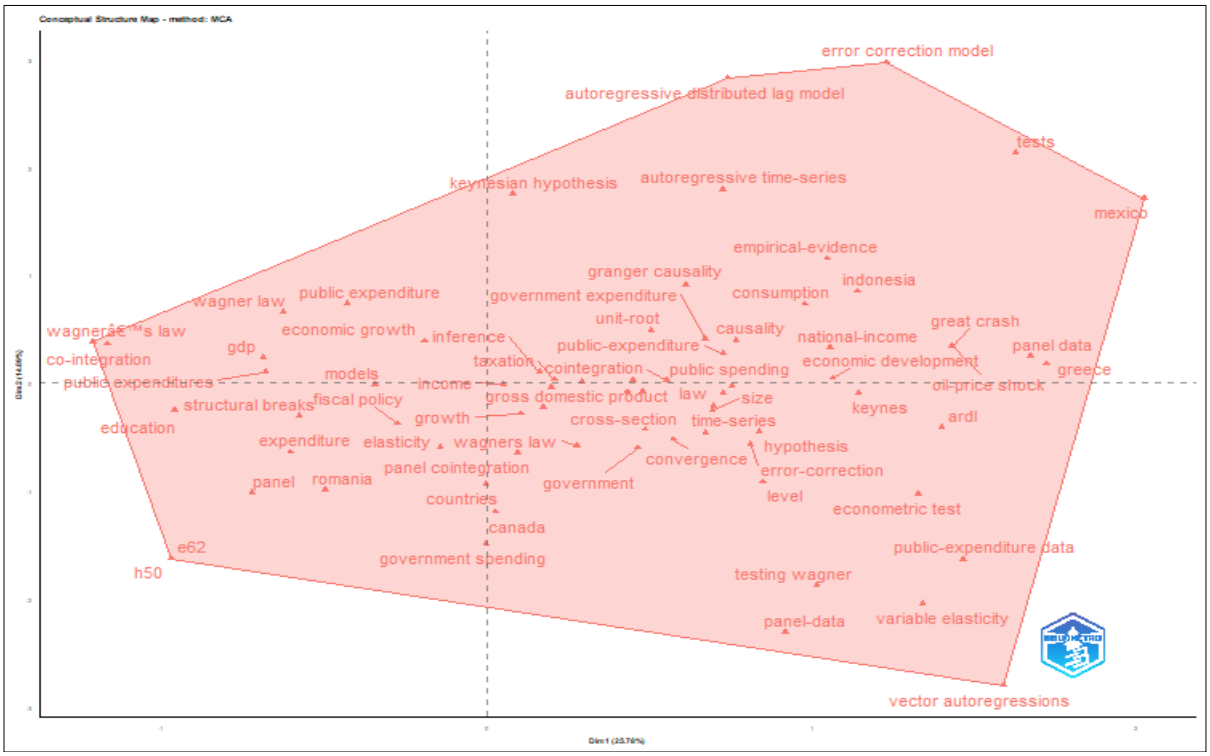

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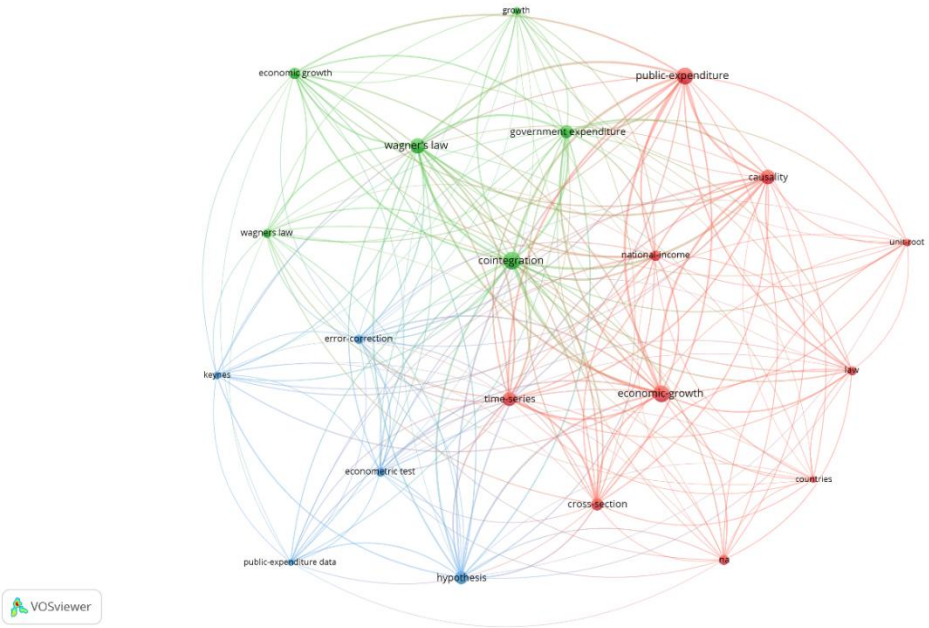

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Table 2: Cluster Analysis

Cluster	CallonCentrality	CallonDensity	RankCentrality	RankDensity	ClusterFrequency
wagner law	0	50	1	2.5	2
public expenditures	0.839455782	52.67857143	5	4	15
cointegration	5.070720222	87.67919823	6	6	436
convergence	0.75	75	4	5	6
wagner's law	0.1	14.28571429	2	1	7
government	0.25	50	3	2.5	2

A co-word analysis of author keywords and Keywords Plus reveals the intellectual backbone of the field. The most frequently occurring keywords are "Wagner's Law", "Public Expenditure", "Economic Growth", "Cointegration", "Causality", and "Time Series Analysis". These recurrent terms highlight the dominance of econometric modelling as the principal methodological approach to testing Wagner's hypothesis.

The thematic map, based on Callon's centrality and density measures, classifies research themes into four quadrants:

- Motor Themes (high centrality, high density): *Wagner's Law* and *Economic Growth*, indicating mature, well-developed core topics central to the field.
- Basic Themes (high centrality, low density): *Public Expenditure* and *Cointegration*, representing foundational yet evolving areas of inquiry that connect with broader macroeconomic debates.
- Niche Themes (low centrality, high density): *Fiscal Policy* and *Panel Data Analysis*, reflecting specialised methodological niches gaining sophistication.
- Emerging or Declining Themes (low centrality, low density): *Government Size*, *Public Debt*, and *Causality Tests*, which either represent re-emerging interest areas or those losing prominence as empirical paradigms evolve.

The trend topic analysis demonstrates the chronological evolution of thematic focus. Early studies (1980s–1990s) were largely descriptive, testing Wagner's Law through simple regression frameworks. Post-2000, with the advent of cointegration techniques, the literature witnessed a surge in studies emphasising long-run and short-run dynamics through Error Correction Models (ECM), ARDL bounds testing, and panel cointegration. From 2015 onward, there has been a growing interest in cross-country analyses and the integration of fiscal

sustainability variables such as public debt and government size, suggesting an expanding analytical scope that situates Wagner's Law within broader fiscal frameworks.

The bibliometric evidence confirms that research on Wagner's Law remains a significant and evolving domain within public finance. While methodological rigour has deepened through the adoption of advanced econometric models, the geographical and theoretical concentration of studies limits generalizability. Most contributions are country-specific, with minimal multi-country comparative analyses. Furthermore, although

econometric validation has dominated, theoretical innovation appears limited, suggesting that future research could benefit from integrating institutional, political economy, and behavioural perspectives to enrich understanding of public expenditure dynamics. Overall, the intellectual landscape of Wagner's Law research is methodologically mature but thematically fragmented. The field has achieved considerable technical sophistication yet continues to revolve around the binary empirical validation of Wagner versus Keynes, often overlooking hybrid or context-specific explanations of fiscal behaviour. A future research agenda could therefore emphasise cross-country panel studies, disaggregated expenditure analysis, and interdisciplinary integration to provide a more nuanced understanding of how government spending interacts with economic growth trajectories.

4. CONCLUSION

The present study provides a comprehensive bibliometric mapping of the intellectual landscape connecting public expenditure, economic growth, and Wagner's Law. Drawing upon 69 documents indexed in Scopus and Web of Science between 1979 and 2025, the analysis reveals a research field that is both methodologically robust and historically persistent. Despite its relatively modest size, this body of literature reflects a continuing scholarly effort to understand the long-term dynamics between fiscal expansion and economic performance across diverse national contexts. The results demonstrate that the debate surrounding Wagner's Law remains a central and enduring theme in public finance. The dominance of econometric methodologies, particularly *cointegration*, *Granger causality*, and *error correction modelling,* highlights the field's emphasis on empirical verification of long-run relationships. However, this methodological consistency also reveals a certain paradigmatic rigidity, i.e., most studies remain confined to validating or refuting the law using time series techniques, often within single-country frameworks. Consequently, theoretical diversification and comparative perspectives have been limited, leaving gaps in our understanding of how institutional structures, fiscal rules, and governance quality mediate the expenditure growth nexus. In summary, this bibliometric analysis not only maps the trajectory of Wagner's Law research but also highlights the need for theoretical renewal and methodological diversity. Future research could benefit from: (i) adopting cross-country panel analyses to enhance comparability, (ii) integrating institutional and behavioural variables into fiscal models, and (iii) exploring the interaction between public expenditure, fiscal responsibility, and inclusive growth. By extending beyond traditional econometric tests, such efforts can revitalise the discourse on the public expenditure growth relationship and reaffirm its relevance to twenty-first-century fiscal policy challenges.

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