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The Unemployment Hysteresis Puzzle: A Bibliometric Analysis of Global Research Patterns

İşsizlik Histerisi Paradoksu: Küresel Araştırma Eğilimlerine Yönelik Bibliyometrik Bir Analiz

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ABSTRACT

Studies on unemployment hysteresis have garnered increasing attention in the literature, particularly during periods of economic crises when countries face persistent unemployment problems. Although the literature on unemployment hysteresis is extensive, no comprehensive bibliometric analysis focusing on this field has been identified. This study aims to provide a comprehensive evaluation of the knowledge accumulated in the unemployment hysteresis literature between 1890 and February 2025. The study employs bibliometric analysis methods, including performance analysis and science mapping techniques. Findings based on 383 documents indexed in the Web of Science (WoS) database reveal a growing body of literature in the field of unemployment hysteresis. Notably, there has been a significant increase in publications since 2006. The number of articles peaked between 2014 and 2018, following the global financial crises and the European debt crisis. Furthermore, it has been determined that the issue of unemployment hysteresis is addressed with similar theoretical frameworks across different geographical regions. When examining the countries with the highest research intensity, developed countries predominantly stand out. The keyword "hysteresis" is frequently associated with "persistence," "time-series," and "unit-root tests," while the keyword "unemployment" is often linked to macroeconomic variables. In conclusion, this study systematically presents the evolution and research trends of the unemployment hysteresis literature through bibliometric analysis methods. The findings offer valuable insights to guide future research in this field.

ÖZ

İşsizlik histerisi alanında gerçekleştirilen çalışmalar, özellikle ekonomik kriz dönemlerinde ülkelerin karşılaştığı işsizlik sorunuyla birlikte literatürde artan bir ilgi görmüştür. Literatürde işsizlik histerisi üzerine yapılan çalışmalar oldukça zengin olmasına rağmen, bu alana yönelik kapsamlı bir bibliyometrik analiz çalışmasına rastlanmamıştır. Bu çalışma, 1890-2025 Şubat dönemi için işsizlik histerisi literatürüne odaklanarak, ilgili alandaki bilgi birikiminin kapsamlı bir değerlendirmesini yapmayı amaçlamaktadır. Çalışmada bibliyometrik analiz kapsamında kullanılan performans analizi ve bilim haritalaması teknikleri kullanılmıştır. Web of Science (WoS) veri tabanında indekslenen 383 belgeye dayanan bulgular, işsizlik histerisi alanında büyüyen bir literatür olduğunu ortaya koymaktadır. Özellikle 2006 yılından itibaren işsizlik histerisi alanındaki yayınlar artış göstermektedir. Küresel finansal krizler ve Avrupa borç krizinin ardından 2014-2018 yılları arasında işsizlik histerisi alanındaki makale sayılarının zirve yaptığı görülmektedir. Ayrıca, farklı coğrafi bölgelerde işsizlik histerisi konusunun benzer teorik çerçevelerle ele alındığı tespit edilmiştir. Çalışma yoğunluğunun en yüksek olduğu ülkeler incelendiğinde, ağırlıklı olarak gelişmiş ülkelerin öne çıktığı görülmektedir. "Hysteresis" anahtar kelimesinin sıklıkla "persistence", "time-series" ve "unit-root tests" anahtar kelimeleriyle birlikte kullanıldığı; buna karşın "unemployment" anahtar kelimesinin ise makroekonomik değişkenlerle birlikte ele alındığı gözlemlenmiştir. Sonuç olarak, bu çalışma bibliyometrik analiz yöntemleri aracılığıyla işsizlik histerisi literatürünün zaman içindeki evrimini ve araştırma eğilimlerini sistematik bir şekilde ortaya koymaktadır. Elde edilen bulgular, gelecekteki araştırmalara yol gösterici nitelikte önemli bilgiler sunmaktadır.

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Introduction

Unemployment remains one of the most pressing economic challenges faced by countries worldwide. Particularly following the global financial crisis and the European debt crisis, many European countries experienced a notable increase in unemployment rates. For instance, the unemployment rate in the Eurozone rose from 7.6% in 2008 to 12.0% in 2013 (OECD, 2013). More recently, the COVID-19 pandemic further exacerbated the unemployment problem, significantly disrupting labor markets across the globe. As of 2024, while the unemployment rate in the Eurozone fluctuated between 6.2% and 6.4%, unemployment rates in many OECD countries still remain above pre-crisis levels (OECD, 2024). This persistence highlights the importance of understanding whether unemployment is primarily driven by cyclical or structural factors—an issue that holds significant implications for policymakers.

To explain the dynamics of unemployment, the literature has developed three prominent hypotheses: the natural rate or non-accelerating inflation rate of unemployment (NAIRU) hypothesis (Friedman, 1968; Phelps, 1968), the hysteresis hypothesis (Blanchard and Summers, 1986, 1987), and the structuralist hypothesis (Phelps, 1994). According to the NAIRU hypothesis, the effects of economic shocks on unemployment are temporary, and the unemployment rate tends to converge to its natural level over time. In contrast, the hysteresis hypothesis suggests that economic shocks can have persistent effects on unemployment, implying that the unemployment rate does not revert to its pre-shock equilibrium level. This view highlights that prolonged high unemployment could elevate the natural rate of unemployment through mechanisms such as skill deterioration and insider-outsider dynamics. Meanwhile, the structuralist hypothesis proposes that while some shocks may have transitory effects, others can lead to permanent shifts in unemployment due to structural changes in the labor market (Collins, 2021, p. 248).

Despite the growing body of research on unemployment, there is a lack of comprehensive bibliometric studies that systematically map the intellectual structure and evolution of the unemployment hysteresis literature. To the best of our knowledge, no bibliometric analysis specifically focusing on unemployment hysteresis has been conducted. Existing bibliometric studies have examined the broader field of unemployment (Haydaroğlu, 2022; Ralph and Arora, 2023) and the relationship between unemployment and macroeconomic variables (Arik et al., 2024; Bozkurt and Gökmenoğlu, 2023; Coruche, 2022; Neto and Silva, 2013). However, these studies do not provide a comprehensive overview of how the concept of unemployment hysteresis has evolved over time. This study aims to fill this gap by conducting a bibliometric analysis of the literature on unemployment hysteresis from 1890 to February 2025 using the WoS database. Two bibliometric techniques are employed: performance analysis and science mapping analysis. The primary objectives of the study are threefold. First, it seeks to identify the dominant theories and how they have evolved over time. Second, the study aims to pinpoint key authors, influential studies, and collaborative networks that have shaped the development of the field. Finally, by mapping the intellectual landscape, the study intends to provide a comprehensive understanding of the field's structure and its future directions.

The outline of this paper is as follows: Section 2 explores the empirical literature on unemployment hysteresis. Section 3 describes the dataset and methods used in the bibliometric analysis. Section 4 presents the findings from the performance analysis and science mapping. Finally, Section 5 discusses the results and offers conclusions, limitations, and suggestions for future research.

Literature Review

There is a considerable body of literature on unemployment hysteresis. In the literature, unemployment hysteresis has been examined mainly through two methods: fractional integration methods (Caporale and Gil-Alana, 2007, 2008; Furuoka et al., 2024; Gil-Alana and Henry, 2003; Gil-Alana et al., 2024; Trejo and Gil-Alana, 2021) and unit root tests. However, the majority of studies testing unemployment hysteresis employ unit root tests. The initial studies on this subject were conducted using traditional unit root tests (Brunello, 1990; Cross et al., 1990; Groenewold and Hagger, 1998; Jaeger and Parkinson, 1994; Mitchell, 1993; Neudorfer et al., 1990; Røed, 1996). However, many researchers have criticized traditional unit root tests (Arestis and Mariscal, 1999; Cuestas et al., 2011; Mednik et al., 2008). In line with these criticisms, new unit root tests have been developed over time, and these tests have been used to examine unemployment hysteresis in various countries. To address the hysteresis effect, unit root tests that consider structural breaks (Camarero et al., 2005; Cuestas and Gil-Alana, 2011; Lee and Chang, 2008), nonlinear unit root tests (Cheng, 2022; Güriş et al., 2017; Lin et al., 2008), and unit root tests based on Fourier functions (Chang, 2011; Furuoka, 2015, 2017a, 2017b; Xie et al., 2018) have also been employed. Additionally, some studies investigate the hysteresis effect using panel unit root tests (Camarero et al., 2006, 2008; Chang et al., 2005; Furuoka, 2017b; Khraief et al., 2020; Nnyanzi et al., 2024 Omay et al., 2021).

While numerous studies have investigated unemployment hysteresis through empirical methods¹, bibliometric analyses on this topic remain scarce. Mapping the intellectual structure of this extensive literature through bibliometric analysis is highly important. However, studies using bibliometric analysis methods have largely focused on unemployment rather than unemployment hysteresis. For example, Haydaroğlu (2022) traced the development process of the unemployment topic by focusing on postgraduate theses and revealed general trends. Ralph and Arora (2023) explored significant research on youth unemployment worldwide. The researchers identified that the primary factors influencing youth unemployment include regional economic growth, demographic trends, migration patterns, household circumstances, regional openness, and trade levels. Topçuoğlu et al. (2023) comprehensively reviewed SSCI-level studies on the concepts of entrepreneurship and unemployment. The researchers evaluated the limited number of Turkey-based studies as a lack of academic interest in these concepts. In a similar context, Gupta (2024) highlighted significant aspects of research by addressing entrepreneurship as a tool to tackle unemployment issues in economies. The researcher stated that artificial intelligence, rapidly evolving technological transformations, and the increasingly gig economy-based environment significantly impact employment creation and entrepreneurial activities.

Moreover, Neto and Silva (2013) presented the current literature by identifying new theoretical mechanisms and empirical evidence explaining the relationship between unemployment and growth. The researchers emphasized that the variety of effects explaining the unemployment-growth has significantly increased. Conducting a similar study, Coruche (2022) reached a similar conclusion regarding the relationship between unemployment and economic growth. Bozkurt and Gökmenoğlu (2023) comprehensively evaluated the literature by examining the relationship between unemployment and inflation. The researchers indicated that the main research topics were concentrated around keywords such as 'unemployment,'

¹ Given that studies in the literature produce varying results depending on the methodologies employed, the empirical findings are generally mixed. Therefore, instead of presenting the empirical results from the literature, this study outlines the general trends identified in the literature through bibliometric analysis.

'inflation,' and 'Phillips Curve'. Arik et al. (2024) extensively reviewed studies on the concepts of unemployment and employment by addressing international trade. The researchers identified 'trade' and 'agriculture' as the most frequently used keywords. Cherif and Gourida (2024) provided a comprehensive assessment of Industry 4.0 and technological unemployment, focusing on their effects on labor market imbalances. The researchers identified various significant trends, particularly income inequality, job polarization, and technological unemployment.

Methodology and Data

In this study, the bibliometric analysis method, which reveals the structure, development, and research trends of scientific knowledge, was adopted to comprehensively evaluate the literature on unemployment hysteresis. Bibliometric analysis has become a key method for assessing the academic output of different scholarly elements, such as papers, authors, topics, journals, research institutions, and countries (Donthu et al., 2021; Öztürk et al., 2024). The data used in the research were obtained from WoS, a highly reputable international academic source, in February 2025. WoS, consisting of seven different databases, is one of the most comprehensive academic databases, including information collected from scientific journals, books, book series, reports, and conference proceedings (Li et al., 2010, pp. 197-198). Based on the data obtained from WoS, the following research questions, which constitute the focus of the study, reveal the current state of research on unemployment hysteresis:

RQ1: What are the temporal trends, geographical distribution, institutions, authors, and journals of academic studies on unemployment hysteresis?

RQ2: What are the most cited studies and the main research topics in the field of unemployment hysteresis?

RQ3: How are scientific collaborations and intellectual networks shaped in unemployment hysteresis research?

Bibliometric analysis techniques are divided into two main components: performance analysis and science mapping analysis (Noyons et al., 1999, p. 115). Bibliometric studies focus on performance analysis by evaluating scientific output based on quality and quantitative indicators (Gutiérrez-Salcedo et al., 2018, p. 1276). In this context, elements such as researchers, universities, journals, citation counts, and publication counts are examined. Accordingly, RQ1 and RQ2 are analyzed within the specified framework. Science mapping analysis reveals the intellectual, conceptual, and social network structure of research as well as its evolutionary dynamics (Aria and Cuccurullo, 2017, p. 960). In this context, relationships between authors, countries, keywords, co-keywords, and co-authors are analyzed. Accordingly, RQ3 is analyzed within the specified framework.

In the process of determining the data set, a two-stage search and filtering method was applied.² As indicated in Figure 1, the process consists of two stages: database search and database filtering.

² See Donthu vd., 2021; Öztürk vd., 2024; Gutiérrez-Salcedo et al., 2018.

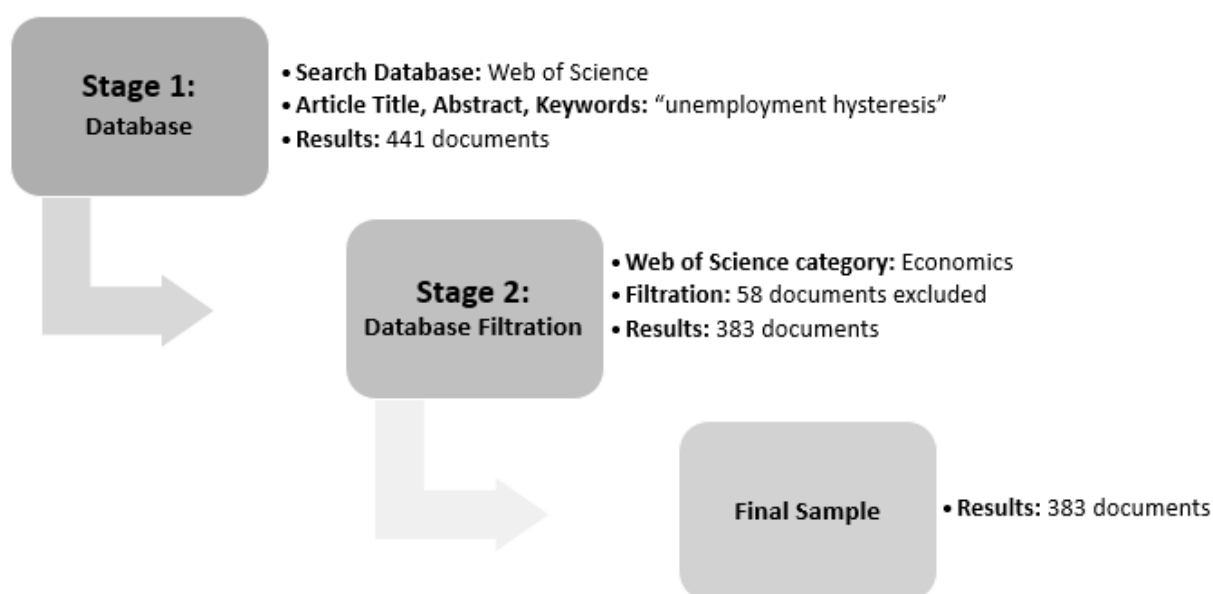


Figure 1: Selection of relevant documents

In the study, a comprehensive search was initially conducted based on the term "unemployment hysteresis" by scanning titles, abstracts, and keywords. This search yielded an initial result of 441 documents. Subsequently, an inclusion filter was applied in line with the research objective. To ensure that the dataset falls within the economics category, the search was further refined by identifying records with the term "economics" in the subject category. As a result of the filtering process, a total of 58 documents were excluded from the dataset. Following these steps, 383 documents were included in the bibliometric analysis. The Bibliometrix³ package in R software was used to refine the dataset and conduct the bibliometric analysis, including both performance analysis and science mapping.

Findings of the Study

The study analyzes research on unemployment hysteresis conducted between 1980 and 2025. As presented in Table 1, a total of 383 studies from 167 different sources (such as journals and books) have been examined, involving 597 distinct researchers. Among these, 128 studies are single-authored publications. The studies contributing to the literature originate from 1013 different institutions across 41 countries. The researchers have identified a total of 545 keywords reflecting the topics and/or fields of the studies. The total number of citations received by the analyzed publications is 6264, corresponding to a mean of 16.36 citations per document. The annual mean number of citations per document is calculated as 1.12.

Table 1: Descriptive overview of the dataset

Feature	Results
Time Frame	1980 - 2025
Total Number of Sources (Books, Journals, etc.)	167
Total Number of Documents	383
Number of Contributing Authors	597
Single-authored Documents	128
Number of Institutions	1013

³ The software, created by Aria and Cuccurullo (2017), was developed using the R programming language to perform statistical calculations and generate graphics.

Number of Countries Represented	41
Keywords Plus Count	545
Total Citations	6264
Mean Citations per Document	16.36
Mean Annual Citation Count per Document	1.12

Performance Analysis

This section examines the temporal trends of academic studies on unemployment hysteresis, their geographical distribution, institutions, authors, publication outlets, and disciplines. Additionally, the most cited studies and key research topics in the field are analyzed.

Annual scholarly output on unemployment hysteresis

Figure 2 shows the trend of the yearly number of articles on unemployment hysteresis. During the period from the 1980s to the early 2000s, the annual number of articles on the topic remained relatively low. However, a marked increase has been observed since the early 2000s, particularly between 2010 and 2020, when the number of publications significantly rose. The publication activity peaked between 2014 and 2018, reflecting a heightened academic interest in the field. These trends may be linked to global economic crises and shifts in unemployment dynamics.

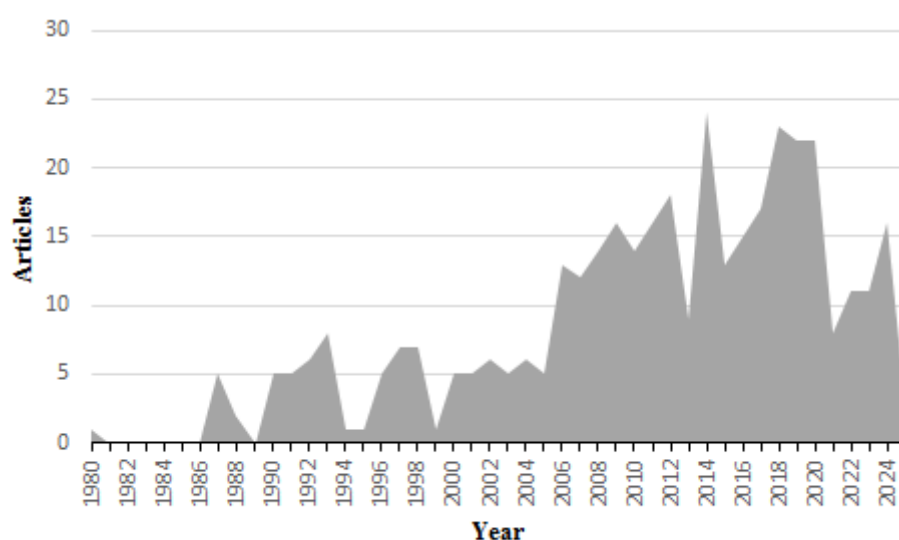


Figure 2: Annual publication documents in unemployment hysteresis

Author publishing output

Table 2 lists the ten leading authors in the field of unemployment hysteresis based on their publication output. Accordingly, Furuoka F. is identified as the most productive author with a total of 12 publications, ranking first in fractionalized article count with 9.62. Although Gil-Alana L.A. and Usabiaga C. have each published 11 articles, their fractionalized article counts are calculated as 4.20 and 4.33, respectively. This finding suggests that these authors predominantly contribute to co-authored studies.

Table 2: Top-Contributing authors

Authors	AC	Authors	FAC
Furuoka F.	12	Furuoka F.	9.62
Gil-Alana L.A.	11	Usabiaga C.	4.33

Usabiaga C.	11	Gil-Alana L.A.	4.20
Romero-Avila D.	10	Stanley T.D.	4.00
Chang T.	9	Chang T.	3.83
Stockhammer E.	7	Stockhammer E.	3.83
Garcia-Cintado A.	6	Romero-Avila D.	3.75
Osterholm P.	6	Osterholm P.	3.50
Belke A.	5	Belke A.	3.50
Camarero M.	5	Lang D.	2.83

Note: AC: Article Count, FAC: Fractional Article Count

Publishing output by institutions

Information on the top ten universities in terms of academic productivity in the field of unemployment hysteresis is presented in Table 3. The University of Navarra stands out as the most prolific institution with 26 publications, followed closely by the University of Malaya (24) and Feng Chia University (23) as other leading contributors. Spanish universities, such as Pablo de Olavide University (18) and the University of Huelva (11), ranked among the top four, have made significant contributions to this field. Moreover, the presence of universities from Europe, Asia, and America in the top ten highlights the widespread global interest in academic research on unemployment hysteresis.

Table 3: Most productive universities and institutes

University	Number of Articles
University of Navarra	26
University of Malaya	24
Feng Chia University	23
Pablo de Olavide University	18
University of Huelva	11
Jaume I University	10
Roma Tre University	10
Francisco de Vitoria University	9
University of Porto	9
Colgate University	8

Publishing output

According to Table 4, the most significant contributors to the field of unemployment hysteresis are the United States (USA), the United Kingdom (UK), and Spain, respectively. Notably, the USA stands out as the country with the highest number of SCP (43). On the other hand, the UK (44.20%), France (46.7%), and Italy (46.7%) have the highest shares of MCP, indicating that these countries place greater emphasis on international collaboration.

Table 4: Corresponding author's affiliated countries

Country	AC	Articles Ratio	SCP	MCP	MCP Ratio
USA	60	15.70	43	17	28.30
UK	43	11.20	24	19	44.20
Spain	40	10.40	31	9	22.50
China	24	6.30	20	4	16.70
Germany	18	4.70	13	5	27.80
France	15	3.90	8	7	46.70
Italy	15	3.90	8	7	46.70

Türkiye	15	3.90	12	3	20.00
Canada	11	2.90	8	3	27.30
Sweden	11	2.90	10	1	9.10
Note: AC: Article Count, SCP: Single Country Publications, MCP: Multiple Country Publications					

Journal publication output

Table 5 lists the top ten journals with the highest number of scientific publications in the field of unemployment hysteresis. The total number of articles published in these journals is 120, accounting for 31.33% of the total scientific publications on unemployment hysteresis.

Table 5: Publishing output by journals

Sources	AC
Applied Economics Letters	21
Applied Economics	18
Economic Modelling	16
Empirical Economics	16
Economics Letters	11
Review of Keynesian Economics	10
European Economic Review	8
European Journal of Economics and Economic Policies-Intervention	7
Scottish Journal of Political Economy	7
Oxford Bulletin of Economics and Statistics	6
Note: AC: Article Count	

An examination of Table 5 reveals that the ten journals with the greatest number of scientific publications predominantly originate from developed countries. Figure 3 presents the geographical distribution of studies on unemployment hysteresis across countries. A color scale ranging from dark blue to light blue is used to visualize the countries exhibiting the highest and lowest research intensity, respectively. The countries with the highest research intensity are primarily developed countries. The USA holds the leading position, followed by other developed countries such as Spain, the UK, Germany, France, Italy, and Sweden. Meanwhile, among developing countries, China, Türkiye, and Malaysia stand out in this field.

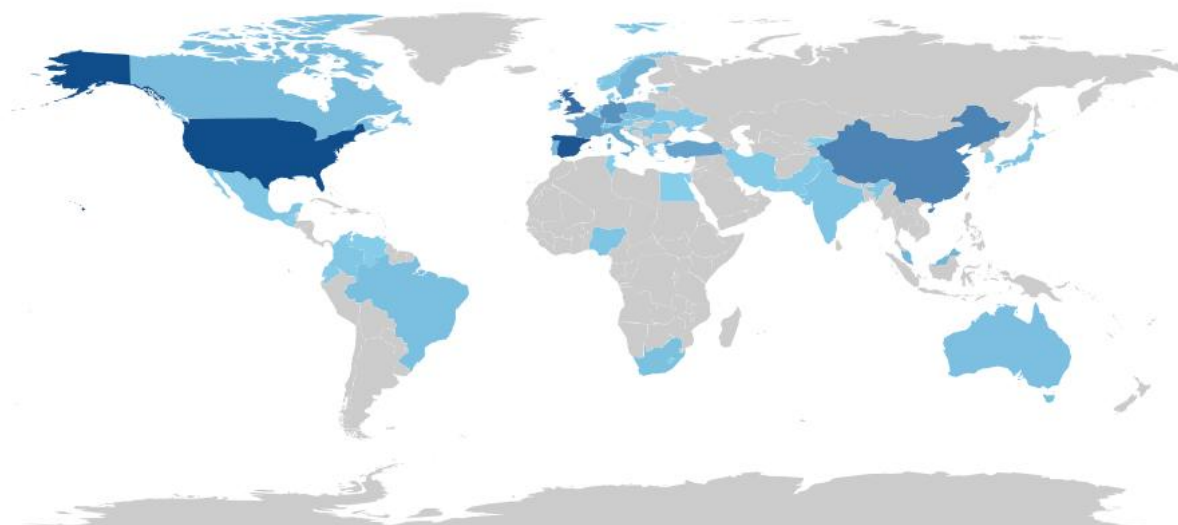


Figure 3: Countries' scientific production

Citation analysis

Table 6 presents the citation metrics for the ten leading researchers in the field of unemployment hysteresis. The study by Clark A. E., published in 2003 in the Journal of Labor Economics, stands out with a total of 580 citations, making it the most highly cited work on the list. Its annual citation rate is 25.22, which is relatively high compared to other studies. However, the normalized citation score of the study is calculated as 4.27, indicating a relatively lower impact when assessed through normalized metrics. On the other hand, the study by Yagan D., published in 2019 in the Journal of Political Economy, has received 105 citations. Despite having an annual citation rate of 15.00%, its normalized citation score is 10.90, suggesting that this study has a remarkable impact in terms of normalized metrics compared to other works.

Table 6: Top manuscripts by citations

Authors	Year	Journal	TC	TC per Year	NTC
Clark A.E.	2003	Journal of Labor Economics	580	25.22	4.27
Delong J.B.	2012	Brookings Papers on Economic Activity	288	20.57	9.62
Blanchard O.J.	1987	European Economic Review	240	6.15	4.08
Clark A.	2010	Labour Economics	200	12.50	7.95
Darity W.	1996	Journal of Economic Perspectives	133	4.43	3.80
Dutt A.	2006	International Review of Applied Economics	122	6.10	4.71
Mitchell W.F.	1993	Applied Economics	108	3.27	2.73
Yagan D.	2019	Journal of Political Economy	105	15.00	10.90
Bartik T.J.	1993	Regional Studies	103	3.12	2.61
Benigno G.	2018	The Review of Economic Studies	95	11.88	7.12

Note: TC: Total Citation Count, TC per Year: Total citation count per year, NTC: Normalized total citation

Table 7 shows the citation rates per article by country. The USA ranks as the most cited country in the field of unemployment hysteresis, with a total of 1,734 citations. Additionally, it holds a relatively above-average impact with 28.90 citations per article. Although France ranks second in total citations with 853, it has the highest impact rate, averaging 56.90 citations per article. Despite receiving a total of 142 citations, Australia demonstrates a greater impact in terms of citations per article compared to countries with higher total citations, such as Spain, China, Italy, Germany, Switzerland, and Canada. On the other hand, the countries with the lowest citation rates per article are Canada (13.20), China (12.60), and Germany (11.20), respectively.

Table 7: Total citation count per country

Country	TC	AAC
USA	1734	28.90
France	853	56.90
UK	743	17.30
Spain	583	14.60
China	303	12.60
Italy	267	17.80
Germany	202	11.20
Sweden	162	14.70
Canada	145	13.20
Australia	142	23.70

Note: TC: Total Citation Count, AAC: Average Article Citations

Science Mapping Analysis

In this section, mapping graphs are employed to illustrate the interconnected relationships within the unemployment hysteresis literature. These graphs depict the co-occurrence patterns among keywords, authors, and countries, providing a comprehensive overview of the research network.

Co-occurrence of keywords

Figure 4 provides information on the co-occurrence and association of keywords in the field of unemployment hysteresis. In Figure 4, the keywords are grouped under two main terms: hysteresis and unemployment. The keyword hysteresis is frequently used alongside persistence, time-series, and unit-root tests in the studies. Under the unemployment keyword, studies centered around macroeconomic indicators such as wages, growth, and inflation emerge.

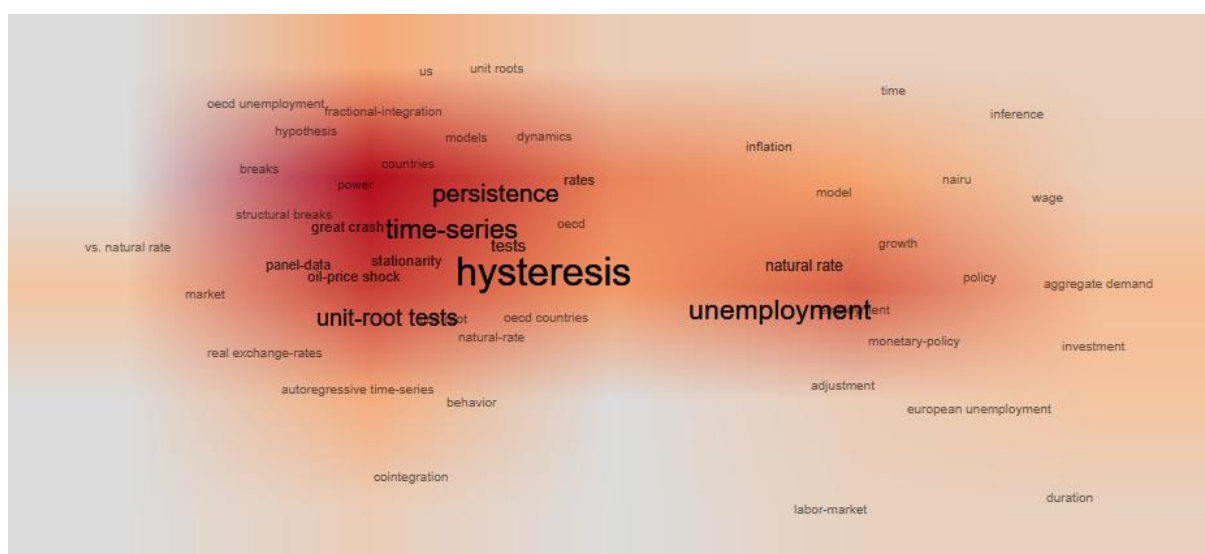


Figure 4: Co-occurrence of keywords

An examination of Figure 4 reveals that the keywords hysteresis and unemployment stand out in the field. Accordingly, Figure 5 presents a word cloud generated from the analysis conducted to determine the frequency of keywords used in unemployment hysteresis studies. The keywords unemployment, hysteresis, persistence, unit-root tests, time-series, and natural rate are observed to be the most prominent terms in the word cloud.



Figure 5: Word cloud

Country-author-keyword dynamics and trend analysis

Figure 6 visually presents the network structure of relationships among countries, authors, and keywords. It is observed that the researcher Gil-Alana L.A. from Spain is in intense interaction with the key words "hysteresis" and "unit-root tests." This suggests that Gil-Alana L.A. focuses on statistical methods examining the persistence of unemployment rates and the stationarity properties of unemployment data. Similarly, Furuoka F. from Malaysia is associated with the keywords "hysteresis," "persistence," and "unemployment," indicating that this author concentrates on long-term unemployment dynamics and the phenomenon of persistence.

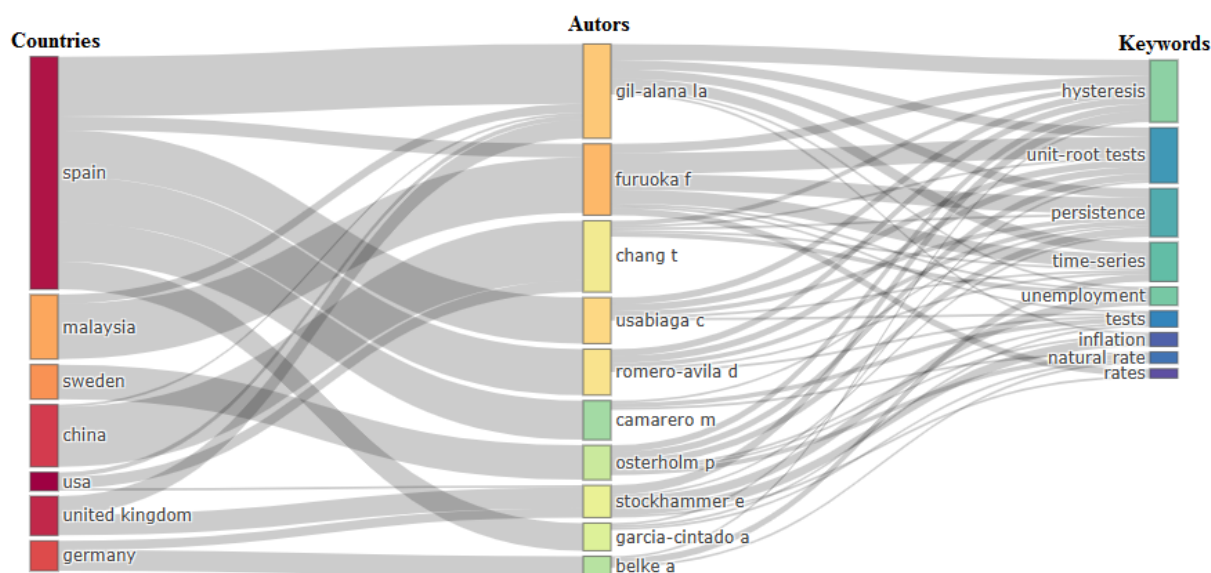


Figure 6: Country-author-keyword network analysis

Thematic mapping

Thematic mapping is a method that organizes keyword clusters into four groups based on their thematic content: motor themes, niche themes, basic themes, and emerging or declining themes. These clusters are examined along two axes: The X-axis (relevance degree), which defines the internal coherence and development level of a theme, and the Y-axis (development degree), which indicates the strength of its connection with other themes and its centrality in the field (Cobo et al., 2011, p.150). Accordingly, the thematic mapping⁴ is presented in Figure 7.

Motor Themes – Upper Right Quadrant: Motor themes reflect both central and well-developed key themes in the thematic map. Located in the upper right quadrant, this theme is represented by the terms unemployment, employment, and NAIRU. The largest cluster, unemployment, employment, nairu, is observed to be centrally positioned and highly developed, indicating that topics related to unemployment and employment are highly significant and extensively studied in the literature.

Niche Themes – Upper Left Quadrant: Niche themes include more specific topics that have been extensively studied but are not among the central topics of the field. This quadrant includes topics such as entrepreneurship, extended benefits, and potential.

Basic Themes – Lower Right Quadrant: Basic themes represent topics that are as important as motor themes but have not yet reached a high level of development. This quadrant contains the themes hysteresis, time-series, and persistence, suggesting that these concepts hold a fundamental place in the literature but are less intensively developed.

Emerging or Declining Themes – Lower Left Quadrant: This quadrant displays topics that are either emerging or losing significance in the field. The theme adaptability is found in this region, which can be interpreted as either a newly developing topic or one that is losing relevance.

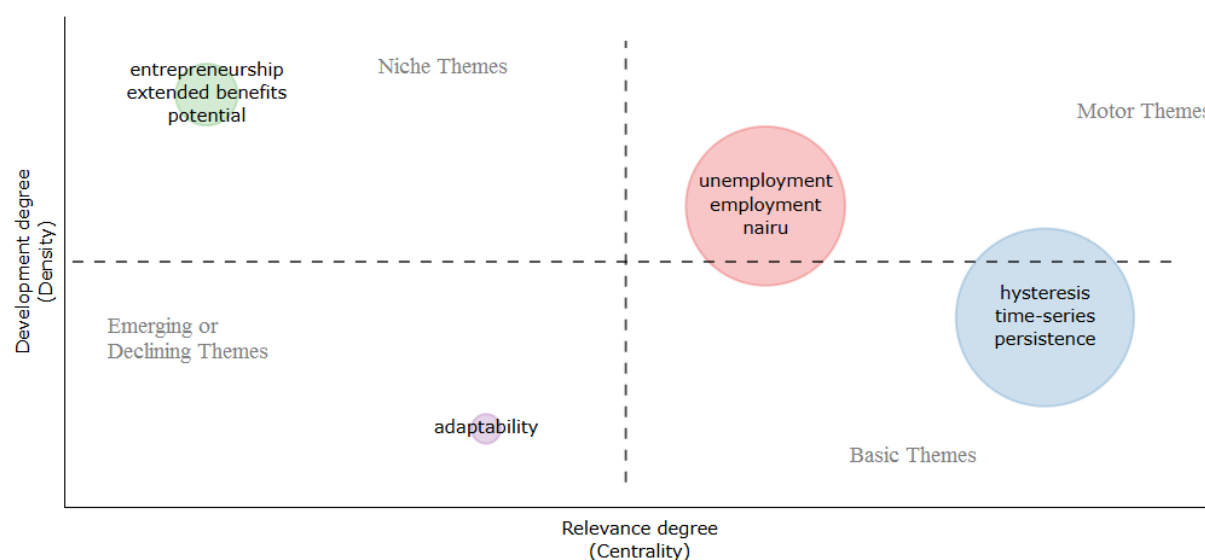


Figure 7: Thematic mapping

⁴ All records were manually reviewed to verify the topical scope of the clusters identified within the four categories of the thematic map.

Collaboration network of authors

Figure 8 presents a bibliometric density map visualizing the level of collaboration among different researchers in the field of unemployment hysteresis. High-density color areas in the figure indicate a high level of collaboration between researchers, while red and dark regions represent the locations of the most influential researchers in the field. Romero-Avila D. and Usabiaga C. are among the most prolific researchers in this area, possessing the strongest collaboration ties. Additionally, researchers such as Furuoka F. and Gil-Alana L.A. have made significant contributions to the field. Collaborations among other authors are also evident and observed at similar density levels.



Figure 8: Author collaboration network

Discussion and Conclusion

Discussion of Principal Findings

In this study, the bibliometric analysis method was applied to structure the research conducted in the field of unemployment hysteresis. It was determined that the increase in publications on unemployment hysteresis since 2006 was significantly influenced by the global financial crises and the European debt crisis that countries faced. Subsequently, the COVID-19 pandemic, which had a global impact, led many countries to encounter unemployment problems, and the validity of the unemployment hysteresis hypothesis was frequently tested during this period. These adverse conditions negatively affected labor markets and contributed to an increase in studies investigating the long-term effects of unemployment rates.

The findings of the bibliometric analysis indicate that a total of 383 studies on unemployment hysteresis have been conducted, with 6,264 citations. The results reflect key trends and contributions in this field. Among the most productive countries, developed nations such as the USA, France, and the UK stand out. The USA provides the highest contribution with a total of 1,734 citations, while France draws attention with an average of 56.90 citations per article. This suggests that research conducted in these countries has a significant impact on the academic literature and is widely followed by a broad readership. Among developing countries, China and Turkey have increased their research outputs; however, their average citations per article remain at lower levels, indicating a more limited international impact. Indeed, as stated in the University Ranking by Academic Performance (URAP) 2024 report, although the number of publications from Türkiye is gradually increasing, the number of citations per publication remains below the global average. The report attributes this situation

to the growing tendency of Turkish articles to be published in journals with low or zero impact values in recent years.

In the productivity ranking among universities and institutions, the University of Navarra emerges as the most prolific institution with 26 publications, followed by the University of Malaya with 24 publications, demonstrating their successful research-oriented strategies and significant positions in the global academic network. Among the most productive authors, Furuoka F. ranks first with a total of 12 publications, while Gil-Alana L.A. and Usabiaga C. share second place with 11 publications each, and Romero-Avila D. ranks third with 10 publications. Science mapping findings reveal that researchers such as Romero-Avila D. and Usabiaga C. have strong collaboration networks in the field of unemployment hysteresis. Additionally, researchers like Furuoka F. and Gil-Alana L.A. have made notable contributions to the field. Although Turkish universities exhibit lower productivity, they still have a certain impact on the global research network.

The results of the study show that citations per publication serve as an important indicator of academic impact. Publications in France and the USA stand out with high citation numbers, while some countries focus on specific areas, fostering intense interactions within narrower academic circles. The lower rates of Multiple Country Publications (MCP) indicate limited international collaborations. However, countries like the UK and Spain have made significant contributions through multiple collaborations.

In terms of thematic maps, the cluster consisting of "unemployment," "employment," and "NAIRU" was identified as the largest. Additionally, the keyword "unemployment" was observed to be associated with macroeconomic variables such as inflation, growth, and wages. This finding is supported by Neto and Silva (2013) and Coruche (2022), both of whom examined the relationship between unemployment and growth using bibliometric analysis. Furthermore, Bozkurt and Gökmenoğlu (2023) investigated the relationship between unemployment and inflation, revealing similar findings. Among niche themes, topics such as "entrepreneurship," "extended benefits," and "potential" were identified, while core themes such as "hysteresis," "time-series," and "persistence" held a central place in the literature but were less intensive in terms of development. Emerging or declining themes included "adaptability," which can be interpreted as either an emerging or fading topic in the field.

Future Research Directions and Limitations

This study is a bibliometric analysis based solely on the WoS database, which constitutes the primary limitation of the research. Future studies could expand the scope by incorporating various databases such as Scopus, Jstor, ProQuest, RePEc, SSRN, and Google Scholar to include a broader range of articles not covered by the WoS database. Furthermore, studies on unemployment hysteresis exhibit differences in terms of the methods employed. In this context, future research could compare the methodologies used in unemployment hysteresis studies, revealing the evolution of methodological trends over time. Additionally, focusing on country-specific studies could contribute to identifying whether unemployment hysteresis is more prevalent in developed or developing countries. Comparative studies testing the presence of hysteresis effects based on countries' development levels would help to provide a more detailed understanding of the literature in this field.

Conclusion

The primary objective of this study is to examine the state of knowledge in the field of unemployment hysteresis through a bibliometric analysis of the research articles indexed in the WoS database. The study considers publications from the period 1980 to 2025 (February). A total of 383 studies related to unemployment hysteresis were identified in the WoS database. By employing performance analysis and science mapping techniques within the bibliometric analysis, the general trends in unemployment hysteresis research during the analyzed period were revealed. The network structure among countries, authors, and keywords was mapped, providing significant insights into collaboration patterns among researchers and the co-occurrence of keywords.

The findings indicate that researchers have shown greater interest in unemployment hysteresis during periods of economic crises. The most productive countries in this field are the USA, the UK, and Spain, while the most prolific researchers are Furuoka F., Gil-Alana L.A., and Usabiaga C. According to the fractionalized article count, Furuoka F. ranks first, followed by Usabiaga C. and Gil-Alana L.A. Despite regional differences, strong collaboration ties have been identified between the Malaysian researcher Furuoka F. and the Spanish researcher Gil-Alana L.A.

The keyword analysis results show that the term "hysteresis" is one of the most frequently used keywords, often accompanied by "persistence," "time-series," and "unit-root tests." Moreover, the keyword "unemployment" is observed to be examined in conjunction with macroeconomic variables such as inflation, growth, and wages. The word cloud analysis highlights that the core concepts concentrated in the field of unemployment hysteresis are "unemployment," "hysteresis," "persistence," "unit-root tests," "time-series," and "natural rate."

In conclusion, the bibliometric analysis reveals that studies on unemployment hysteresis have increased over the years and that this phenomenon has been addressed with similar theoretical frameworks across different geographic regions. By systematically presenting the evolution of knowledge and research trends in the field through bibliometric methods, this study provides valuable insights that can guide future research.

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