

BIBLIOMETRIC ANALYSIS ON THE RESEARCH ON LOCAL OFFICIALS IN CHINA BASED ON CITE SPACE

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Received Date: 17 July 2025

Revised Date: 29 September 2025

Accepted Date: 15 November 2025

Published Date: 26 December 2025

DOI: <https://doi.org/10.51200/mjbe.v12i2.7168>

Keywords: Local Officials, China, CiteSpace, Research Hotspots, Visualization Analysis

ABSTRACT

Local officials, acting as dual agents who embody both state and social roles, constitute a crucial element in local governance. Based on the literature about Chinese local officials within the WOS database from 2001 to 2023, this current paper employs CiteSpace 6.2.R6 software to analyze the number of publications, research countries, research institutions, and keywords in this field. The results reveal that the number of publications has increased significantly since 2018. Both China and the United States exhibit a substantial lead in the number of published articles. Most of the publishing institutions are top universities in China, with Peking University, Renmin University of China, and Fudan University ranking in the top three. The keyword analysis of the literature discloses that the current research hotspots of Chinese local officials mainly focus on official promotion, economic performance, official turnover, and environmental governance. Furthermore, the relationship between officials and environmental governance emerges as a prospective research trend. Visualizing the research hotspots of Chinese local officials and comprehensively summarizing the research progress in this field can serve as a valuable reference for scholars to enhance future research in this field.

INTRODUCTION

Local officials, appointed by the state, are entrusted with the authority and responsibility to oversee local public affairs. They operate under a subordinate status to the central government, receiving guidance from both the central government and higher-level officials. Within the framework of local governance, local officials serve as dual agents, fulfilling the roles of state agent and social agent. They play a pivotal role in local development (Wang, 2021). In this study, local officials in China refer to party and government officials positioned below the central government in the national vertical government hierarchy. They are endowed with specific powers and functions within designated jurisdictions outside the central government and are accountable to the central government, higher-level leaders, and the local population concurrently.

Since the initiation of China's reform and opening up, the Chinese economy has experienced rapid, sustained, and stable growth. Over 40 years ago, China faced severe shortages of goods, extremely low living standards, and an almost stagnant national economy. Today, China has become the second-largest economy in the world, surpassed only by the United States. The remarkable achievements in China are often referred to as the *Chinese Miracle* (Lin et al., 2004) and the *Chinese Model* (Song et al., 2011). Throughout the process of local economic development, local officials in China play a crucial role. They diligently promote local economic development and make significant contributions to overall economic growth.

Despite China experiencing an economic miracle, it is noteworthy that numerous economic and social challenges persist, and their severity is considerable. For instance, challenges such as environmental pollution, inadequate investment in basic education, healthcare, and social security arise from the crude growth model (Tian et al., 2023; Chen et al., 2018; Fan et al., 2023). Additionally, the government's excessive power in administrative approvals, rent-seeking behavior of officials, local protectionism, and market segmentation significantly hampers the marketization process of China's economy and could

potentially jeopardize its long-term sustainable development (Chen et al., 2011; Bai et al., 2008; Lu & Wang, 2022). In reality, they are inherently tied to the governance and incentives of local officials. Consequently, local officials in China have garnered increasing attention from scholars.

In recent years, there has been a significant increase in the number of publications on local officials in China. However, few related bibliometric studies have been conducted. Scientific bibliometrics can quantitatively analyze published scientific knowledge, and summarize the current status and development trends. According to the literature related to local officials in China in the Web of Science (WOS) database, this article employs CiteSpace and Origin software to generate line graphs depicting the numbers of annual publications, country network graphs, research institution network graphs, keyword co-occurrence graphs, keyword clustering graphs, and keyword burst graphs. This analysis aims to organize the knowledge base, understand the development and evolution, and predict the future development direction of research on local officials in China. CiteSpace, as an information visualization mapping tool, is a Java application designed for the metrological analysis of literature. It was developed by Professor Chao-Mei Chen in 2004. CiteSpace has gained prominence as a valuable tool for bibliometric analysis due to its stability, readability, and richness. Specifically, CiteSpace extracts and categorizes information, including authors, institutions, nationalities, keywords, references, cited authors, and cited journals. It identifies intrinsic links between different literature under the same research topic by analyzing literature from databases such as WOS, Scopus, and China National Knowledge Infrastructure (CNKI) (Chen, 2006).

DATA AND METHODS

Data Source and Search Strategy

This current paper is based on the Web of Science Core Collection database, with *Topic= (local official OR local bureaucrat AND China)* as the search rule. The time span of the search is 2001-2023.

Literature Screening

Literature on local officials in China was reviewed and screened, resulting in 581 pieces of literature. This count excludes those that were irrelevant to local officials in China and duplicates.

Parameter Setting

The parameters for CiteSpace are configured as detailed in **Table 1**.

Table 1 The parameters of CiteSpace

Node type	Time slicing	Years per slice	Top N	Top N%	Pruning	Threshold
Nations	2001-2023	1	50	10	None	0
Institutions	2001-2023	1	50	10	None	8
Keywords	2001-2023	1	50	10	None	5

In cluster analysis, CiteSpace computes the modularity value (Q-value) and the silhouette value (S-value) by the clarity of the network structure and clusters. The primary keywords undergo clustering analysis, and clusters are labeled using the Log-likelihood Ratio (LLR) method. A Q-value greater than 0.3 suggests a significant cluster structure. An obtained cluster is deemed reasonable if $S > 0.5$. If $S > 0.7$, the obtained clusters are considered plausible (Chen, 2004).

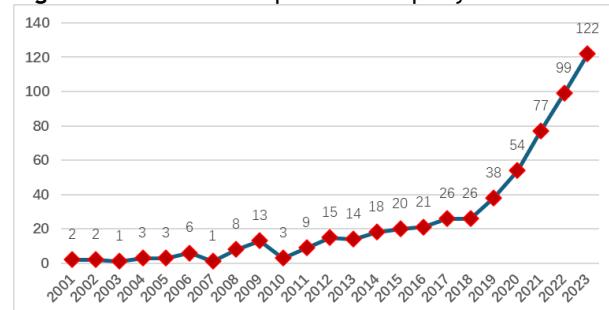
RESULTS

Descriptive Statistical Analysis of Publication

The volume of publications serves as a crucial bibliometric indicator, reflecting the level of attention and developmental trends within the research field. In this study, we conducted a statistical analysis of the annual publication volume of literature on local officials in China, resulting in the curve depicted in **Figure 1**. The curve reveals that between 2001 and 2007, the number of articles was relatively low, averaging less than three papers per year. This suggests that scholars did not allocate significant attention to the study of local officials during this period. The relevant literature predominantly concentrated on the governance of Chinese local governments. Between 2008 and 2018, the volume of relevant literature gradually increased, signifying a growing focus on the study of local officials in China. After 2018, the annual publication count experienced a

surge, continuing through 2023. This trend indicates that Chinese local officials have become a popular research topic, and relevant studies have entered a stage of high-speed development. Researchers started to delve deeper into the exploration of local officials in China.

Figure 1 The volume of publications per year



Nations and Institutions

By utilizing the CiteSpace software and configuring the function areas as *Countries* and *Institutions* separately, we can generate visualizations of countries and research institutions, as depicted in **Figure 2** and

Figure 3. Between 2001 and 2023, 34 countries and 93 research institutions participated in the study of Chinese local officials. The node sizes in the graphs positively correlate with the frequency of articles published by countries and institutions, with larger nodes indicating more frequent article issuance. In

Figure 4, we provide detailed information on the number of articles issued by countries with a frequency greater than five. China leads with the highest number of articles, totaling 476 and accounting for 66.2% of the total. The United States follows with 133 articles, representing 18.5% of the total, while each country of others has fewer than 30 articles. China and the U.S. exhibit a significant advantage in the number of articles published on the study of local officials in China. Regarding the research organizations involved, as illustrated in

Figure 5, Peking University in China leads with the highest number of articles at 26, followed by Renmin University of China with 23 and Fudan University with 21. It is noteworthy that among the research

institutions with more than 5 articles, only the National University of Singapore is not from China. These institutions are predominantly among the top universities in China.

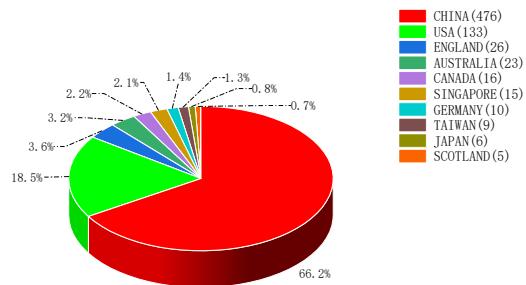
Figure 2 Visualization map of nations



Figure 3 Visualization map of institutions



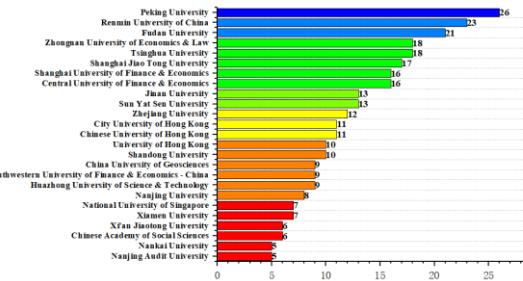
Figure 4 Countries according to their scientific production



In the visualization map, the purple circle on the outer ring of a node signifies that the centrality of the node exceeds 0.1. The mediated centrality of a node in the network mapping reflects the node's importance and influence within the entire cooperative network (Chen, 2004). Similarly, in the realm of countries studying Chinese local officials, China boasts the highest mediational centrality at 0.84, followed by the United States of America with 0.42. This suggests that China engages in closer

cooperation with the United States of America, exerting a significant influence on the development of research on Chinese local officials.

Figure 5 Institutions according to their scientific production



Keywords

Keywords serve as high-level summaries of the research topic. Keywords with a higher frequency of occurrence generally represent the research hotspots (Chen et al., 2009).

a. Keyword Co-occurrence

Within the CiteSpace software configuration, we choose the node type as *Keywords*, and set the time range from 2001 to 2023 with a time slice of one year. The keyword co-occurrence map for the literature on local officials in China is presented in Figure 6. It comprises 139 nodes and 735 lines. The size of a keyword node signifies the frequency of the keyword. A larger node indicates a higher frequency (Chen et al., 2010).

Figure 7 displays the top 30 high-frequency keywords. *Performance* and *Incentives* secure the first and second positions, signifying that political performance and political incentives of officials constitute the core content of research on local officials in China. Additionally, these keywords have more connections with other nodes, indicating frequent co-occurrence in the same literature and playing a significant bridging role.

Figure 6 The co-occurrence of keywords

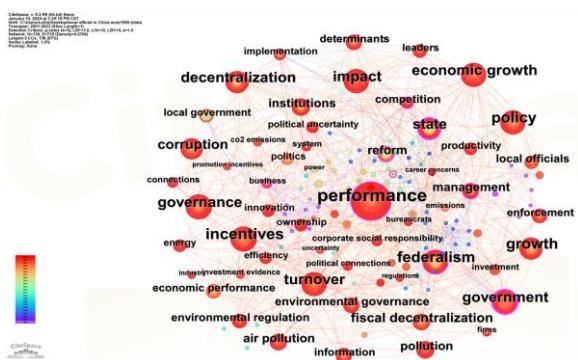
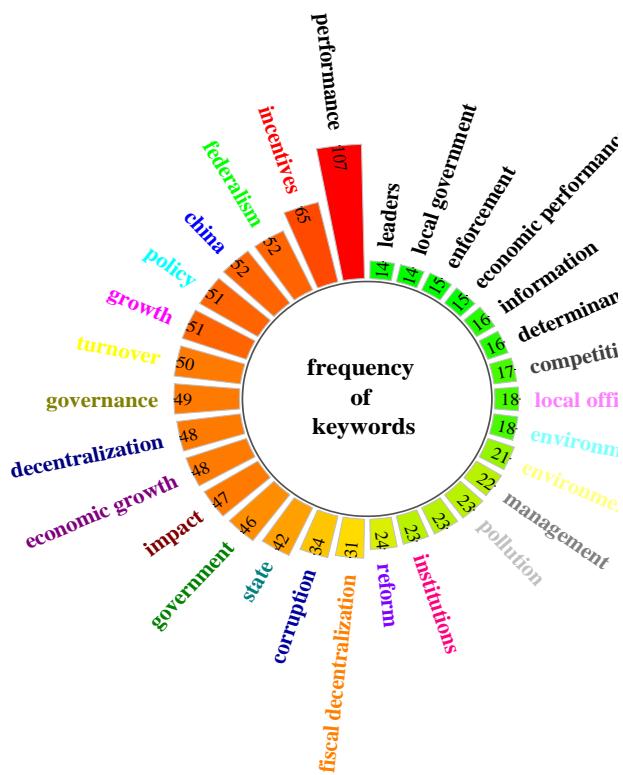


Figure 7 Top 30 keywords according to their frequency



a. Keyword Cluster

Based on the keyword co-occurrence diagram, this current paper generates the keyword clustering map and timeline visualization map by CiteSpace, as illustrated in Figure 8 and

Figure 9. The clustering algorithm employs the log-likelihood ratio (LLR), resulting in a Q-value of 0.4055 (>0.3) and an S-value of 0.8151 (>0.7). These values indicate that the structure of the clustering results is both significant and highly credible. The smaller the cluster label number, the more content the cluster contains. The cluster group encompasses #0 political connection, #1 societal support, #2 local bureaucratic rent-seeking, #3 political trust, #4 government-company reciprocity, #5 political

uncertainty, and #6 political interest.

Figure 8 Keywords grouped by clusters

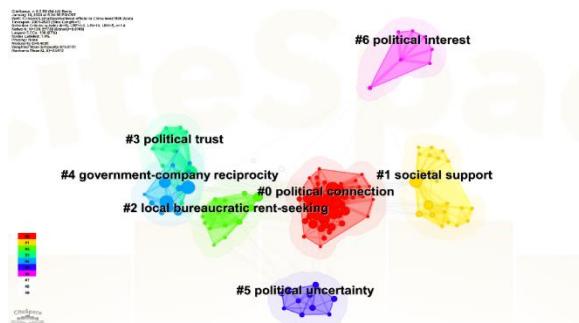
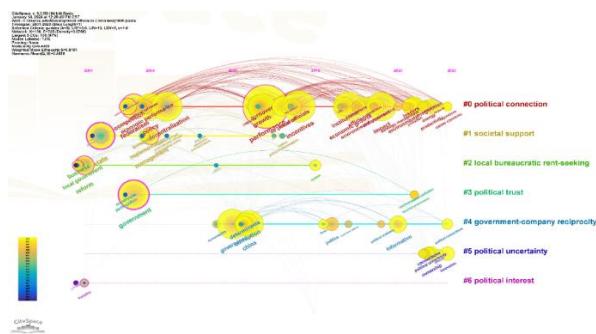


Figure 9 Evolution of keywords by timeline



By summarizing the seven clustering labels formed from the keyword clustering diagram and timeline visualization diagram, we conclude two hot topics in the study of local officials in China, as illustrated in Table 2. Hot topic A represents the *relationship between local officials and economic development*, encompassing promotion competition, performance, decentralization, promotion incentives, environmental regulation, CO2 emissions, and political turnover. Hotspot B is *governance of local officials*, encompassing corruption, law enforcement efficiency of local officials, one-vote veto, political trust, and health resource allocation.

Table 2 Hot Topics of Research on Local Officials in China

Hot topic	Label cluster	of Keyword
A	#0 Political connection	promotion competition, performance, decentralization, promotion incentive, environmental regulation, emissions, air pollution
	#2 Local bureaucratic rent-seeking	business, government

	#4 Government-company reciprocity	politics, political economy, governance
	#5 Political uncertainty	connections, political turnover
B	#1 Societal support	corruption, policy, implementation, environmental enforcement, enforcement effectiveness
	#3 Political trust	political trust, one-vote veto
	#6 Political interest	health sector reform, urban health insurance reform

b. Keyword Burst

Keyword burst analysis focuses on mutually independent keywords as the research object, uncovering key research points that emerge suddenly in a specific period. This reflects the degree of concentration of the academic community on a particular research topic during that time, and a higher intensity of emergence indicates a more concentrated discussion on that topic in that period (Chen, 2017). Thus, this paper identifies the hot frontiers of research on local officials in China based on the keyword burst. It screens representative keywords based on the principles of emergent year, emergent intensity, and non-repetition of word meaning, as presented in Table 3. The red squares indicate the periods of keyword emergence, highlighting the key nodes of research on Chinese local officials during the study period. Throughout the research process, three hotspots persist for more than 6 years, including *local government*, *economic performance*, and *carbon emission*. Among them, *local government* exhibits the highest emergence intensity of 13.12 and the longest duration, indicating its significant influence in the research on local officials. *Political turnover* and *carbon emission* have recently emerged with a high emergence intensity, signifying they will become hotspots and frontiers of research shortly.

Table 3 The burst of keywords

Keywords	Strength	Begin	End	time period (2001-2023)
Local government	13.12	2008	2017	
Reform	7.82	2012	2016	
Economic performance	9.38	2014	2021	
Decentralization	5.37	2014	2018	
Political turnover	5.03	2016	2020	
CO2 Emissions	5.82	2018	2023	

Note: Strength means concern extent.

DISCUSSIONS AND CONCLUSIONS

This current paper employed CiteSpace software to visualize the literature related to Chinese local officials published in the WOS database from 2001 to 2023.

The visualization map of countries reveals absolute dominance by China and the United States in this field. Institutions such as Peking University, Renmin University of China, and Fudan University are prominent. Nevertheless, there are only 93 connecting lines between institutions, indicating limited cooperation. Moreover, these institutions are predominantly concentrated in Chinese top universities.

Keywords, condensed in academic literature, offer insights into research hotspots within the field (Chen & Song, 2019). *Performance* emerges as the most frequently used keyword in the co-occurrence map, underscoring the significance of performance appraisal in the promotion of local officials in China. Currently, China has established a relatively comprehensive modern bureaucratic system, with political promotion as the core from the grassroots to the central government. Various factors shape the promotion path of local officials, with economic growth at the center of political promotion (Zhou, 2007). China has achieved a remarkable economic growth miracle since 1978, with the *promotion tournament* serving as the institutional factor driving this extraordinary economic growth. Under the tournament, the higher government or the central government acts as the referee, while local officials at all levels play the role of athletes (Su, et al., 2012). The central government offers political promotion benefits to local officials, incentivizing them to contribute to targeted development through allocated resources (Pi, 2017; Yu & Shen, 2022). Li and Zhou (2005) demonstrated that the economic growth performance achieved during the tenure of local officials significantly enhances their

likelihood of promotion and reelection. Likewise, Wang and Xu (2008) discovered that local officials tend to respond to political incentives in a manner that prioritizes economic growth within their jurisdictions.

As agents of the state, local governments possess significant discretion in formulating and implementing policies, which affords local officials easy access to direct economic benefits, thereby creating opportunities and incentives for corruption (Gong, 2006). Theoretically, the decentralization of government is likely to increase the incidence of bribery (Shleifer and Vishny, 1993; Ehrlich and Lui, 1999; Berkowitz and Li, 2000). Empirical studies have corroborated this conclusion. For instance, Che (2002), drawing on evidence from China, asserted that decentralization encourages local officials to maximize personal benefits. Wu (2008), utilizing various indicators of decentralization, discovered that fiscal decentralization exacerbates corruption. Furthermore, in some specific affairs such as land development, decentralization also contributes to corrupt practices (Liang, 2010; Lee, 2020).

The intensity of keyword burst reveals that *economic performance*, *political turnover*, and *environmental governance* are emerging as future hotspots and frontiers in research, deserving sustained attention. First, driven by the incentives of political promotion, local officials strive to achieve exceptional economic growth through a blend of conventional policies and informal measures to gain a promotional edge over their peers. Foreseeably, economic growth will continue to be a key indicator for evaluating the promotion of local officials in China, given its persistent centrality as the primary objective. Second, within China's personnel system, local officials hold specific positions for a term of five years. Leaders at the county level and above within the local party and government must transition to another position after completing a 10-year term (Wu, 2023). Typically, officials will be reappointed, promoted, or demoted at the end of their terms based on their performance during their tenure. However, actual data indicate that local officials frequently serve less than five years in the same position (Pang & Geng, 2016).

Frequent changes in officials, particularly party chiefs, have the potential to disrupt economic and social order (Jiang et al., 2022; Li et al., 2023; Huang, 2022; Yu et al., 2022). In the existing knowledge, the potential negative effects of frequent turnover in local officials have not been theorized. In addition, the individual characteristics of local officials exhibit significant differentiation, such as ages, educational backgrounds, work experiences, genders, origins, and network connections, which shape diverse policy effects (Wang, et al., 2023; Cui et al., 2020; Shen & Liao, 2023). Finally, China has incurred a substantial environmental cost alongside its rapid economic growth. Under the GDP-centered performance appraisal, local officials are strongly incentivized to support local enterprises and foster local economic development for promotion considerations, leading to high resource consumption and environmental damage (Chen et al. 2022; Jiang & Tang, 2023; Sun, 2018; Tian & Tian, 2021; Wu & Ma, 2023; Chen & Gao, 2020). During the 19th National Congress of the Communist Party of China, ecological civilization was elevated to the *Millennium Plan*, and in 2018, it was enshrined in the constitution. Ecological environmental governance, with its elevated political and legal status, has gradually been included in the performance appraisal criteria for local officials, garnering increasing attention from local officials.

This work employs CiteSpace software to visually discuss the literature on Chinese local officials in the WOS database, providing insights into the current research status and emerging directions in this field. The findings have significant reference value for research on Chinese local officials. Nevertheless, there are several limitations. First, the literature included in this study is extracted based on subject headings, which could lead to incompleteness, potentially resulting in biased research outcomes. Second, the majority of research on Chinese local officials is published in Chinese journals. Due to the design limitations of CiteSpace software, the literature in CNKI and WOS databases could not be combined and analyzed together. Consequently, this current paper solely employed the literature in the WOS database, overlooking the literature in CNKI.

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