Research Progress and Trend of Population and Economy in China-- Based on Citespace Econometric Analysis

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Abstract: In order to systematically review the progress and trend of population and economy research in China, we selected CNKI journals from 2000 to 2020 as research samples, and used CiteSpace to map the knowledge structure of keywords, core authors and institutions. The results show that the research on population and economy in China has a tendency of gradually heating up from 2000 to 2013 and gradually cooling down from 2014 to 2020, and the main research directions are population growth and economic growth, population aging and economic development, and population dividend.In the future, the study of population and economy in China can change to the direction of population evolution and economic development.

Keywords: Population and Economy; Knowledge Map; Bibliometrics; Hot Frontier

1. Introduction

The relationship between population and economy is the basic problem in the process of social development. Paotello first expounded the relationship between population and economy, believing that people are the wealth of the country [1], while physiocrats believed that excessive population growth would lead to the lack of means of living [2]. Early classical economists William Pedi, Adam Smith, Ricardo and others established the important position of population theory in economics and paid more attention to the theoretical analysis between economy and population [3]. Western scholars' research on the relationship between population and economy has gone through a process from the relationship between population quantity and economic development to the relationship between population quality and economic development[4].

Domestic research on the relationship between population and economy:Ma Yin-chu proposed the "New Population Theory", which systematically demonstrated the relationship between population quantity, quality and economic development [5]. In the past 20 years, many domestic scholars have conducted in-depth studies on the generation mechanism, approaches and methods of the relationship between population and economy based on China's national conditions, providing a theoretical basis for national policy decision-making [6].In this paper, CiteSpace was used to conduct quantitative analysis of the literature, and the topic direction and future development trend were explored by sorting out the hot spots, frontiers and evolution rules of the research.

2. Research methods and data sources

2.1 Research methods

The main function of CiteSpace is to visualize keywords, authors and institutional cooperation, and visually present research hotspots, connections and evolution and development process in this field [7]. From the perspective of knowledge mapping, this paper explores the evolution process, hot topics and frontier trends of population and economic research in China in the past 20 years by using CiteSpace bibliometrics, knowledge mapping, content analysis and bibliometrics.

2.2 Data sources

The data sources used in this paper are CNKI core database, including journal papers from SCI, EI, Peking University Core, CSSCI and CSCD sources. Based on the retrieval conditions shown in Table 1, 5,369 literatures were obtained. After manual screening, 1,037 sample literatures were finally obtained.

Table 1 Research sample data retrieval conditions	
Retrieve the condition category	Retrieval condition setting
Retrieve the date	3 December 2020
The time span	In 2000 ~ 2020
The database	CNKI core database
Retrieval methods	"Subject = Population and Economy" (5369 literatures retrieved)

3. Results analysis

3.1 Research development stage and topic direction analysis

The time distribution of literature can reveal the research development process in population and economy [8]. It can be seen from the distribution of the number of publications in population and economic research field from 2000 to 2020 that the number of publications in population and economic research field in China has experienced two development stages of fluctuation rise and fluctuation decline. According to the keyword clustering and time zone distribution, three main themes are identified: population aging and economic development, population growth and economic growth, and demographic dividend. Keywords related to population aging and economic development appeared in 2000. According to Table 2, "population aging" has a high centrality, indicating that it is an important research content in this field. The topic direction of population growth and economic growth involved keywords from 2001 to 2003. It can be seen from Table 2 that "economic growth" has the highest centrality, indicating that it is a research hotspot in this field. Keywords related to the demographic dividend theme appeared in 2008, indicating that scholars began to pay attention to the impact of demographic dividend on economic development, and began to worry about the negative impact after the disappearance of demographic dividend. By comprehensively analyzing the development trend of population and economy research in China, the impact of population spatio-temporal evolution on economy may become a new research topic.

3.2 Keyword analysis

The mutability, correlation and frequency of keywords can represent the hot spot, intrinsic connection and importance of the research [9]. Keywords Co-occurrence network atlas can present hot issues, topic directions and trends of research [10].

3.2.1 Basic research field analysis

The node size and font size in the keyword co-occurrence atlas represent the frequency, and the thickness of the line represents the strength of keyword connection. There are 166 nodes, 462 links and 0.0337 network density of the keyword co-occurrence atlas obtained from the research in this field. Generally speaking, keywords whose centrality is higher than 0.1 are regarded as important keywords in this field. In the study of Population and economy in China, there are seven keywords whose centrality is higher than 0.1, namely, economic growth, population, population aging, demographic dividend, economic development, demographic structure and China (Table 2). The analysis shows that these seven key words are closely related to "population and economic research", which are the basic research fields of Population and economic research in China and have been concerned by scholars.

Table 2 List of high-frequency keywords and their centrality			
Serial number	Frequency	Centricity	Keywords
1	223	0.41	Economic growth
2	100	0.3	Population
3	90	0.34	Population aging
4	85	0.23	Demographic dividend
5	74	0.28	The economic development
6	58	0.04	Economic
7	41	0.15	The population structure
8	25	0.07	The coordinated development
9	23	0.04	Population growth
10	23	0.02	Demographic transition

3.2.2 Phase frontier research field analysis

Emergent words are the key terms that increase suddenly in a certain period, which can show the frontier research fields in stages [11]. There are 13 emerging terms in the study of Chinese Population and economy, among them, the influence cycle of "sustainable development" was from 2000 to 2008, which was the earliest frontier field. From 2001 to 2006, "total fertility rate" and "population migration" became the focus of research and attention in this field. Compared with "total fertility rate",

the influence period of "population migration" is longer, indicating that scholars are more interested in "population migration" during this period. Since 2016, "demographic structure" and "temporal and spatial evolution" have emerged, indicating that the research focus of Population and economy in China has gradually shifted to this direction in recent years, and these two directions have gradually become the forefront of research in this field, and are likely to remain in the next few years.

4. Conclusion

To sum up, the study of Population and economy in China has achieved abundant academic achievements, which has laid a good theoretical foundation for the future. According to the research status in recent years, the future research on China's population and economy should focus on the following aspects: The research on China's population and economy involves many factors, and the research content needs the intervention of economics, demography and other disciplines; In terms of research methods, we should make full use of big data to support China's population and economic research. Population aging, demographic dividend, demographic structure, and the impact of population's spatial-temporal evolution on economic development can be regarded as the new theme direction of research.

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