

The Research Progress and Hot Spot Analysis of Labor Supply in China Based on CiteSpace

Ruihan zeng

Qing Teng AP & A-level Program of AIC, Guangzhou510000, China

Abstract. The analysis in the field of labor supply including the topic of general interest and frontier progress has a significant impact on the mobility and the development of the Chinese labor force. Based on the software of Citespace, this essay makes an in-depth study on the research achievements in the labor supply field published in CSSCI journals from 1998 to 2021, draws a knowledge map and systematically analyzes the research hotspots and frontier progress in this field. The results show that the hot areas of domestic labor supply research include demographic dividend, labor force, severe labor shortage, aging, unemployed people, demand, medical insurance, and so on. The latest research frontier in the field of labor supply in China is related to delayed retirement, manufacturing, artificial intelligence, aging, and intermediary effect. All the research is closely related to the national policy orientation. In the future, it is suggested to strengthen communication and cooperation between scholars and research institutions from a multidisciplinary perspective, enhance research and collaboration in the field of labor supply, reinforce the construction of facilities in labor supply, build a labor supply service system and constantly innovate the development model to promote the development of social integration.

Keywords: Labor; Labor supply; CiteSpace; Bibliometric analysis.

1. Introduction

At present, China's employment situation is grim and the labor supply has an important impact on employment. Against the background of population structure transformation and population aging, the labor supply in China is undergoing unprecedented changes. In addition, according to the deployment of the Central Economic Work Conference and the government work report, we need to do a solid job of "six stability" and fully implemented the tasks of "six guarantees". China's economy has achieved a stable start and provided an important institutional guarantee for labor transfer and output. The report of the 19th National Congress of the CPC put forward that the drawbacks of the system and mechanism that hinders the social mobility of the labor force and talents should be eliminated so that everyone can have the opportunity to achieve their development through hard work. Therefore, against the background that the state attaches great importance to the development of the labor force, it is an important task to study the related contents of the labor force field that can effectively reflect the current situation and future trends of the labor force field. This study takes labor supply as the main research content, integrating related essays to discuss the present situation and research trends of labor supply, to better promote the improvement of the labor market and sustainable development of an economy.

The balance between labor supply and demand is important for the synergistic development of population and economy and cities . On the premise of an unlimited supply of domestic labor force to labor shortage, the state implemented the new labor contract law on January 1, 2008. After the implementation of the new law, the cost of a breach of contract by employers has increased significantly, the occupational stability of workers has increased, the enthusiasm of dedicated workers has grown and the labor supply has increased incrementally . In 1983, China's labor force participation rate was as high as 83%, then it continued to decline and drop to 77.22% in 2000, and it further dropped to 70.79% in 2010 and slightly dropped to 68.72% in 2018. The seventh census in 2021 reported that the population aged 60 years accounted for 18.70% of the total population in China, which can be categorized as a moderate aging society. Therefore, on May 31, 2021, the Political Bureau of the CPC Central Committee held a meeting, which indicated that it would further optimize the birth policy and implement the policy that a couple can have three children. From the perspective

of the labor force, having three children and increasing the number of children will have an impact on China's human resources, which is mainly manifested in the quantity and quality of labor supply. Labor supply has become a field that needs to be explored by incorporating various factors.

Since 1957, the supply of labor force has been a wide concern by scholars. Some scholars' studies have pointed out that household property income and family members' provisions also influence whether individuals participate in the labor market, and the cost of raising minor children affects parents' willingness to participate in the labor force. Some scholars have also suggested that artificial intelligence will lead to structural unemployment by replacing labor, which may lead to structural inequality of opportunity and polarization of the wage gap between skilled and unskilled workers. Through combing the relevant articles, it is found that the current academic research on China's labor supply mainly focuses on the labor market, labor employment, demographic dividend, economic growth, population aging, etc. Although the existing research on labor supply is abundant, the research contents are scattered and fragmented. This paper attempts to use Citespace software to quantitatively analyze the frontier and hotspots of domestic research on labor supply by using CSSCI source journals (including CSSCI extensions) included in China National Knowledge Internet (CNKI), and take a visual approach to analyze and summarize the current situation and development pulse of research in this field. It can provide ideas and references for subsequent research by understanding the current situation, research hotspots, and missing research areas of labor supply in China.

2. Data Sources and Research Methodology

2.1 Data sources

The data used in this study were obtained from the China National Knowledge Internet (CNKI) database, and "labor supply" was used as the subject term to search for relevant articles, excluding dissertations, conference papers, newspapers, and other irrelevant results, and only journal articles were retained. To ensure the quality of the articles and the representativeness of the analysis results, only the articles published in CSSCI journals (including CSSCI extensions) are reserved. The reasons for choosing this database are as follows: (1) the Chinese periodicals collected by the CNKI database are the most diverse and representative; (2) the CSSCI source periodicals are highly recognized and the quality of articles is guaranteed, which can more accurately reflect the current research status of domestic labor supply; (3) the subject terms are the core content of the article, which can better reflect the main idea of the article and are applicable. Therefore, this study retrieved a total of 1113 core journal articles from 1998-2021 as research data after excluding irrelevant articles.

2.2 Research methodology

The research method chosen for this study is CiteSpace software, which is a knowledge mapping tool. It includes cluster analysis, multi-scale analysis, and social network analysis developed by Professor Chaomei Chen of Drexel University, and is one of the most widely used and influential document analysis software. In this study, the CiteSpace software was selected to visually present the author and organization analysis, research hotspot analysis, and research frontier in the research field of domestic labor supply, which can reveal the research status and development trend of this field to a certain extent and provide a reference for the next research.

3. Current Situation of Domestic Labor Supply Research

3.1 Analysis of the number of articles published on labor supply research

By analyzing the number of articles published in the field of labor supply over the years, we can generally see the development process and trend of this field. In this study, 1113 core articles collected by China National Knowledge Internet from 1998 to 2021 were selected and the trend of the number

of articles published on domestic labor supply over the years was plotted, see Fig. 1. From Fig.1, it can be seen that in 1998, some scholars engaged in this research, mainly on state-owned enterprises and laid-off workers, which set off an upsurge of labor supply research. Judging from the number of published articles, the overall situation is on the rise. Since 2002, the research on labor supply has started to grow rapidly, and the average number of articles published every year has remained at about 50 which makes the research on labor supply more mature.

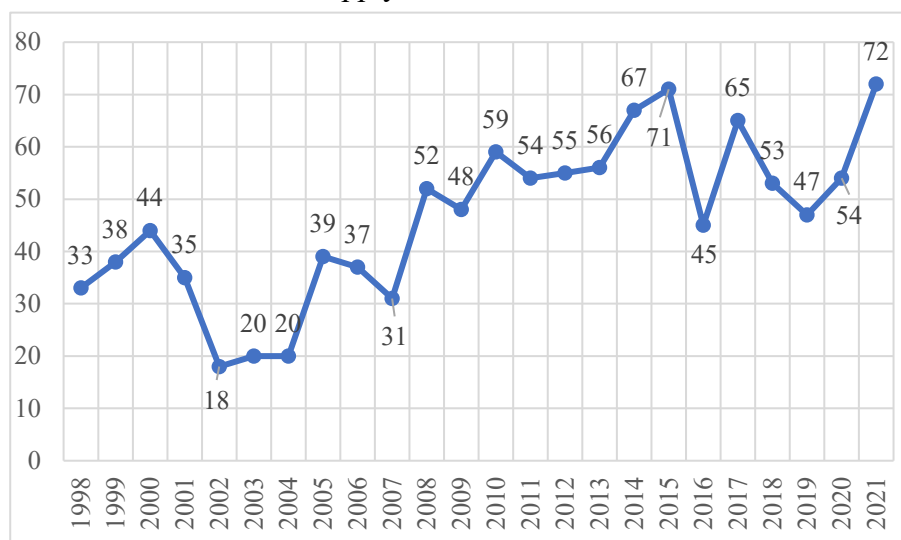


Figure 1. The number of domestic labor supply field publications over the years

3.2 Co-current analysis of labor supply study authors

By using CiteSpace software to visually analyze the periodical authors in the field of domestic labor supply, which can identify the authors with a high number of publications in this field, as well as the cooperative network relationships among the authors. The specific operation is as follows: the 1113 documents retrieved and screened from the China National Knowledge Internet database were exported and imported for analysis according to the conversion format of CiteSpace. The period is 1998-2021, with a time slice of 1; The node type is author, set Top N=50; The pruning type is Pathfinder, and then the software is run for visual analysis, and the author distribution and cooperation network relationship in domestic labor supply field are obtained. The bigger the node, the higher the number of articles published by the author; The connecting line indicates the cooperation between authors. The total number of nodes is 635, the total number of links is 145, and the network density is 0.0007. This provides a good visualization of the volume of articles published by authors in the labor supply area and the collaboration between authors.

Many scholars in China have started to study labor supply, but few authors have published a large number. Table 1 shows the list of scholars who published more than four articles in this field. The top six scholars in the field of labor supply research are F. Cai (14), S.H. Gong (7), L.G Yang (7), X. Yuan (5), and L.F. Chen (5), and F. Liu (5) in turn. Some scholars have 4 articles, such as D.S. Tang, J.Y. Wang, J.Y. Huang, C.K. Liu and F. Han, etc. And most scholars have 1-2 articles. It can be seen that the scholars' research on labor supply still needs to be further deepened. From the perspective of the cooperative relationship between scholars, the links between nodes are more dispersed, which indicates that the cooperation between scholars in labor supply is looser, and a closer network of relationships has not been formed. At present, the cooperation between two authors is the main one, but the cooperation between three or more authors is relatively small, and the articles on teacher-student cooperation are mostly, and the scope of cooperation is comparatively few. According to statistics, 499 of the 1,128 journal articles analyzed were published as sole authors, accounting for 44.2% of the total papers; The number of articles completed by 2 authors was 439, accounting for 38.9% of the total number of articles; The number of articles completed by 3 authors was 151, accounting for 13.4% of the total; The number of articles completed by more than 3 authors was 39,

accounting for 3.5% of the total number of articles completed by more than 3 persons. In addition, some authors with high publication volume are connected, which shows that some of their published articles are cooperative research, which also reflects the side that there is a relatively strong cooperation mechanism among the authors in the research on labor supply.

Table 1. Number of core author publications in the field of domestic labor supply research

Scholar	Number of papers
F. Cai	14
S.H. Gong, L.G. Yang	7
X. Yuan, L.F. Chen, F. Liu	5
D.S. Tang, J.Y. Wang, J.Y. Huang, C.K. Liu, F. Han	4

3.3 C. Co-current analysis of domestic labor supply research institutions.

To further explore the institutions that publish more papers in the field of labor supply and the cooperative relationship among them, this study chooses the node type as the institution in CiteSpace, keeps other settings remain unchanged, and run the software to get the distribution and cooperative mapping of institutions in the field of labor supply in China. The total number of nodes is 587, the total number of connections is 0, and the network density is 0, indicating that cooperation among institutions in the labor supply field is relatively lacking. From the perspective of publishing institutions (see Table 2), four institutions have published more than seven articles in this field, namely: Chinese Academy of Social Sciences (46 articles), Renmin University of China (28 articles), Nankai University (9 articles) and Beijing Normal University (8 articles). The publishing time is concentrated in 2008-2021, and the number of articles published in the last five years has decreased. It can be seen that, as an important branch in the field of the labor force, the research on labor force supply needs to be further deeper, and the influencing factors of labor force supply and multi-subject cross-research should be explored.

In terms of institutional cooperation, the majority of institutions present a dotted distribution, and there are connections between some institutions, most of which intersect at two points and one line such as the cooperation between Peking University and Sun Yat-sen University, Jinan University and Zhejiang University. There are still some cooperation between the same research institution, such as the cooperation between the School of Statistics of Huaqiao University and the School of Economics and Finance of Huaqiao University. This reflects that although research in the field of labor supply has been widely concerned about research institutions, most of them are independent research and they lack awareness of inter-agency cooperation thus it only form weak output of results. Therefore, research in the field of labor supply still needs to strengthen the awareness of cooperation among institutions and promote the sharing and flow of innovation achievements.

Table 2. Top 10 institutions of domestic labor supply research (Units: papers)

Ranking	Organization	Number of papers published
1	Chinese Academy of Social Sciences	46
2	Renmin University of China	28
3	Nankai University	9
4	Beijing Normal University	8
5	Lanzhou University	6
6	Wuhan University	6
7	Nanjing University	5
8	Party School of Guangdong Provincial Committee of	5
9	Hebei University	4
10	Beijing Jiaotong University	4

4. Analysis of hotspots of domestic labor supply research

4.1 Analysis of hot words in domestic labor supply research

Research hotspots refer to issues or topics studied by a large number of papers that are connected to each other within a certain period of time. The key words in the article can refine and summarize the core content of the article, and embody the research value and direction of the article. The research hotspots and research directions in the field of labor supply can be determined by analyzing the keywords with high frequency in this field, which can reveal the internal relationship of the knowledge in this field to some extent.

In CiteSpace, select the nodes as the keyword, with Top N = 35, and get the keyword network diagram after running. There are 167 nodes and 3177 lines in the map, and the network density is 0.0026. The larger the node, the higher the frequency of its occurrence, and the more it represents the research focus in this field. The larger the node, the higher the frequency of occurrence, and the more it can represent the research hotspot in this field. The biggest node in the chart is economic growth, followed by labor force, employment, demographic dividend, labor shortage, aging, human capital, unemployment, urbanization and so on. These keywords appear frequently in the sample, which can reflect the research hotspots in this field to a certain extent. Statistics on the frequency of keywords appearing show that there are 29 keywords appearing more than 10 times in the field of domestic labor supply, among which the top 10 keywords appearing frequently are shown in Table 3.

Table 3. Hot words in domestic labor supply research

Ranking	High-frequency keywords	Frequency	Year of first appearance	High-frequency keywords	Burst	Year of first appearance
1	Economic growth	73	1999	Severe labor shortage	8.35	2004
2	Labor force	62	1998	Economic growth	7.33	1999
3	Employment	50	1999	Unemployment	7.31	1999
4	Demographic dividend	37	2006	The third industry	7.10	1998
5	Severe labor shortage	36	2004	Urbanization	6.69	2014
6	Human capital	28	2000	Employment	5.67	1999
7	Labor supply	27	1999	The recessive unemployment	5.59	1998
8	Aging	24	2001	Migrant workers	5.34	2004
9	Unemployment rate	24	1998	Aging	5.02	2001
10	Unemployment	22	1999	Demographics	4.11	2011

The centrality of keywords reflects their importance in the whole keyword co-occurrence graph. Nodes with a high degree of centrality can be linked to other nodes, represent the research topics and research direction of this field in a certain period, and are the key nodes to promote the in-depth development of this field. The most central keyword is economic growth, followed by the labor force, employment, demographic dividend, and shortage of migrant workers. Therefore, a comprehensive analysis shows that at the early stage of labor supply research, keywords such as economic growth, labor force, employment, demographic dividend, shortage of migrant workers, etc are the focus of scholars' attention. With the continuous decrease of labor supply in China, scholars began to explore the impact of labor supply on the economy and its influencing factors, and constantly broadened and supplement the research on labor supply.

4.2 B. Hot spot clustering analysis of domestic community elderly service research

The clustering function in CiteSpace software can further reflect the current situation of hot issues in the field of domestic labor supply. The Log-likelihood ratio (LLR) algorithm is selected in the software to cluster high-frequency keywords in the field, thus generating a keyword clustering knowledge graph. The module value of clustering is 0.701, and the average silhouette value is 0.909. Generally speaking, the modulus range is between 0.4 and 0.8. The average contour value is between 0 and 1. The greater the value, the higher the internal similarity of the keywords. Therefore, this paper has a good clustering effect and high internal similarity for keywords in the field of domestic labor supply, and the results have certain representativeness and credibility. Thus the result of 10 major clusters of research in this field is obtained, in order of cluster size, are demographic dividend, labor force, labor supply, labor shortage, aging, primary industry, unemployed, birth rate, demand, and health insurance, which are also the 10 major research themes focused on in the field of labor supply in China.

Table 4. Clustering table of hot terms in domestic labor supply research

Cluster	Clustering	Identifiers (select the first 5)
#0	47	Economic Growth; Demographic Dividend; Demographic Structure; Aging Society; Processing Trade
#1	43	Labor Supply; Labor Market; Labor Market Development; Intermediaries; Surplus Labor
#2	39	Labor Supply; Population Policy; Population Aging; Labor Supply Model; Labor Supply quality
#3	29	Industrial Structure; Employment Structure; Smile Curve; Population Development; China-Japan Comparison
#4	27	Labor Supply; Conference Overview; Social Security Contribution Rates; Urban and Rural Workers; Intergenerational Support
#5	25	Labor Resources; Transformation of Economic Growth Mode; Social Fixed Asset Investment; Working Age Population; Demographic Development Trend
#6	22	Non-public Economy; The Nineties; Urban Unemployment; Urban-rural Integration; Socialist Market Economy System
#7	18	Labor Supply; Labor Employment; Labor Means; Natural Population Growth Rate; Industrialization Stage
#8	14	Dynamic Efficiency; amsz Criterion; Dual Structure; Supply Change; Labor
#10	12	Labor Supply; Health Insurance; Pension Insurance; Labor Exchange; Supply and Demand

Based on the keyword map, using the clustering information provided by Citespace, the keyword co-occurrence network clustering table of labor supply research is organized, as shown in Table 4. Combined with the corresponding literature information, it is clear that the research themes of "demographic dividend" mainly focus on economic growth, demographic dividend, demographic structure, aging society, processing trade, etc. The research themes of "labor force" mainly focus on labor supply, labor market, labor market development, intermediaries, surplus labor, etc. The research theme of "labor supply" focuses on labor supply, population policy, population aging, labor supply model, labor supply quality, etc. The research theme of "severe labor shortage" focuses on industrial structure, employment structure, smile curve, population development, and comparison between China and Japan; "Aging" is the difficulty and challenges faced by China's population development. The main research points are labor supply, conference overview, social security contribution rate, urban and rural workers, and intergenerational support. The research topics of "primary industry" focus on labor resources, the transformation of economic growth mode, social fixed asset investment, working-age population, and demographic development trends. The research theme of "unemployed" focuses on the non-public economy, the nineties, urban unemployment, urban-rural integration, and the socialist market economy system; The "birth rate" is related to the population structure and the number of people who participate in the labor market, thus the theme is including labor supply, labor

employment, labor means, natural population growth rate, industrialization stage. The theme of "demand" focuses on dynamic efficiency, amsz criterion, dual structure, supply change, labor rights, etc. The theme of "health insurance" is a response to the shortage of supply and demand caused by insurance in society. The research is focusing on labor supply, medical insurance, old-age insurance, labor exchange, supply, and demand.

5. Research Frontier of Domestic Labor Supply

Identifying and tracking the research frontier enables researchers to grasp the research hotspots and trends in this field, and further explore the follow-up research topics and directions. In CiteSpace software, the research frontier can identify emerging theories and new topics, and make comprehensive analyses based on emerging articles and emerging keywords. Since the research data in this paper mainly comes from China National Knowledge Internet, only the keywords can be analyzed for emergence, and the keyword emergence function in CiteSpace software is run to get 30 nodes of emergent words in the domestic labor supply field (see Fig. 2). According to the emergent words and emergent years of domestic research in labor supply field, and combined with the analysis of the centrality of keywords, the period of 1998-2021 the research articles on this field is divided into three stages to detect the frontier issues of concern to the research in the labor supply field and their evolutionary trends.

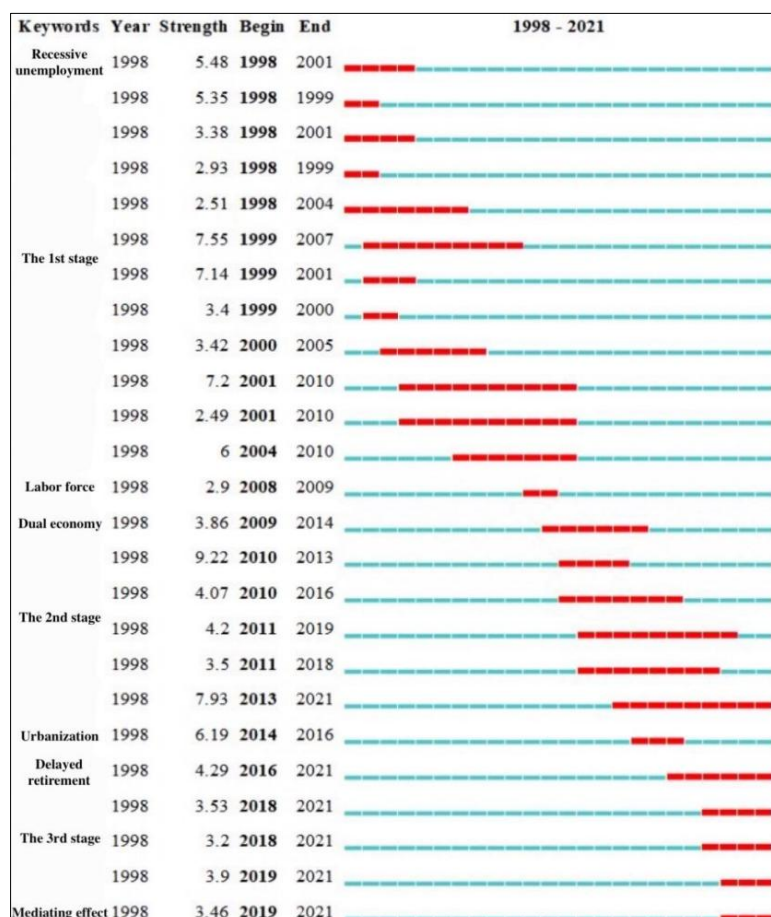


Figure 2. The nodes of keywords emerge from research in the field of domestic labor supply

5.1 Early research frontiers in the field of domestic labor supply

The early frontier appeared from 1998 to 2009. During this period, the research frontiers in the field of labor supply mainly focused on hidden unemployment, unemployment, labor employment, the market economy, tertiary industry, re-employment, migrant workers, labor force, etc. Since the research began in 1998, the labor supply has been a wide concern by scholars. As early as 1997, the

actual unemployment rate in China had reached about 6%. Therefore, since 1998, some scholars have focused their research on the issue of reducing the labor force participation rate. In his article, Tang H (1998) mentioned that by extending the years of education and implementing a phased employment policy for women, thus the size of the school population could be expanded and delay the employment age. Chen L & Yao X (2000) pointed out that if the market employment reform can be further deepened, the demand for employment in China's economy will increase and many people who have secured livelihoods but have poor employment opportunities will automatically leave the labor market temporarily or permanently, thus reducing the total labor supply. Liu B (2003) pointed out that only by making a basic decision to promote the development of the service industry based on accelerating the development of industry and agriculture can continuously improve the sufficiency of social effective demand, ensure the long-term and sustained growth of social productive labor demand, gradually achieve the balance between labor supply and demand, and achieve full employment in the true sense. Since 2008, most of the articles have been analyzed based on the trend of labor supply contraction. Judging from the number of published articles in this period, the total amount of published articles is relatively small, and the development trend is relatively slow. 2009s is the first year of implementing the spirit of the third Plenary Session of the 17th CPC Central Committee, and it is also a key year to actively respond to the international financial crisis. With the change of macro-form, Chinese enterprises, especially labor-intensive and export-oriented small and medium-sized enterprises, have been severely impacted, the number of migrant workers returning home has increased significantly, and the employment pressure on rural labor has increased. According to the situation faced by the professionalization of the rural labor force, under the guidance of scientific development, we should fully implement the Notice of the State Council on Doing a Good Job in the Current Economic Situation and the Notice of the General Office of the State Council on Doing a Good Job in the Occupation of Rural Labor Force, innovate working ideas, change working methods, increase work efforts, and promote multi-channel professional employment of rural labor force.

5.2 Medium-term research frontier in the field of domestic labor supply

The mid-term frontier appeared from 2009 to 2016. In this period, the research frontiers in the field of labor supply mainly focused on the dual economy, shortage of migrant workers, demographic dividend, population structure, social security, economic growth, and urbanization. At this stage, the overall trend of the number of published articles is increasing year by year. To narrow the regional wage gap, Wang N (2010) proposed that China needs to increase international trade and foreign direct investment in the central and western regions, reform the existing household registration system, remove institutional barriers to labor mobility, and strive to create a fair and competitive environment for job selection and employment. With the emergence of recruitment difficulties and labor shortage, Zhang N (2014) points out that China needs to accelerate the optimization and upgrading of industries, promote technological innovation of enterprises, enhance the core competitiveness of industries, realize industrial upgrading, gradually get rid of low-end processing and manufacturing industries, upgrade from the middle and low end of industrial chain to the middle and high end, completely reverse the situation of "shirts for airplanes" and improve the added value of China's economy. To further tap the potential of labor supply, Li Y (2016) focused her research on the working time flexibility and labor participation of male and female labor and put forward measures such as protecting women's employment rights, increasing basic public services such as child and elderly care, promote the household registration reform system, optimize the allocation of educational resources, and standardizing the retirement system to encourage middle-aged and elderly people with employment intentions to increase labor supply. From January 1, 2016, the state implemented a comprehensive two-child policy. Implementing the two-child policy, and reforming and improving the management of family planning services are important measures to promote balanced development of the population, which are conducive to optimizing the population structure, increasing the supply of labor force, alleviating the pressure of population aging, and finish better

implementing the basic national policy of family planning, and promoting family happiness and social harmony.

5.3 The latest research frontier of domestic labor supply

The latest frontier appeared from 2016 to 2021. During this period, the research frontiers in the field of community aged care services focused on delayed retirement, manufacturing, artificial intelligence, aging, intermediary effect, etc. With the development of China's economy and the accelerating process of urbanization, the related research in the field of labor supply has gradually matured. Zhang Y et al. (2017) found through experimental data tests that, in terms of China's overall economy, although delaying retirement leads to the occupation of some jobs that could have been provided to young people, it also reduces the level of contribution rates necessary for the balance of social security funds, so that labor demand and jobs tend to increase, and this job creation effect can exceed the job occupation effect, thus refuting the traditional view that delayed retirement will worsen employment. Song X et al. (2019) point out that the industrial robot input brought by technological development will significantly increase industrial labor productivity, and this technological innovation is an "inclusive innovation", and the substitution effect between machines and workers is more of a complementary substitution effect, and in regions with higher labor supply shortage, the marginal value created by robots is greater in regions with higher labor supply shortages, and the economic contribution is more obvious. As the aging of the rural labor force affects agricultural production efficiency, Peng W & Gonah G (2021) put forward relevant solutions: first, provide agricultural production technology training for rural aging people; second, accelerate the scope of promoting the use of agricultural machinery in areas where urbanization is more prevalent; third, to encourage technological extension activities from research institutes of traditional agricultural production; Fourth, encourage aging labor force to carry out cooperation and mutual assistance in agricultural production. In 2021, the State Council issued a notice on the 14th Five-Year Plan for Employment Promotion, which mentioned that in 2025, we should achieve the goals of overall stable employment situation, steady improvement of employment quality, effective alleviation of structural employment conflicts, and sustained release of entrepreneurship-led employment, so as to promote the formation of a virtuous cycle in which high-quality development and employment expansion and quality are mutually reinforcing.

6. Conclusion and Outlook

In this paper, CiteSpace software is used to explore the core and achievements in CSSCI collected by CNKI from 1998 to 2021, draw a knowledge map, discuss hot topics in the field of labor supply and analyze research frontiers.

The study found that:

(1) The research results in the field of labor supply in China are relatively abundant, but there are not many highly productive scholars. As well as the distribution of cooperation and communication among scholars and research institutions are fragmented which is lacking certain cooperation mechanisms.

(2) There are many articles on empirical analysis of labor supply, and also including some theoretical analysis, discourse analysis, and policy discussion papers, but there are few studies on the combination of the two and lack of comparative research.

(3) The hot areas of domestic labor supply research include demographic dividend, labor force, labor supply, labor shortage, aging, primary industry, unemployed, and demand. Among them, the issue of labor supply has always been the greatest focus of scholars.

(4) The latest research frontier in the field of domestic labor supply is related to delayed retirement, manufacturing, artificial intelligence, aging, and intermediary effect, and the research is closely related to the national policy orientation.

Given the research results of this paper, this study will further promote the research on labor supply in the following two aspects.

(1) Based on the multi-disciplinary perspective, strengthen exchanges and cooperation among scholars and research institutions. The research in the field of labor supply involves the cross development of economics, management, law, sociology, pedagogy, psychology, and other disciplines, and gradually improves its system and concept. For example, economics and management mainly explore the relationship between labor supply and demand, the influence mechanism between population aging and labor force, labor productivity, and so on through empirical research; Legally, it pays more attention to the labor security rights and interests of migrant workers and floating population. In medicine, it can combine labor supply with health and discuss the relationship between labor supply and health from the perspective of healthy human capital. The relationship between labor force supply and health should be discussed from the perspective of healthy human capital. Scholars and research institutions should strengthen ties, promote cooperation and exchanges, hold academic forums and lectures related to labor supply regularly, pool ideas, go deep into the labor force, fully understand the current situation of labor force supply, and obtain the latest data, to better carry out empirical research, promote the combination of theoretical and practical research, and promote the development of labor force supply in China.

(2) Significantly strengthen in-depth research in the field of labor supply. First of all, it is necessary to establish a long-term mechanism of bringing the city development to the countryside and promoting agriculture through industry, expanding the demand of the labor market, increasing the proportion of rural labor in secondary and tertiary industries, and promoting the coordinated development of urban and rural areas. Secondly, we should promote the equalization of basic public services and establish a mechanism to directly link basic public services such as education, medical care, social security, and employment with the resident population, so that the employment and education of children of the labor force can be gradually decoupled from the household registration, and the equality of urban and rural labor forces can be truly achieved. Thirdly, we should continuously improve the quality of labor supply and optimize the structure of labor supply. For example, the development of human resources for the elderly can temporarily slow down the shortage of labor and enhance the willingness of the elderly to work. Finally, we should improve the social security system. The central government should coordinate the development of various social security policies in an orderly manner, realize the orderly convergence of all localities under a unified standard, and guarantee the social security treatment of the labor force.

There are indeed some shortcomings in this paper: First, the research articles mainly come from CSSCI journals (including CSSCI extensions) included in CNKI, and it is mainly in Chinese, excluding the research results published by scholars in foreign journals; Secondly, due to the limitation of data format, it is impossible to conduct citation analysis on articles. In the future, research can expand the scope of research and further explore the research progress in the field of labor supply, to promote the flow and development of labor.

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