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Dynamic Analysis of Academic Research on "Pension Service" in the Last 20 Years in China and Abroad

Quantitative Analysis Based on Citespace 5.0

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Abstract—**With the improvement of aging, "pension services" has become a hot topic in academic research; China has also taken "pension services" as an important content of the supply-side reform. This paper, with the aid of Citespace 5.0, using the literature data of CNKI and WOS[TM] database in 1997-2016, takes the literature data mining and quantitative analysis on the subject of pension service of china's and other countries. This paper discusses the efforts to reform the supply-side of the "pension service" in many countries, and explores the public policy development veining on "pension service" by the way of public policy analysis. Finally discuss the focus of the pension service supply-side reform and its future development trend, i.e. organic combination of agency pension and family pension, pay more attention to the combination of medical care, and the physical and mental health of the elderly. Through analysis, it is clear that there are some differences between China's and others' academic study in this field, these diversities will provide the reference for the future research.**

Keywords—pension services; bibliometric; dynamic analysis

I. INTRODUCTION

In recent years, facing the aging society, how to design the scientific and reasonable pension service and its supply system, and how to create favorable conditions for the elderly? These issues gradually become the focus of

people's concern. The academic research on the problem of aging has also carried out for many years, has yielded fruitful results. Through the methods of literature data mining, bibliometric, literature review, this paper will review the last 20 years (1997-2016) of academic achievements on aging theme. The purpose is to grasp the development trends, summarize the research hotspot and trend of the future development of pension services, find out the similarities and differences between china and abroad in academic research in this field, and to provide some reference for future research.

II. ANALYSIS THE BACKGROUND OF AGING PROBLEM IN CHINA AND ABROAD

The widely recognized definition of the word "aging" is that, in a country or a region, when the elderly population over the age of 60 accounted for 10% of the total population, or over 65 years old population accounted for 7% of the total population, which means this country or region is in the aging society; when the proportion of the population over the age of 65 is up to 14% ,that is the deeper degree of aging; 20% is the super—aging society.[1]

With the improvement of socio-economic level and people's lives, the aging society is an inevitable phenomenon. The aging problem is not only population structure changes in a region, from the culture point of view, with the gradual increase of the proportion of the elderly population, a national social culture will get a subtle change, and the change of social psychology will further influence the process of social development. From the economic point of view, the problem of aging will bring about changes in consumption structure, and further affect the industrial and employment structures, such as China is expected, in the future, to need to increase over 10 million employees related to pension services. In terms of politics, the problem of aging is a country's direct test of social security system, how

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[1]   The aging of populations and its economic and social implications, the United Nations , 1956

to make the proper placement of the elderly, the elderly security, health care and other benefits, will become important factors in the political stability of a country.

According to the data from World Bank, the world's population over the age of 65 in the proportion of the total population has been in a steady upward trend in "Fig. 1". In 2002, population over the age of 65 accounted for 7.029% of the world's population, i.e., the world's population entered the aging society from 2002. Statistics data in World Bank begin from 1960 (4.985%) and as of 2016 (8.465%), in this period, 1960-1965 move down slightly, 1980-1985 tend to be stable, mainly affected by the war and poverty somewhere.
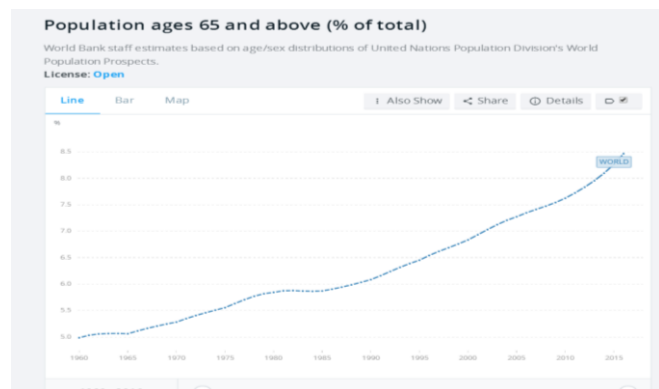

Fig. 1. Statistical line chart about global population aged 65 and over, during 1960-2016, from the World Bank.

According to the analysis of aging data from the World Bank in 2016, in four of the world's continents, except Africa, most countries have already entered the aging society in "Fig. 2". The proportions of aging in 8 countries, such as Japan (26.858%), Italy (22.746%), are already more than 20%, entered the ranks of the super-aging countries in "Table I". In Asia, in the countries of Japan (26.858%), South Korea (13.566%), Singapore (12.291%), Thailand (10.895%), China (10.003%), the aging index is higher than others, the aging trend is more obvious.

Fig. 2. Statistical chart about global aging spread in 2016, from the World Bank. [2]

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[2]   Figures 1, 2 are estimated by the bank's personnel on the basis of the census report, "the world population outlook" of the United Nations

TABLE I.   THE LIST ABOUT THE SUPER-AGING COUNTRIES AND AGING INDEX, DATA COME FROM THE WORLD BANK DATABASE (AS OF 2016)

Country/Region	Japan	Italy	Greece	Germany
Aging index	26.858%	22.746%	21.604%	21.447%
Country/Region	**Portugal**	**Finland**	**Bulgaria**	**Sweden**
Aging index	21.73%	20.017%	20.398%	20.20%

According to the World Bank statistics data in "Fig. 3", in China, the proportion of the population over age of 65 began to rise from 1965, the process is rapid, the ratio reached 7.006% in 2002, then China officially entered the aging society, China is one of the developing countries that earlier been the aging society. At the same time, China is also considered as one of the fastest ones on the aging process in the world, and owns the largest numbers of older in the world countries now. "Korea Daily" latest report said:" at present (July 2017), the population over the age of 60 in China has amounted to 220 million, 2015 as a benchmark, the elderly population accounted for 16% of Chinese total population(1 billion 350 million), accounted for 23% of the world population over the age of 60. In 2030, the population over the age of 60 years in China (350 million) will surpass the total population of the United States; in 2055, the number is expected to be close to 450 million. Then in China, 3 working force will have to support 1 elderly people."[3] But due to the different statistics method, Statistical data are slightly different between the World Bank and National Bureau of statistics of China. According to the National Bureau of statistics of China, China entered the aging society in 1999, as of 2015, the latest data show that the latest Chinese aging index was 9.55% in "Fig. 4".
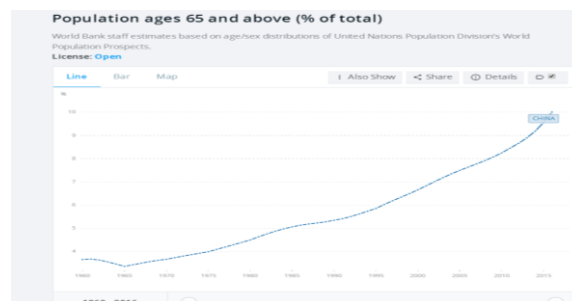

Fig. 3. The statistical chart about the population aged 65 and over in china 1965-2016, from the World Bank.
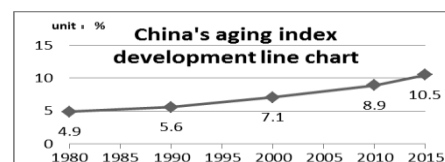

Fig. 4. The statistical chart about the population aged 65 and over, in china, in the period of 1980-2015, from National Bureau of Statistics of China. [4]

Population Division, household surveys conducted by the National Bureau of statistics, household surveys conducted by state agencies, and macro, international, and other aspects of information.

[3]   http://baby.sina.com.cn/news/2017-07-09/doc-ifyhwehx5388495.shtml

[4]   The data in the line chart are searched by the author from the statistics office of the National Bureau of Statistics

III.   DATA ORIGIN AND ANALYSIS TOOL OF THIS PAPER

English literature data are derived from the Web of Science [TM] database, the searching words set to "topic"= (provide service) and (old age); the literature type is "article"; the time span is "1997-2016"; citation index is in SSCI. And then, 2851 valid literatures data are got finally.

Chinese literature data are derived from CNKI advanced Retrieval Journals, the searching words set to "theme word" = "pension services", accurate search, the time span is "1997-2016", the search range for " core journals +CSSCI". Then 1316 valid literatures data are got finally.

This paper uses Citespace information visualization software as literature analysis tools. This software is developed by Professor Chen Chaomei from School of computer and information in Drexel University. The software's update and usage rate is relatively high. Citespace 5.0 is used in this paper.

IV.   THE BASIC SITUATION ANALYSIS OF THE RESEARCH ON "PENSION SERVICE" IN WOSTM

A.   *Basic situation analysis of academic papers published in important discipline*

English literature data in this thesis are derived from SSCI database in Web of Science [TM] database in 1997-2016. According to the analysis of the 2851 valid literatures data, in the last 20 years, the scholar research on issues related to "pension service" has been widespread concerned by many scholars of different disciplines and different countries. On this theme, 51 papers in 1997 only have developed to 304 papers in 2016, the academic researches on related topics of "pension services" in 20 years have increased by nearly 6 times, literatures grow faster especially in the last 5 years in "Fig. 5".
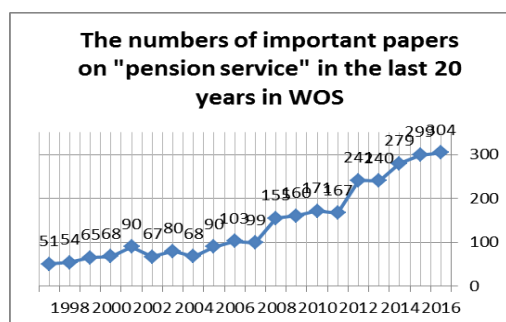

Fig. 5.   Line chart about literatures on "pension service" theme in 1997-2016 in WOS[TM], data are from WOS, sorted by author.

According to the literature data of WOS[TM] database, the numbers of academic researches on "pension service" in different countries or regions can be analyzed "Fig. 6". The most prominent academic contribution country in this theme is the United States, which has more important literatures in 20 years, up to the amount of 1280 papers, far more than any other countries. Then the UK, Australia, Canada and other countries or regions published many papers also.
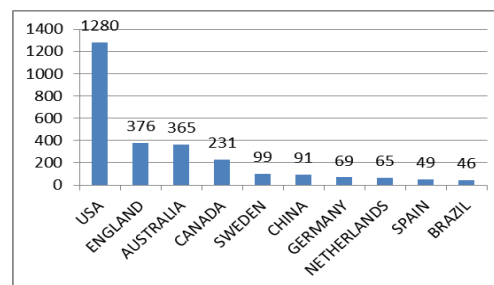

Fig. 6.   Top 10 countries in the number of "pension service" theme academic papers in SSCI, in the last 20 years.

According to the literature data of WOS[TM] database, research institutions which have outstanding academic achievements in pension services can be analyzed in "Fig. 7". In top 10 institutions, the United States accounts for 6, they're all well-known universities; two of the most famous universities in Australia, i.e., University of Sydney and Melbourne University are among the top 10; University of Toronto in Canada and King's College London in England also contribute significantly.
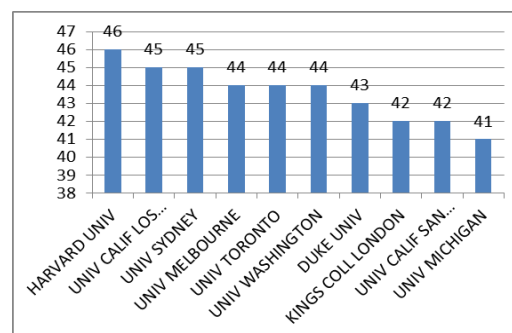

Fig. 7.   The top 10 research institutions in the number of "pension service" research papers published, in the last 20 years.

B.   *The Analysis of Journals and Scholars with Outstanding Academic Contributions*

According to the literature data of WOS[TM] database, we can find out the influential scholars in this field in "Table II" by statistical analysis of published articles.

TABLE II. THE TOP 10 INFLUENTIAL SCHOLARS IN THE LAST 20 YEARS IN WOS™ IN THIS FIELD

Scholars	Papers	Institutions
D.Challis	11	PSSRU, Mathematics Building, University of Manchester, Manchester, UK
Je.Byles	11	Research Center for Gender, Health and Ageing, Hunter Medical Research Institute, The University of Newcastle, New South Wales, Australia;
CM.Callahan	9	Indiana University Center for Aging Research，USA.
IR.Hallberg	9	Lund University, Department of Health Sciences, Sweden
A.Burns	8	University of Manchester, School of Psychiatry and Behavioral Sciences, Wythenshawe Hospital, Manchester, UK
G.Sundstrom	8	Institute of Gerontology, School of Health Sciences, Jonkoping University, Sweden
ID.Cameron	7	Rehabilitation Studies Unit, Northern Clinical School, Sydney Medical School, The University of Sydney, Ryde, Australia
M.Crotty	7	PhD, Rehabilitation & Ageing Studies Unit, Flinders University, Adelaide, South Australia
J.Hughes	7	Personal Social Services Research Unit (PSSRU), University of Manchester, UK
GS.Alexopoulos	6	Department of Psychiatry, Weill-Cornell Medical College, USA

We can find out the higher influenced magazines in "pension service" theme by the total citation frequency in "Table III". The literature data extracted from the WOS™ database are input into Citespace 5.0, time Slicing is set to "1997-2016", year per slice is set to 1, node types is "cited journal", the others are the default value. Then the total citation frequency can be analyzed. Many high influence journals are from research institute in the United States.

TABLE III. THE TOP 10 INTERNATIONAL ACADEMIC JOURNALS WITH HIGH CITATION FREQUENCY

Journal	Citation
Jama-Journal of The American Medical Association	828
Journal of The American Geriatrics Society	782
The Gerontologist	713
Social Science and Medicine	608
American Journal of Public Health	589
British Medical Journal	578
Medical Care	554
The Lancet	521
The New England Journal of Medicine	491
Archives of Internal Medicine	366
Journals of Gerontology Series B-Psychological Sciences And Social Sciences	357

Through the analysis of influential scholars and academic journals in the world, we can find that the academic literatures in "pension services" field, not only from the perspective of social science, a large number of studies involved the medical professional knowledge, such as elderly health care, endowment service, etc. A large proportion of literatures study the method of providing the professional service and support for the elderly in terms of medical care. "Pension service" theme is also viewed as an important issue in public medical and health field. Especially in some developed countries, USA and UK for example, academic research in "pension service" has early integrated the concept of " combination of medical care and

support" into the overall design of the system of pension service, and made great achievements.

C. Related Academic Hot Spot Analysis

The literature data are input into Citespace 5.0, Time Slicing is set to "1997-2016", Year per slice node types is set to 1, node types is "keywords +term", pruning is "Pathfinder +Pruning sliced networks", top N=50. Through the visual analysis and graphic adjustment, clustering calculation in accordance with the "Keyword" mode, finally, we can obtain the visualization map in "Fig. 8". In this map, network node clustering is 306, the connection is 673, the network density is 0.0144, the network module evaluation index is Q=0.6264, which means the visualization of network community structure is significant, that is, the association between the keywords in the academic study is much close. The network homogeneity index Silhouette=0.6677, namely clustering results are highly reliable. Each node represents different keyword, the size of node represents the importance of this keyword in the field, that is, bigger the node is, more important the keyword is. And the link describes the association between these keywords.
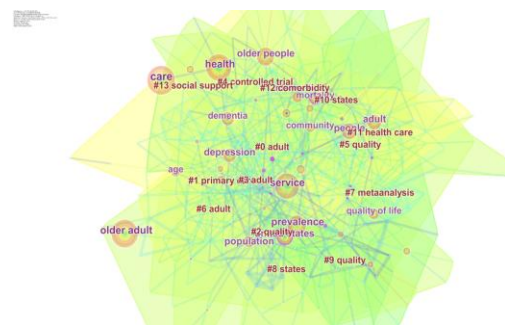

Fig. 8. visual clustering about the keywords related to "pension service" research

Through the clustering and visualization analysis of "pension services" research literature data, which based on the "keyword + theme" issues, 15 clustering are finally got. Amalgamating similar clustering, there are mainly 10 aspects with valuable, extractable information: 1.primary care; 2. quality (of life) 3.; controlled trial ; 4.meta-analysis; 5.health care; 6.Comorbidity; 7.social support; 8.long term care; 9.care Organization; 10.physical activity.

Through the visual clustering analysis of key words and themes, we can find much significant information. In "pension service" field, some academic research methods are often used in English literatures, such as controlled trials, meta-analyses; some vital academic focus, such as nursing care for the elderly, long-term care; pay more attention on geriatric and physical condition; social support and care agency of pension services. Then extracting the larger node keywords involved literature, we can find some important academic research papers, which are involved in geriatric study, practice of pension services in the United States, home care mode, community endowment mode, long-term care discussion and other aspects of this field.

D. Summary of key issues in academic research

The study of "aging problem" and "pension services" starts from the discipline of sociology and demography. The report aging of populations and its economic and social implications, which published by the United Nations in 1956, has proposed the standard of aging earliest, and then the problem of aging concerned by scholars all-round the world. For example, Clark Tibbit (USA) published Handbook of social gerontology: Societal aspects of aging in 1960, the handbook earlier comprehensively expounds the influence of the elderly population on the economic and social aspects. The problem of aging aggravated in western countries in 20 century 80s, that urged the scholars to further study the fiscal policy, social security system, and population policy to solve the aging problem, and improved the development of disciplines of Gerontology and Elderly Economics. 20 century 90s, publish of Economics of Aging: The Future of Retirement (Malcolm H. Morrison, 1982), The Economics of Individual and Population Aging (RL Clark, JJ Spengler, 1980) and some other critical writing, make the sign of real established of elderly economics.

The Ministry of Health of UK issued a report <National service framework for older people: executive summary> in 2001, that attracted worldwide attention. This report is the first national plan for the construction of old-age service system, and become the reference with the highest rate of citation in the field of "pension services". This national service framework provides 8 standards for pension service, that is, rooting out age discrimination, providing person-centered care, providing intermediate care service, ensuring general hospital care, preventing stroke, preventing falls, promoting good mental health in older people, and the promotion of health and active life in older age. Based on the framework, Welsh promulgated local rules of the framework in 2005, including 10 key criteria: rooting out age discrimination, person centered care, promoting health and well-being, challenging dependency, intermediate care, hospital care, stroke, falls and fractures, mental health in older people, medicines and older people(now incorporated as a standard).[5] The production of these public policies, to a certain extent, leads the direction of other countries' designing concept of pension service. According to the literature mining, we find that the national service framework for older people, which established earliest in England, sets a basic direction and evaluation system for the development of later pension services, guides the research direction and focus of scholars' attention, and also provides the basis and standards for the development of pension services for many other countries around the world.

The English literatures in WOS[TM] database reflect that the research and discussion about the supply-side reform of "pension service" are systematical in most developed countries. The UK is a good example of public policy on the supply of modern public service, especially the reform and modernization on public health and social care. Modernizing social care for older people in the UK, there are six themes were derived by the Labor Administration of United Kingdom after the Election in 1997, associated with 20 areas, that is, I. Integrated health and social care: developing partnership working, joined-up services; II. Independence: hospital discharge from long-stay settings, hospital discharge from acute-care settings, work opportunities, rehabilitation, care at home or in home-like environments, direct payments; III. Consistency: eligibility criteria and access to services, range of services, charges to users; IV. Support to careers: knowledge of entitlement, assessment and care plan, service provision; V. Making sure services fit individuals' needs: care management (including assessment), service commissioning, preventative services, targeting assistance; VI. Workforce: recruitment and retention, training. (Sally,2009) As a welfare state, there was almost no private provision of social services in Sweden, the most affected field is the elderly services. Therefore, the Sweden took a reform of social service privatization, privatization of the service institutions forced them to pay more attention to the service itself, especially the elderly nursing quality, the proportion of private service providers increased from 1% in 1990 to 16% in 2010.(R Stolt, P Blomqvist, U Winblad,2011) [6] In Finland, deinstitutionalization is an important trend in the redesign reform of long-term eldercare, that is, traditional institutional care is partly replaced by home care services and the creation of home-like housing facilities [7] ,(A Anttonen, O Karsio,2016) just like the community-based housing support in China. To meet the increasing demand of the older for long-term care, Bulgaria strengthens the PPP, which is well-known in EU countries as a method to bridge the gap in the public budget, and tries to provide more efficient services to the elderly by PPP.[8](A Boykov, 2015)

Many countries have formed the mature industrial chain and the steady policy trend of pension services in practice. Besides building a strong social security system, many countries are operating the market, encouraging all kinds of social organization, NGO, enterprise to participate into the industry of pension services. For example, Holland shut down part of the pension institutions operated by government and increased the supply of home-like care services institutions; strengthened financial support more effectively. France put forward the planning of "endowment village", make the construction of a village-style area covering consumer, healthcare, and other leisure functions, instead of the traditional nursing houses, combining both spiritual and material needs of the elderly together. Sun City in the United States is famous as for its facilities and the pleasant environment, is also known as the industry model of the pension community, and constantly creates a broader practical significance of pension service basis.

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[5]   National Service Framework (NSF) for Older People in Wales, Welsh Assembly Government,2006

[6]   R Stolt ,P Blomqvist , U Winblad, "Privatization of social services: quality differences in Swedish elderly care", Social Science & Medicine,2011 , 72 (4) : 560

[7]   A Anttonen , O Karsio, "Eldercare Service Redesign in Finland: Deinstitutionalization of Long-Term Care", Journal of Social Service Research , 2016 , 42 (2) :151-166

[8]   A Boykov, "Delivering Care Services To The Elderly Population Using Public private Partnership", Economics & Management,2015 , 11

V. THE BASIC SITUATION ANALYSIS OF THE RESEARCH ON "PENSION SERVICE" IN CNKI

A. *Basic Situation Analysis of Academic Papers Published in Important Journals*

According to the academic literature data retrieved from CNKI database, the number of academic articles in the theme of "pension service" is huge, that can be traced back to 90s in 20th century. The earliest academic article on "pension service" is "The thinking on the paid pension services" (Yang Jinxing, Ren Lizhong, 1993), which believes that socialized and paid pension service is the inevitable trend in social development, the government should promote diversified service. It is worthwhile to note that, at that time, China is far from the aging society, the discussion of pension issue was based on the historical background: I. The first generation under the policy of one-child gradually grown up, they need to face the responsibilities of both society and family, the burden is much more than the that of several-children time; II. The society is progressive and opening up in China, the third industry is more strengthen than before, flexible pension services are appearing, the key is people's concept of endowment is changing. These realities urged the scholars to rethink on the drawbacks of the traditional pension model, and the scholars' thinking are more likely to be reflected in the feasibility analysis of the transition from the family pension to the social pension

According to the analysis of the literature data extracted from CNKI database, we can analyze the volume of papers on the topic of "pension service" in the important academic journals in the last 20 years in "Fig. 9".
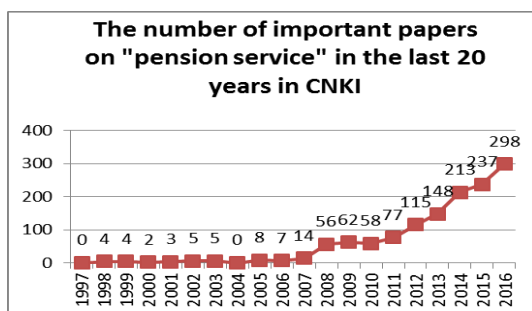

Fig. 9. Line chart about literatures on "pension service" theme in 1997-2016 in CNKI, sorted by author.

In April, 1998, Aging Association of China [9] and Gerontological Society of China held the "Seminar on national homelike pension and socialized pension service" in Xiamen, Fujian province. This seminar is an academic conference earlier concerning about socialized pension services problems in China. This conference caused the academic attention on pension issues, and then followed by some research articles, such as study pension model in abroad; explore methods of social practice of pension services, some introduction of practical accomplishment somewhere.

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[9] The association has changed name to "China Aging Development Center" now

In 2006, the State Council issued <Circular on accelerating the development of the pension service industry >, Circular made the clear definition of "pension services": "the service industry, to provide life care and nursing service and to meet the special life needs for the elderly." Circular fully affirmed and largely encouraged the development of pension service industry. From 2007, the study on "pension service "in academic circles began to show a rising trend, a large number of academic papers on the construction of the system and socialization of old-age service were published, then academic circles shown a great interest on the "community care". 2009, the basic judgment from Chinese government, that China has entered "the aging society", sounded the alarm to the whole Chinese. In 2010, National Development and Reform Commission , Ministry of Civil Affairs of China and some other departments held the relative conferences on the theme of "the construction of old-age service system in China " several times. Since 2010, the academic research about "pension service" entered a blowout period, more and more instructive articles are published. In 2012, < Rights protection law of the People's Republic of elderly people> was emended. <Circular of the State Council on printing and distributing the plan for the development of service industry in 12th Five-Year> was issued. These regimes of law planed explicitly the "pension service industry" as the life service industry to develop vigorously, put forward "the government should introduce a variety of forms of market bodies into the pension industry, cultivate and develop professional pension service institutions, encourage capital from private and abroad to invest the projects of pension services, participate in the construction and operation of pension service facilities, and actively support the non-profit organizations and small or medium-sized enterprise to serve the pension service industry development" In 2013, Circular of the State Council on the issuance of the plan for the development of China's aged undertakings in 12th Five-Year made a clear layout of the aging service industry.

February 25th in 2015, National Development and Reform Commission, Ministry of Civil Affairs of China, Ministry of Education of China and other ten ministries jointly issued Opinions on encouraging private capital to participate in the development of the pension service industry, put forward that social forces would become the main force to develop the pension service industry, would play an important role in this filed. In 2015, Chinese government put forward the overall planning of supply-side reforms; "pension services" is further incorporated into the supply-side reform blueprint.

In the period of "12th Five-Year", each corner in China has taken many attempts in privatization, market reform and private operating of public affairs. The local governments promote the development of pension service industry actively; the social forces are also involved in various fields of this industry. For example, the cities of Chongqing and Guangzhou were building the pension town with complete facilities and medical support combined pension. But during the "12th Five-Year", the central government had no specific top-level design on pension services industry, the

whole country was in the actively exploring stage. But there are many problems on the system and mechanism of the industry and norms of the service, that barriers the elderly to accept service smoothly, for example, the beds in public nursing institutions are always insufficient, but the beds in private nursing institutions are nonbed occupancies.

February 2017, the State Council issued "13th Five-Year" national development cause of aging and pension system construction planning, put forward explicitly to develop "the old-age service system of home-based, community-supported, organization--supplemented, combination of medicine and nursing." So far, after years of debate and practice, the basic form of design of public policy system on pension services supply-side mode has taken shape; normative and scientific top-level design of public policy has formed.

B. The Analysis of Journals and Scholars with Outstanding Academic Contributions

According to the literature data of CNKI, we find that many universities and research institutions have positive contribution to the research on "pension service" in China in the last 20 years, "Fig. 10". The Renmin University of China is the most prominent, have the largest number of papers published in important journals, and Nanjing Agricultural University, Hehai University, Huazhong University of Science and Technology also have the main academic contribution in the last few years.
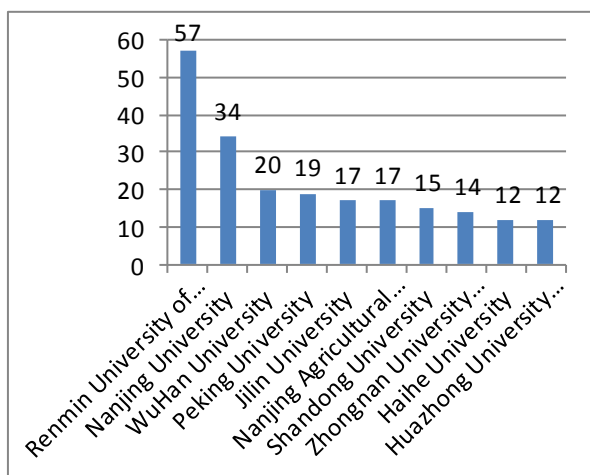

Fig. 10. Top 10 academic contribution on theme of "pension services".

From the further analysis of the relationship between scholars and research institutions, we can find the outstanding academic achievements in the institutions and relative scholars. The literature data from the CNKI are input into Citespace 5.0. Time Slicing is set to "1997-2016", year per slice is set to 1, node types is "author + institution", Pruning is "Pathfinder+ Pruning sliced networks" top N=50. Through visual analysis, the mixed map of author and institution is obtained in "Fig. 11". The network nodes is 279, the connection is 239, the network density is 0.0062, the network module evaluation index for Q=0.9667, Q means the significance structure of network community.

The visual map reflects that research institutions and scholars on "pension services" dispersed in different communities; the cooperation between each other is few. The network homogeneity index Silhouette=0.5409, means that the result of this clustering is reasonable. Each node represents an institution or author; the size of node on behalf of its academic contribution, line describes the cooperation between authors or institutions.

Fig. 11. Mixed visual map about the academic research scholars or institutions on theme of "pension services"

C. Related academic hot spot analysis

According to the literature data from CNKI, and merging similar words, such as "home pension mode" and "family pension mode", "aging population" and "the elderly", statistic preliminarily the 10 key words of high frequency of appearance in "Fig. 12".
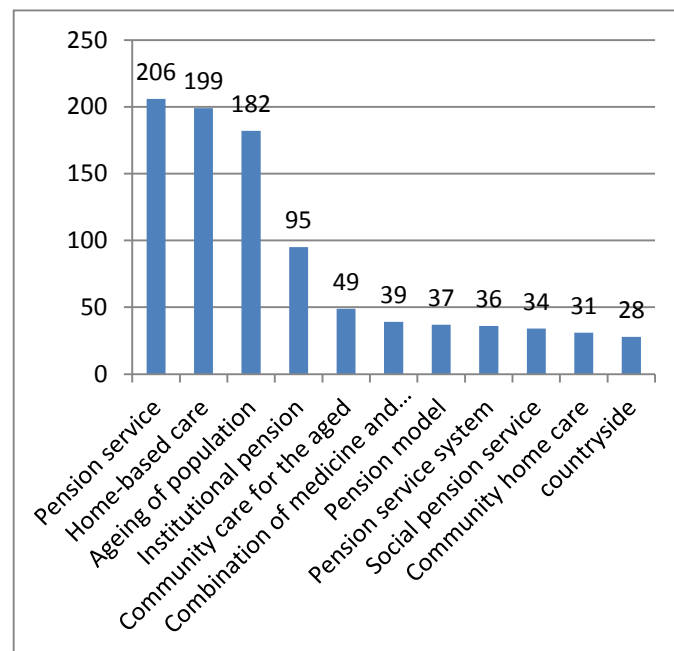

Fig. 12. The keywords frequency statistics on "pension service" theme academic research.

The literature data extracted from CNKI are input into Citespace 5.0, Time Slicing is set to "1997-2016", year per slice is set to 1, node types is "keywords +term", Pruning is

"Pathfinder +Pruning sliced networks", top N=50. Through visual analysis and graphic adjustment, clustering calculation in accordance with the "Keyword" mode, we can get the clustering figure 9. The nodes in the network is 299, the connections is 416, and the network density is 0.0093, network module evaluation index for Q=0.8136, Q means that the association between key words of academic research on "pension service" theme is close. Network homogeneity index Silhouette=0.4762, means the degree of homogeneity between the keywords is not very high, there are some differences between keywords, that is ,the clustering results are more reasonable. Each node represents different keyword, the bigger size of node represents more important the research is, and the line describes the connection between keywords.
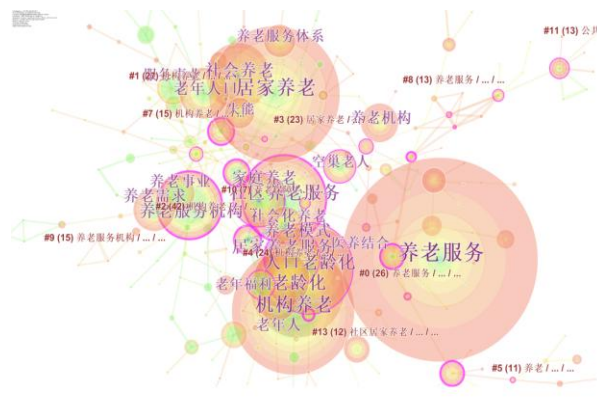

Fig. 13. The visualization clustering map about related keywords on "pension service"

Keywords visual clustering of "pension services" were formed 31 clusters in "Fig. 13", reflecting different views on the issue of the pension services, the relationship between each clustering is very strong. After summing up and classification, the remarkable keyword clustering concentrated in these words: institutional pension, socialized pension, home care, community-home care, old-age security, pension services. These words reflect the academic research of the pension service model in China in the last 10 years.
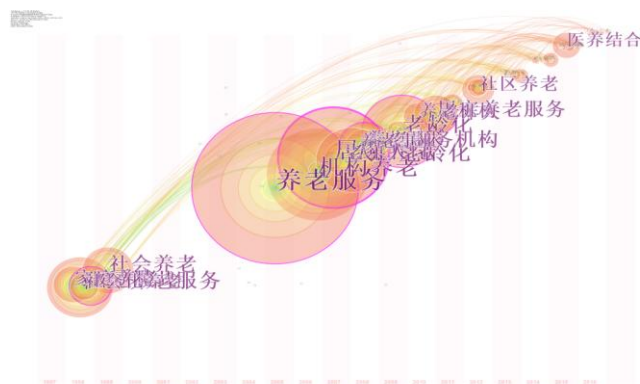

Fig. 14. Clustering time-zone map of the keywords of "pension service"

Through clustering related keywords of the "pension service", and then analyzing the time zone map by CiteSpace 5.0, we can clearly find that the change of

research focus on "pension service" as time. With the constant confrontation between academic discussion and practice, the knowledge of the pension service has been continuously increased as shown in "Fig. 14". At the end of 20th century, the research on "pension service" is much less; the discussion was focus on the mode conversion problems of family or society, people's view were changing gradually. During this period of 2006-2014, the academic research on the theme of "pension service" increased sharply, the discussion focused on the debate among different pension models and the construction of the pension service system, just like the thinking reflected in the analysis of high frequency words, such as home-like, community, social pension, etc. In recent years, the academic discussion on "pension services" much centralized on the supply mode of combination of medicine and nursing.

This development path just confirmed the exploration on the supply mode of pension service in Chinese academic and social practice. And ultimately promote the issue of "13th Five-Year" national development cause of aging and pension system construction planning in February 2017.

Through the keyword visual clustering by Citespace 5.0, besides paying attention on the keywords of high frequency, there are still many issues worthy of our concern, such as social welfare system, the application of government purchase services, disabled elderly, rural elderly pension problems, empty nest elderly. These subjects should be particularly concerned and discussed in the future practice of pension services.

D. Summary of Key Issues in Academic Research

In China, the study on "aging problem" and "pension service supply" can be traced back to the mid-90s in 20th century. Chinese scholars made many in-depth researches on the situation of supply and demand of pension services (Huang Junhui, 2015; Li Wenjun, 2011; Pan Jinhong, 2010), the researches were important references for the academic research and policy analysis later since. The scholars also learned the experience of other countries actively, such as Japan (Kang Yue, David, Hasegawa Naoki, 2011; Suzuki Hiroshi, 2011), and Britain (Qi Feng, 2010), etc. With the promotion of market-oriented reforms, academic researches paid more attention to the improvement of pension service, the overall planning of sanatoria industrial development, and the function and role of government. "Establish and develop the comprehensive community service pension system" (Jing Tiankui; 2015); "Construction of government responsibility system for home-care aging service in China from the perspective of welfare pluralism " (Tong Chunfen, Wang Lianjie; 2015); "The thinking of China's pension service "supply-side" reform---build a "community based, home-service" comprehensive pension service system "(Li Zhiming, 2016) .In 2013, the State Council issued the <Some opinions on speeding up the development of the service for the aged>, put forward to carry out a reverse mortgage housing for the elderly pension insurance pilot, that coursed widely discussion on the financial support issues of old-age service system, such as how does the public finance support pension business effectively? (Han

Junjiang, 2015). The practice of government purchase pension service carried out step by step in Jiangsu province, Anhui province, Guan Guangxi Zhuang Autonomous Region etc. This initiative helped to reverse the imbalance of pension service supply, guarantee the interests of service provider and the elderly, especially the interests of low-income groups. Considering the promotion of service efficiency, some scholars suggested to use the agency theory and the third-party governance theory, to build a new model to insure the government procurement efficiency (Song Yanbo, 2014), at the same time, to encourage social organizations participate into old-age service supply (He Shoukui, 2016). The comparison and controversy among different pension models never stopped, "sojourn with a medical support care model" enriches the ways of providing pension service, and is worth further developing as high-end pension scheme industrialization (You Yuanwen, 2014). The community-home-based care pension service, which needs the involvement of social, government, market, social organizations and other parties, thus to get the resultant force (Xu Qian, 2016).

Many scholars concerned about the pension issues of special groups. The process of urbanization and the aging process occurred almost simultaneously in China, and Empty Nester old-age problem occurred in city and countryside at nearly the same time, for which land transfer funds and rural communities should play a key role (Guo Yongfang, 2008). Based on the tradition of China, the mode of mutual-aid pension and take account of family would be a welcome way for the Empty Nester (Jin Huabao, 2014). Based on the problem of uneven quality of pension service institutions, scholars called on the concern on disabled elderly (Mu Guangzong, 2012), disabled elderly need more of community health care, social work, social welfare etc. In China, the affairs of pension services need further combination of medical experts, social workers, social organizations, and to cultivate professional personnel and organization to participate in the pension service.

VI. CONCLUSION

Through the literature data mining and quantitative analysis, we can find that, many countries around the world are faced with the problem of aging, academic research can also find many common points. Most aging society countries take the government-led, market-oriented operation of the policy oriented as the supply method of pension services.

With the marketization trend of pension service supply business, countries are facing some similar problems, such as the role of government function, supervising the quality of service pension institutions, providing the support of social security to the elderly. And the difference of specific content of pension service policies in different countries. That leads some differences in development concept in pension service all around the world.

There are still some differences between China and other countries on the research of "pension service". Relatively speaking, China's academic research and practical work started later, but the development of the reform process of pension services is fast. The Chinese government pays more attention to providing material and hardware services, such as nursing homes, health care facilities etc.

From the literature study of other countries, besides the construction of pension institutions and supply system, pension service is just like cultural and ethical construction, that is, concerning more on establishing the "people-oriented" concept, paying attention to the prevention and treatment of senile diseases, the harmonious development of physical and mental health for the elderly. Especially, lots of academic researchers are medical staff or social workers. So the pension services in many countries, the degree of socialization, marketization, and the combination of medicine and nursing support are all more mature.

Chinese government has been highly concerned on pension issues, both the social security policy and specific measures of local governments. An awareness of systematical layout is gradually formed, a unified old-age service system is gradually constructed, and innovative pension service supply mode is continuously explored. In 2015, the "supply side" reform is proposed by Chinese central government, the reform will enhance the development of every industry. Pension services, as an important part of public service, have to be promoted in its marketization, scale and standardization, to standardize the whole supply-side of pension service from the angle of public policy, and to realize the transformation of "supply side". February 2017, the State Council issued the notice of the "13th Five-Year" national development cause of aging and pension system construction planning, which put forward the overall public policy framework of the pension service supply: "the old-age service system of home-based, community-supported, organization-supplemented, combination of medicine and nursing." This framework became the guiding program of the development of pension service industry in China in the future.

From the macro perspective, Chinese government needs further solving the region segmentation problem of social security system, solving the pension welfare problems of those who living far away from hometown; and further narrowing the gap between urban and rural areas, so that the elderly can enjoy the same service fairly.

From the aspects of system construction, Chinese government needs to further promote the marketization and privatization in the proportion of pension service industry. Local governments should carry the coordination of various departments, design a multi-level governmental pension service system pertinently, perfect the construction of the function of the existing community; train more general practitioners to participate in the community service, and gradually realize the combination of medical care and nursing care, support the coordination of community-home-care service system.

From the cultural perspective, in practice in China, there should be more concerning on the "people-oriented" service concept. The society and government should not only provide support services in material aspects for the elderly,

but also pay attention to the mental and physical health of elderly people. Start from the construction of medical care, old-age security, cultural building, we should accelerate community-home endowment mode, so that the elderly do not have to leave their familiar living communities, and be able to accept professional pension services.

With the development of China's pension service; it gets mature. Through the government procurement, supervision and so on, market-force and social organizations' capabilities can be cultivated steadily. The future of China's pension service market will be more mature and convenient for elders.

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