ALTERNATIVE POLICY MEASURES TO COPE WITH THE IMPACT OF AGEING ON THE FINANCIAL SUSTAINABILITY OF THE SOCIAL SECURITY SYSTEM

VOLUME ON 2018 RESEARCH

TOPIC 2.1.3

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Component 2

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Population Aging and Fiscal Sustainability of Social Security in China

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Preface

China's social security reform has been going on for nearly 30 years. In the era of planned economy, people enjoyed social security according to their work units. By now the social security system has been increasingly adapted to the development of market economy, establishing a new social security system framework based on social assistance and social insurance This system has played a huge role in ensuring the basic life of the people, especially the elderly. China's social security system has developed rapidly, but there are some obvious institutional defects and operational problems. These problems are further highlighted in the context of the accelerating global population aging. In China's social security system, the governments bear most of the expenditure responsibilities, so the most serious problem is that the financial sustainability of social security is challenged.

With the socialism with Chinese characteristics entering a new era, the major social contradictions in China have been transformed into "the contradictions between the people's ever-growing needs for a better life and the unbalanced and uneven development.", which implies that the level of social security needs to be further improved. The aging of the population structure is prominent, the proportion of the elderly and the number of the elderly is rising, and the subsidized population covered by pensions and medical systems is rapidly expanding. The expansion of coverage and the increase in the level of treatment have placed the governments under enormous financial pressure and the fiscal sustainability has been challenged. If no appropriate measures are taken, China's social security system will be unsustainable, which will have an immeasurable impact on social stability. Therefore, based on the status quo to analyze the problems and challenges that may be faced in the future, it is of great significance for China to find solutions and ideas to ease or even solve the problems as early as possible.

This paper is based on the background of China's aging population and the financial status of the current social security system. It combines existing studies and authoritative data to establish a simulation prediction model to calculate the financial sustainability of China's social security system in the future. Through the analysis of the results, we will further discuss the effects of existing measures and provide an important reference for the implementation of corresponding reforms.

Based on this background, the paper is structured as follows.

The first part presents the current situation and trend of China's population ageing. It focuses on the evolution of the age structure of the Chinese population and the status and

characteristics of population aging and uses the data of the United Nations Population Division to forecast and analyze the indicators of population ageing.

The second part introduces the financial responsibility and current situation in China's social security system. It focuses on the overall structure of China's current social security system and the financial burden of the government in each sub-system including the pension system, the medical system and the social assistance system, and analyzes the government's fiscal expenditure in the social security system through historical data.

The third part is to forecast the financial burden of China's social security system from 2018 to 2050, including pension insurance, medical insurance, social assistance and the overall financial burden of these three sub-systems.

The fourth part analyzes the existing measures which could improve the sustainability of the social security system. These measurs includes reform of the contribution collection and management system, progressively delaying retirement, promoting the development of the third pillar pension, controlling medical insurance costs, and abolishing the “one-child policy” to encourage fertility.

The main data sources for this report are:

1. National Population Census Data from 1953 to 2010;
2. Official statistics of the National Bureau of Statistics of China.
3. Official data of the Ministry of Finance of China
4. Official data of the Ministry of Human Resources and Social Security of China.
5. *China Statistical Yearbook, China Health and Family Planning Statistical Yearbook, Finance Yearbook of China, Human Resources and Social Security Yearbook*, etc.
6. Data from the Department of Economy and society Affairs, United Nations.

1 The Status and Trend of Population Aging in China

Population ageing is an important trend in the development of the whole world. Changes of the population age structure affect every aspect of human's life extensively and profoundly, and population ageing has increasingly become a major population problem affecting numerous countries. As the world's largest developing country, China has become a population aging when its economic development level was relatively low, which will not only have a profound impact on China's population and labor structure but will also cause enormous financial pressure on China's social security system.

1.1 The current situation of China's population structure

1.1.1 The scale and proportion of old-age population grow fast

The population age structure of China has been changing since the 1950s due to the changes of the birth and death rates. The data of the six censuses show that the quantity and percentage of elderly has been increasing very rapidly. The percentage of population aged 60 and above was 7.32% in 1953 and rose to 13.26% in 2010; the percentage of population aged 65 and above was 4.41% in 1953 and rose to 8.87% in 2010. According to the UN, in 2000 the proportion of the population aged 60 and above was 10.33%, which indicated that China had become an aging society.

From the point of an ageing population development speed, China spent only 18 years in changing the population age structure from the adult structure to an older structure, while France took 115years, Switzerland 85 years, the United States 60 years, and even Japan took 25 years. The speed of China's population aging development is very fast[1].

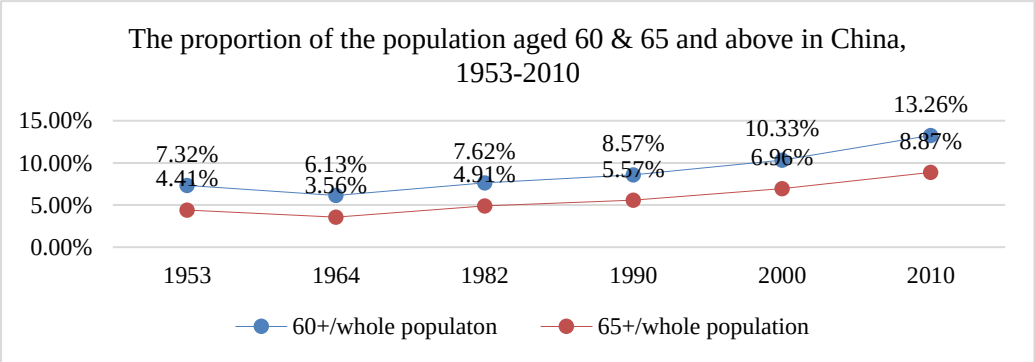


Figure 1-1 The proportion of the population aged 60 & 65 and above in China, 1953-2010

[1] SUN Qixiang, ZHU Nanjun. China's Ageing Population Analysis[J]. China's Financial, 2015 (24): 21-23.

Sources: National Census Data

At the same time, China's elderly population is huge, the quantity of old people being equal to 1/5 of the world elderly population.[2] China is the only country where the elderly are more than one hundred million.

At the same time, people's living standard is rising and especially due to the improvement of medical and health conditions, life expectancy has increased. In 2000, the number of people aged 65 and above was 88 million, and their percentage 6.96%. By the end of 2017, the number has reached 158 million, and the percentage 11.39%.

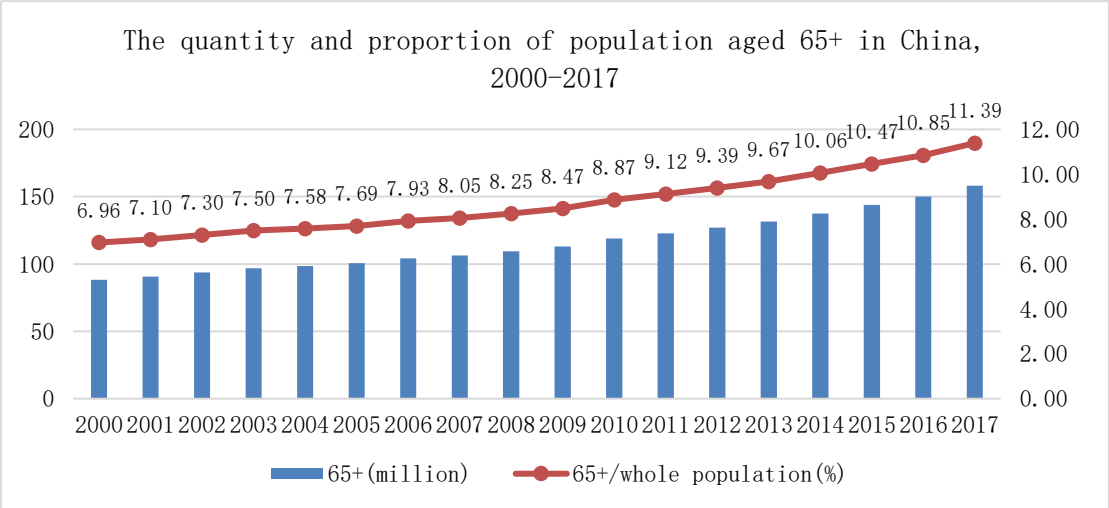


Figure 1-2 The quantity and proportion of population aged 65+ in China, 2000-2017

Sources： The annual data from National Bureau of Statistics, People's Republic of China , whereby, data of 2000 and 2010 are based on the census data, the other data are calculated according to the annual population sampling survey.

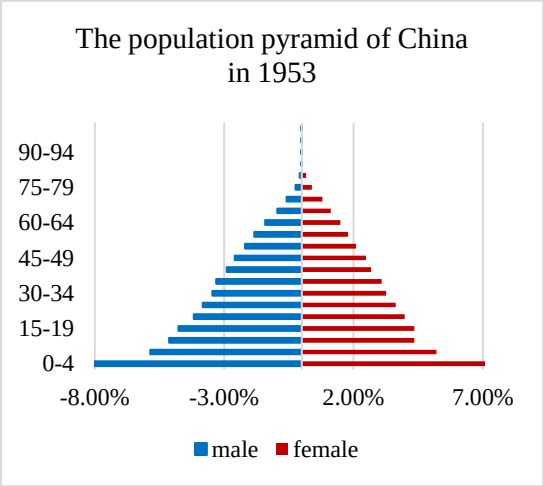
1.1.2 The bottom of the population pyramid is shrinking, the structure of population is becoming older and older

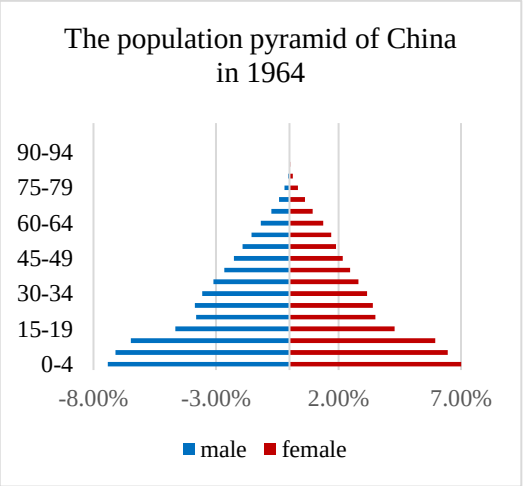
Great changes of the population age structure have taken place since the founding of the People's Republic of China. The number of people aged 60 and above rose from 41.5 million in the first national census in 1953 to 177 million in the sixth national census in 2010.

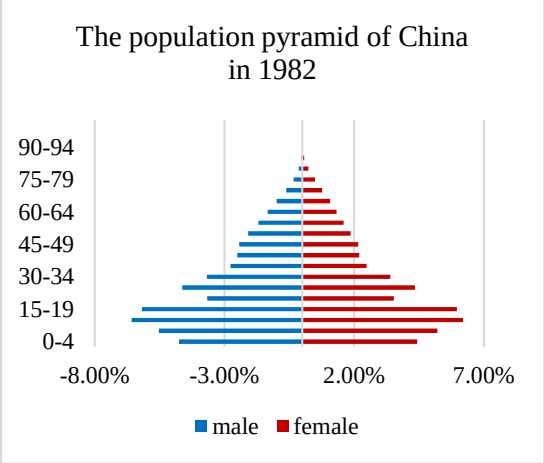
Scholars have provided different interpretation of the changes of the population age structure in China. Generally, the changes of the population age structure are summarized as a

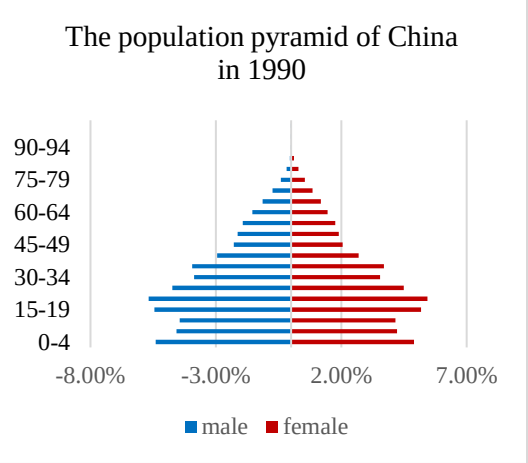
[2] The national working committee office on aging. China's ageing population trend prediction research report [R]. 2006.

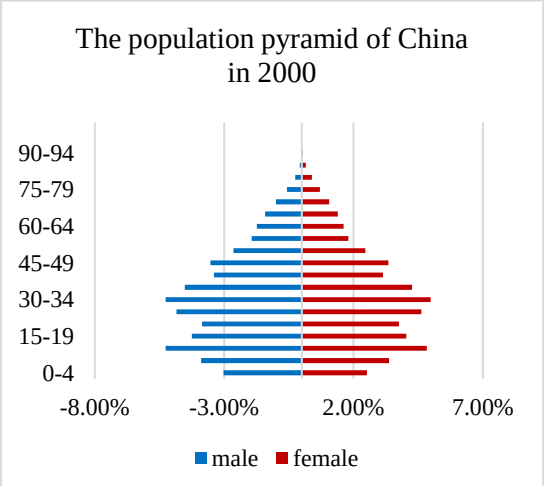
three-phase shift. The first phase is characterized by a high birthrate and a high mortality rate, and a low natural growth rate; the second phase by a high birth rate, a low death rate and a high natural growth rate; the third phase by a low birth, a low mortality rate and a low natural growth rate. These phases are reflected by the evolution of the age pyramid.











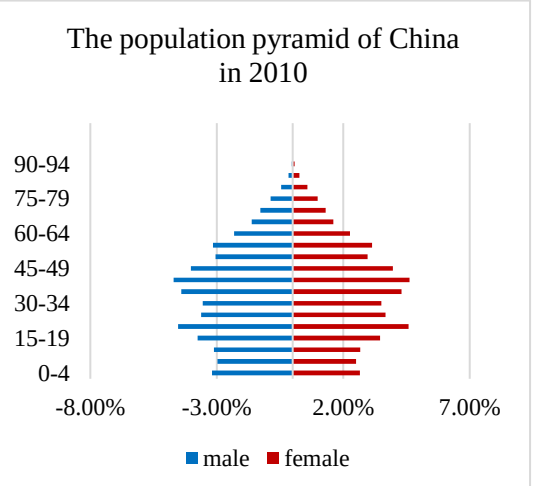


Figure 1-3 The population pyramid of China, 1953-2010

Sources: National Census Data

Comparing the age pyramids from the six censuses, we can see that in 1953, the population age structure presented a standard pyramid shape and the population was still young. After that, along with the rapid rise of fertility and the decline of mortality, the population age structure became even younger. However, China began to implement family planning starting in the 1970s, and the fertility rate fell sharply. The birth rate decreased from 34.11 ‰ to 17.82 ‰ from 1969 to 1979, and the number of births fell rapidly, so that the bottom of the pyramid is shrank, while the middle and top of the pyramid expanded.

Table 1-1 Total Population and Percentage of Population by Age Groups

Year	Total population (million)	Percentage of population by age groups (%)		
		0-14	15-64	65+
1953	594.35	36.28	59.31	4.41
1964	694.58	40.69	55.75	3.56
1982	1008.18	33.59	61.5	4.91
1990	1133.68	27.69	66.74	5.57
2000	1265.83	22.89	70.15	6.96
2010	1332.81	17.12	73.6	8.87

Sources: National Census Data

Moreover, all censuses showed that the percentage of population 0 -14 decreased by more than half, from 36.28% in 1953 to 17.12% in 2010.

1.1.3 The life expectancy is becoming longer， the median age is rising

Life expectancy is an important indicator of a population health level, but it is also an important cause of population aging. Along with the gradual improvement of the economy and society development as well as of the medical and health care system, life expectancy has increased from 43.83 years in the 1950s to the present 75.67 years. The extension of life expectancy increased the number of elderly people to a certain extent and deepen the process of population aging.

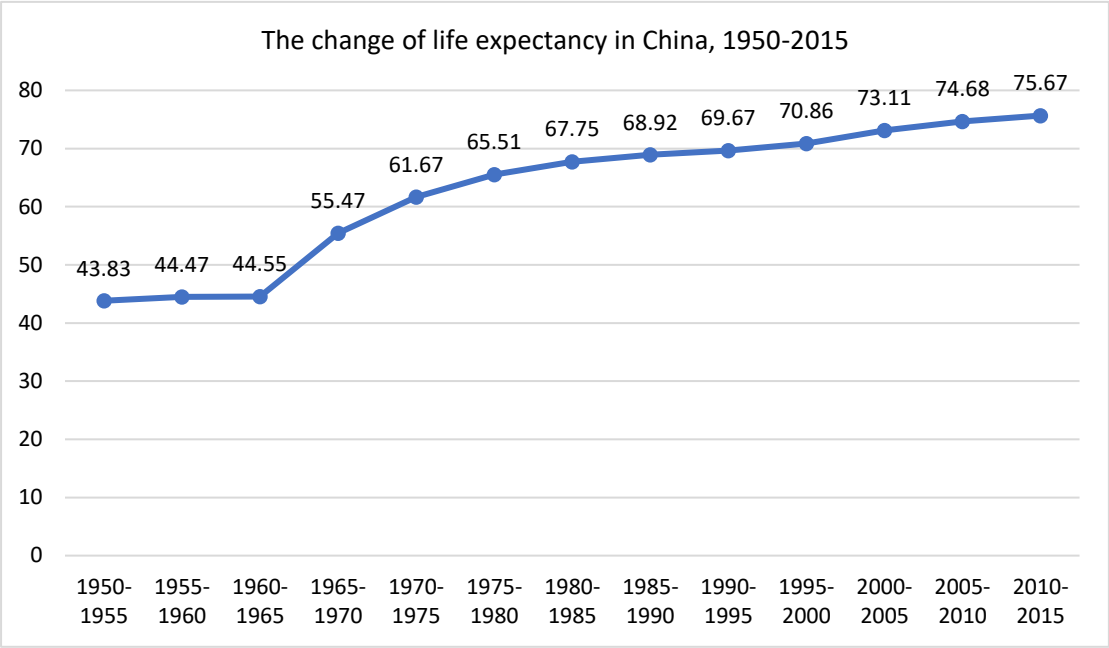


Figure 1-4 The change of life expectancy in China, 1950-2015

Sources： United Nations, Department of Economic and Social Affairs, Population Division (2017). World Population Prospects: The 2017 Revision, custom data acquired via website.

The median age is also a key indicator of population age structure. The upward moving trajectory of the median age can reflect the population ageing process as a whole. In the early days after the foundation of the People's Republic of China, as a result of a rapidly rising birth rate, and declining mortality, the median age experienced a period of decline. In the 1970s, along with the carrying out of the family planning policy, the new born population began to decline, and the median age increased year by year and it has risen to a present value of 37 year. According to international practice, the median age indicators is a standard for defining the of dividing the population age structure: a population is young when the median age is under 20; it is an adult when the median age is between 20-30; it is elderly when the median age is over 30. According to this standard, by now China has an elderly population structure.

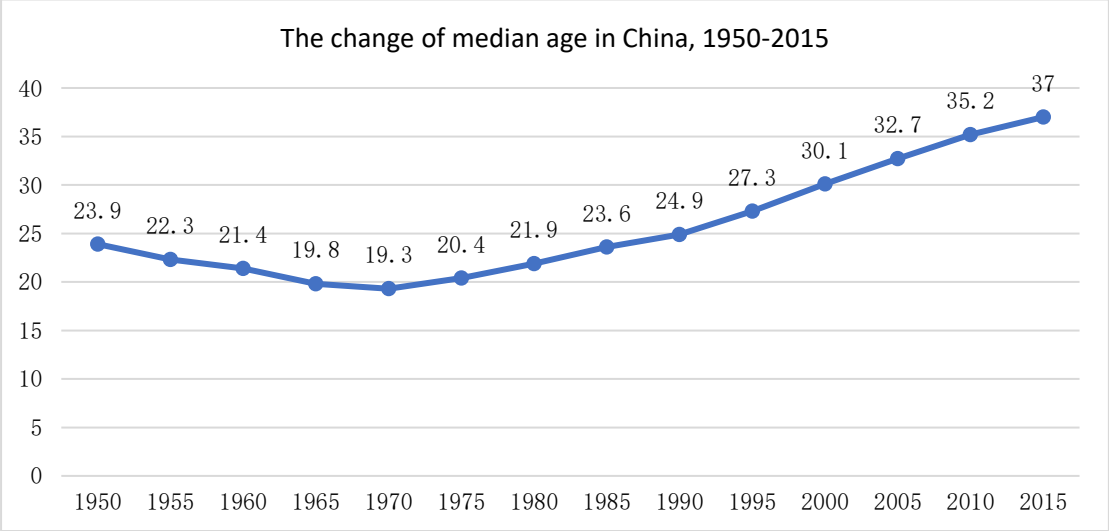


Figure 1-5 The change of median age in China, 1950-2015

Sources： United Nations, Department of Economic and Social Affairs, Population Division (2017). World Population Prospects: The 2017 Revision, custom data acquired via website.

1.1.4 The proportion of labor population decreases, and the old-age dependency ratio rises

Another intuitive consequence of population aging is the decline of the percentage of working age population, which implies a reduction of labor supply. During the "Twelfth five-year" period (2011-2015), the percentage of working age population 15-64 registered began inflection point from up to down and the demographic dividend gradually disappeared. In 2017, the proportion of working age population labor population (15-64) fell to 71.68%, and that of working age population (1559) fell to 66.08%.

Another implication of the decline of the percentage of working age population is the increase of the population dependency ratio, especially of the elderly dependency ratio. There are two ways to calculate the old-age dependency ratio. Based on the data from the United Nations Population Division, taking population aged 15-59 as the standard, the old-age dependency ratio grew from 15.57% in 2000 to 24.57% in 2017. Taking the population aged 15-64 as the standard, the old-age dependency ratio grew from 10.09% in 2000 to 14.85% in 2017. It means, aging leads to the increase of the old-age dependency ratio.

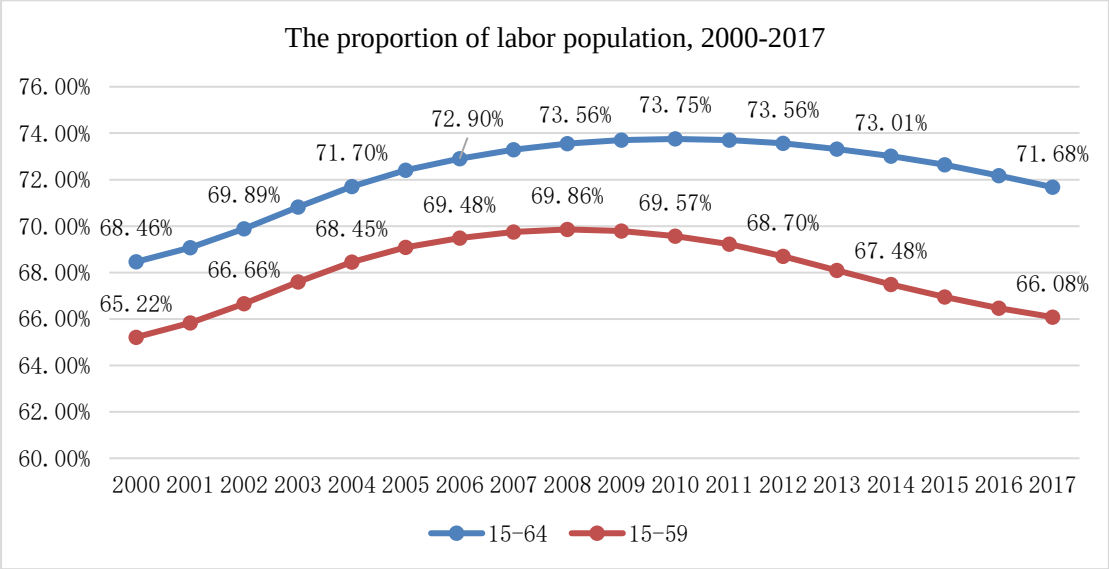


Figure 1-6 The proportion of labor population, 2000-2017

Sources: United Nations, Department of Economic and Social Affairs, Population Division (2017). World Population Prospects: The 2017 Revision, custom data acquired via website.

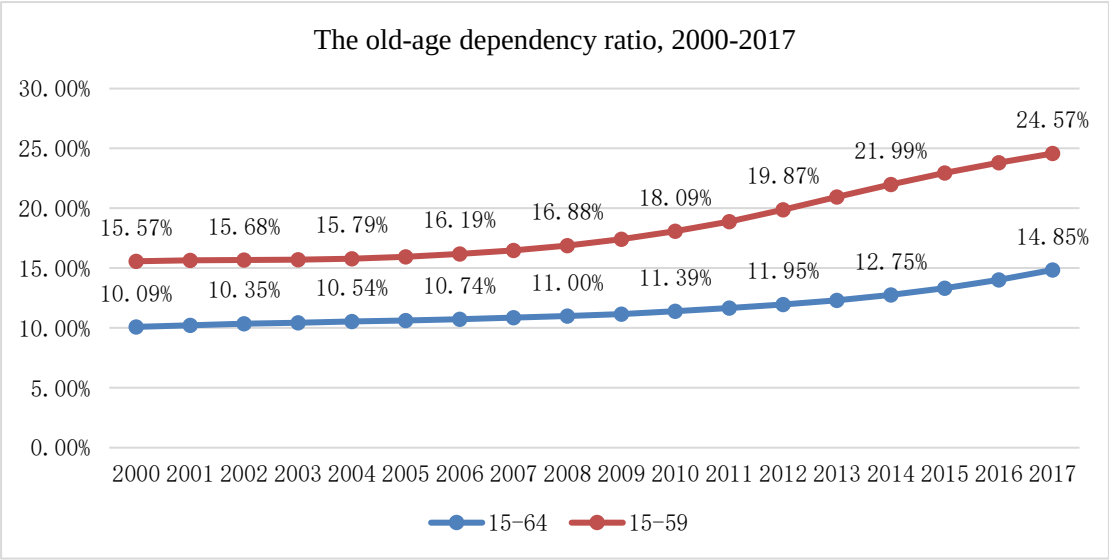


Figure 1-7 The old-age dependency ratio, 2000-2017

Sources: United Nations, Department of Economic and Social Affairs, Population Division (2017). World Population Prospects: The 2017 Revision, custom data acquired via website.

1.2 The trend of China's population ageing

1.2.1 The trend of the whole population and the aged population in China

The future population trend of China will impact on the population policy of our country on the one hand, and on its economic and social development goals on the other. Different organizations and scholars have produced forecast of population aging in China. The future population trends are influenced mainly by fertility and mortality. However, mortality is relatively stable, and it is often not included in the assumptions of different prediction schemes; the differences among forecasts mainly reflect the data and assumptions on fertility.

Table 1-2 Prediction of the population age structure of China in the future by different organizations and scholars

Year	Zeng Yi		Guo Zhigang		Du Peng		Li Jianxin		UN	
	population	65+/whole	population	65+/whole	Population	65+/whole	Population	65+/whole	population	65+/whole
2000	12.71	6.8	12.69	7.1	12.74	6.9	12.88	7.0	12.70	6.8
2010	13.56	8.4	13.35	8.4	13.61	8.5	13.76	8.4	13.52	8.4
2020	14.40	12.9	14.33	11.6	14.33	11.9	14.50	11.9	14.21	11.9
2030	14.77	16.4	14.66	15.6	14.44	16.3	14.86	16.1	14.59	16.2
2040	14.81	22.4	14.62	20.4	14.29	21.9	14.70	22.0	14.48	22.2
2050	14.60	24.1	14.45	20.6	13.38	23.2	14.27	23.8	14.09	23.7

Sources：Li Jianxin. Problems of China's Population Structure [M]. Beijing: social sciences academic press,2009: 33.

The predictions of the population quantity and structure of China’s population are quite consistent. All scholars predict that population will peak between the 30s and the 40s, and the speed of population ageing will increase in the next thirty or forty years. Around 2040, the percentage of the population aged 65 and above will be more than 20%, and it will continue to increase to be 20% to 24% in 2050.

The United Nations Population Division produces comprehensive population forecasts for all countries of the world every two years, based on the national population register data, census data and some important survey. The most important factors that influence these prediction are the birth and mortality rates.

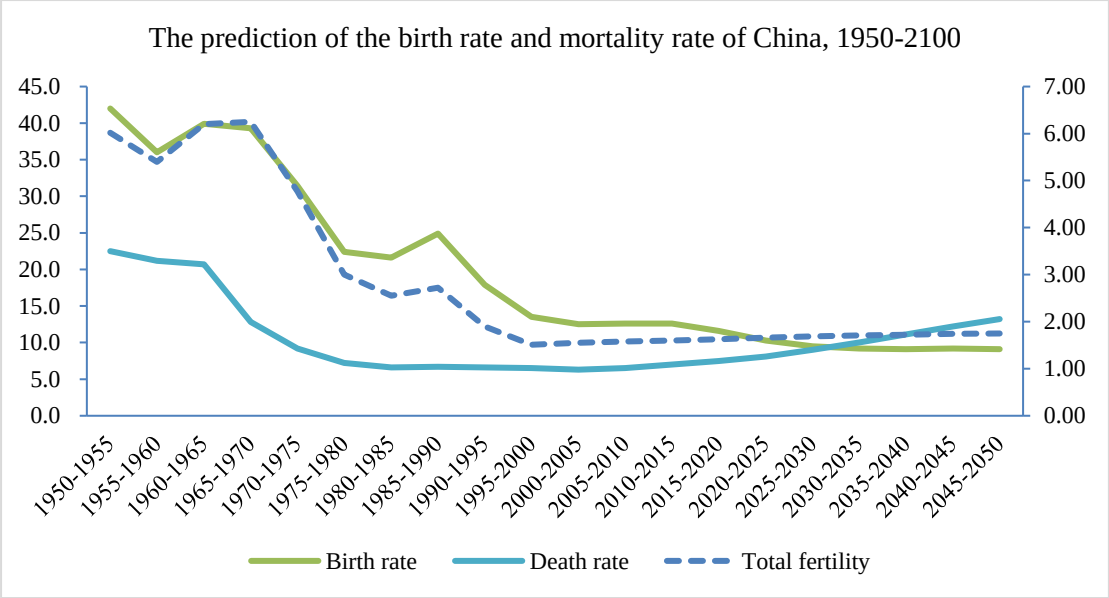


Figure 1-8. The prediction of the birth rate and mortality rate of China, 1950-2100

Sources: United Nations, Department of Economic and Social Affairs, Population Division (2017). World Population Prospects: The 2017 Revision, custom data acquired via website.

China's has experienced a quick rise of fertility from 1950 to1970, then the fertility rate began to fall under the influence of the family planning policy, and it has been basically stable at about 1.5 from the beginning of the 21st century until now. Forecasts show that China's fertility rate will rise in the next future from 1.5 children per women to 1.75 also due to the policy of second child. From the perspective of China's birth rate, the overall trend is basically the same as that of the total fertility rate, which has dropped rapidly from the peak of around 40‰ before 1970 to 13.5‰ at the end of the 20th century. The birth rate is in a stable downward trend in the 21st century. Although the second child policy at the end of 2015 has a certain effect on the increase of the total fertility rate China, the inertia of the old policy and the change in the concept of fertility make it difficult for the birth rate to rise in the short term, and it is predicted that it will remain at the level of 9‰-10‰ by 2050.

In the aspect of mortality, it decreased from 23 ‰ at the beginning of the founding of PRC to 6 ‰ in the 1980s, then it has remained in 6 ‰--7 ‰ till now, but from now on, China's population mortality rates will rise from the current 7.4 ‰ to 13.2‰ in 2050.

The total population of China will reach its peak around 2028. Then the total population will begin to gradually decline, while population aged 65+ and above continuously increases. This number is expected to reach 359 million in 2050, and the proportion also rises, reaching 26.3% in 2050. It is noticeable that the trend is just predicted until 2050. Due to “two-child”

policy resulting in an increase of TFR (Total fertility rate), some experts predict that this proportion will exceed 30%, and stay on this level for a long time.[3]

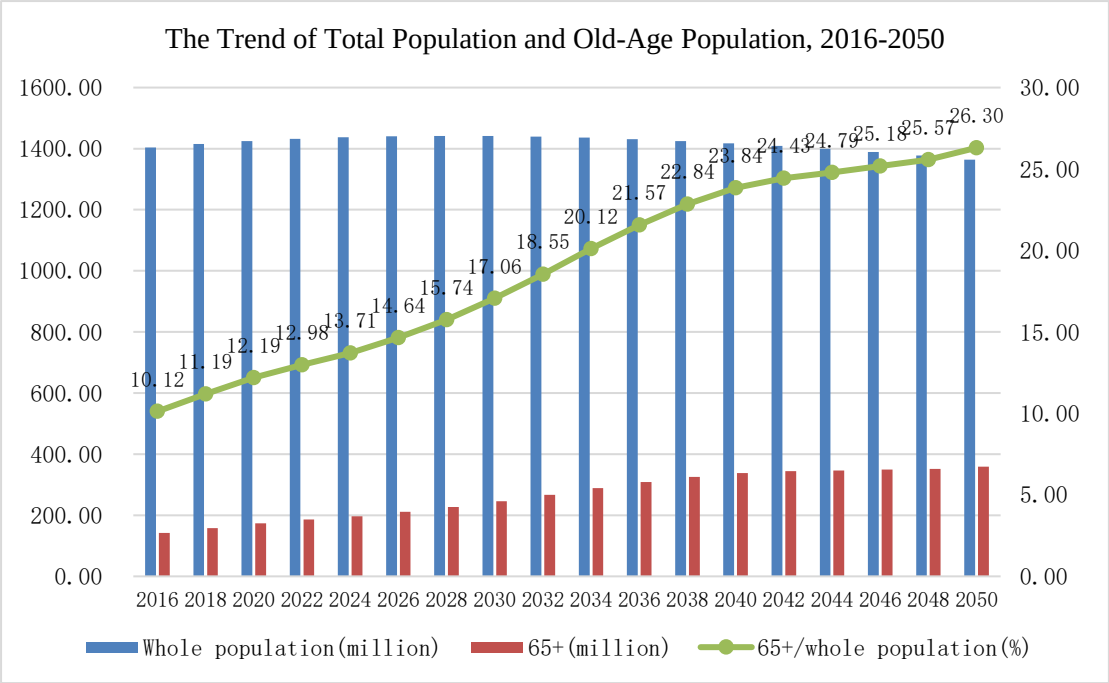


Figure 1-9 The Trend of Total Population and Old-Age Population, 2016-2050

Sources: United Nations, Department of Economic and Social Affairs, Population Division (2017). World Population Prospects: The 2017 Revision, custom data acquired via website.

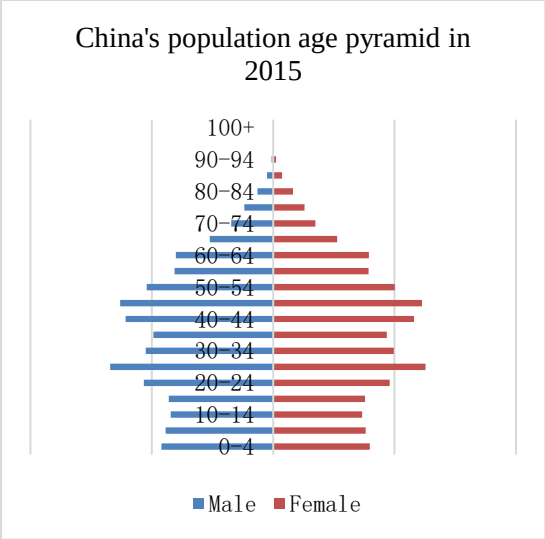
1.2.2 The trend of China's population age pyramid

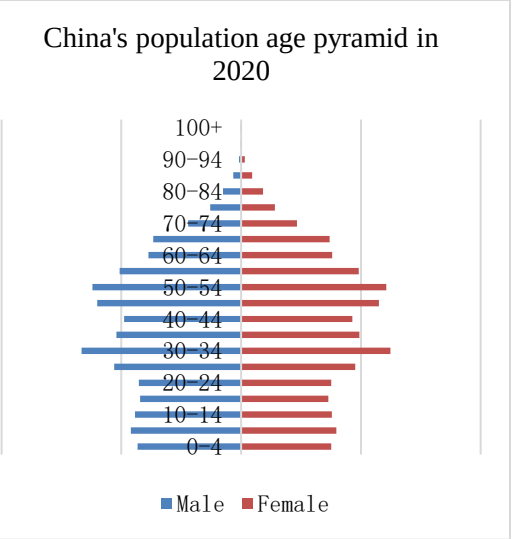
According to prediction of the United Nations Population Division, the shape of the population age pyramid will further change in the following 30-40 years, the bottom of the pyramid will be continuously shrinking, and the aging problem will be increasingly severe.

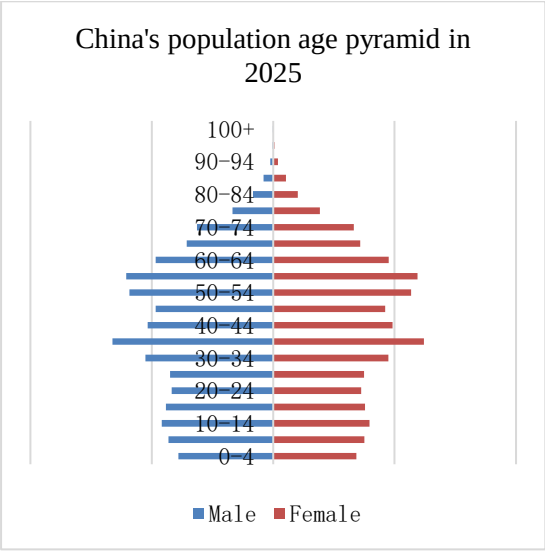
Influenced by two baby booms during 1953-1957 and 1962-1973, a majority of population will reach the age of 60 in 2013-2017 or 2022-2033. Besides, under the inertia effect of the second population boom, the third birth boom formed in 1985-1991, and this population will go into the age of 60 before, during, and after 2045-2050, when population aging will reach its peak. Along with the decrease of the total population, the proportion of elderly population will continue rising, the proportion of the population aged 60 and above will constitute more than 26% of the total population. It is speculated that it will exceed 30%

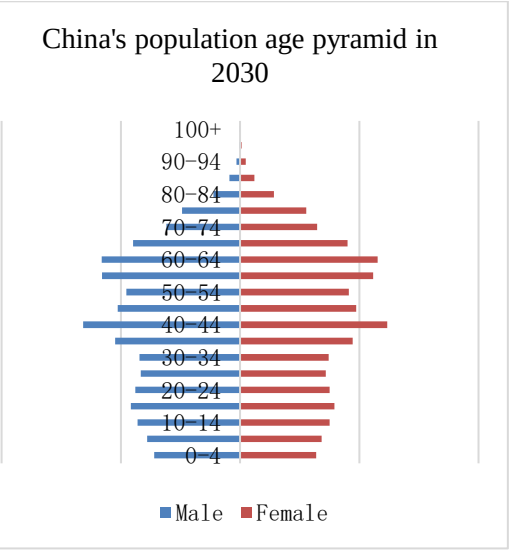
[3] DONG Keyong, ZHANG Dong. Peak or Plateau? : The Trend of Population Ageing and Rethinking of Its Influences on the Pension System in China[J]. Population & Economics, 2017(4): 43-53

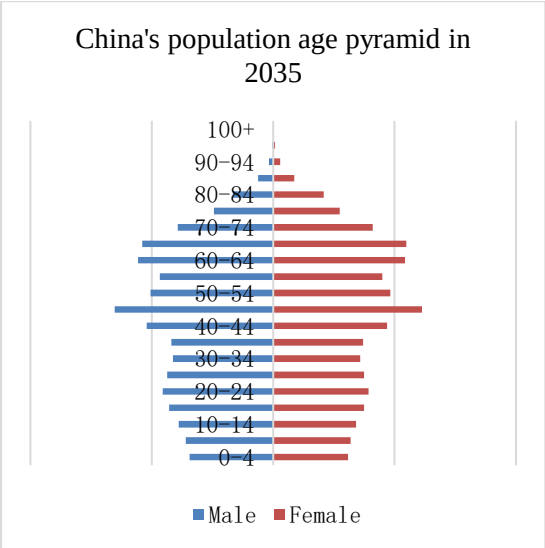
in the future and will remain at this level for a long time.

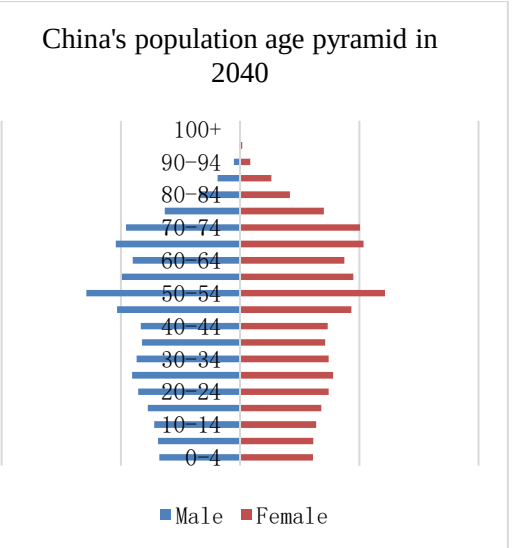












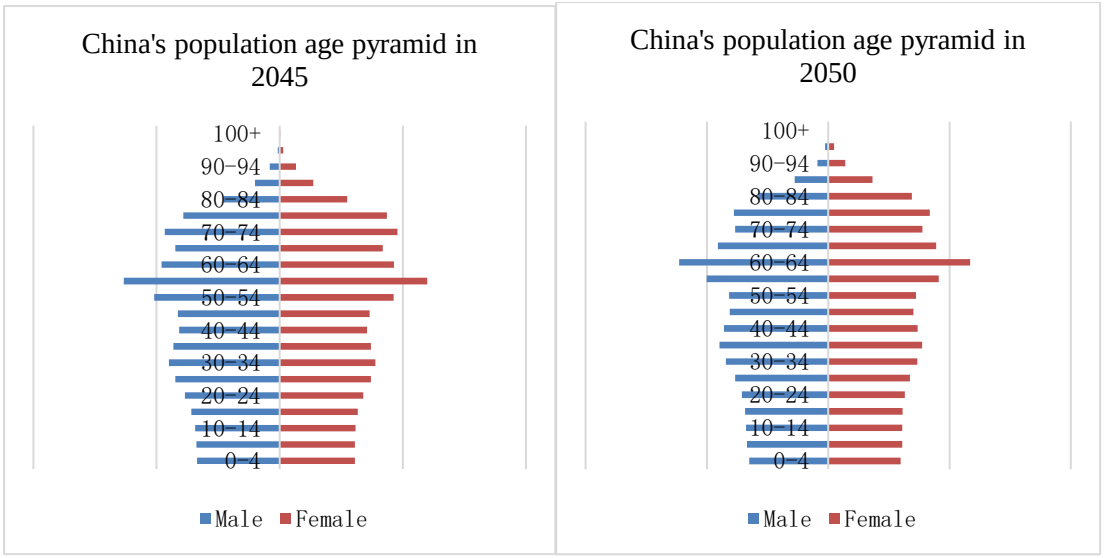


Figure 1-10 The trend of China's population age pyramid, 2015-2050

Sources: United Nations, Department of Economic and Social Affairs, Population Division (2017). World Population Prospects: The 2017 Revision, custom data acquired via website.

1.2.3 The prediction of the life expectancy in China

As an important factor affecting population aging, life expectancy will be further enhanced along with economic and social development and the advance of medical technology.

The United Nations Population division predicts in the following 30 to40 years, the life expectancy in China will increase from 76.5 currently to 81.1 years in 2050. The scale of aged population will be widened owing to longer life expectancy.

Table 1-3 The Trend of Life Expectancy, 2015-2050

Year	Life expectancy (Year)	Year	Life expectancy (Year)
2015 - 2020	76.48	2035 - 2040	79.58
2020 - 2025	77.28	2040 - 2045	80.34
2025 - 2030	78.06	2045 - 2050	81.07
2030 - 2035	78.83		

Sources: United Nations, Department of Economic and Social Affairs, Population Division (2017). World Population Prospects: The 2017 Revision, custom data acquired via website.

1.2.4 The prediction of trend of the advanced ages in China

With the extension of life expectancy, the quantity and scale of the population aged 80 and above will keep expanding. The data of the United Nations Population division illustrate that the population aged 80 and above in China will be more than 120 million in the coming decades. Besides, the population aged 80 and above will grows much faster than the population aged 60. The proportion of the population aged 80 and above will reach 23.18% of the population aged 60 and above by 2050, which means that there will be one person aged 80 and above in every 4-elderly people.

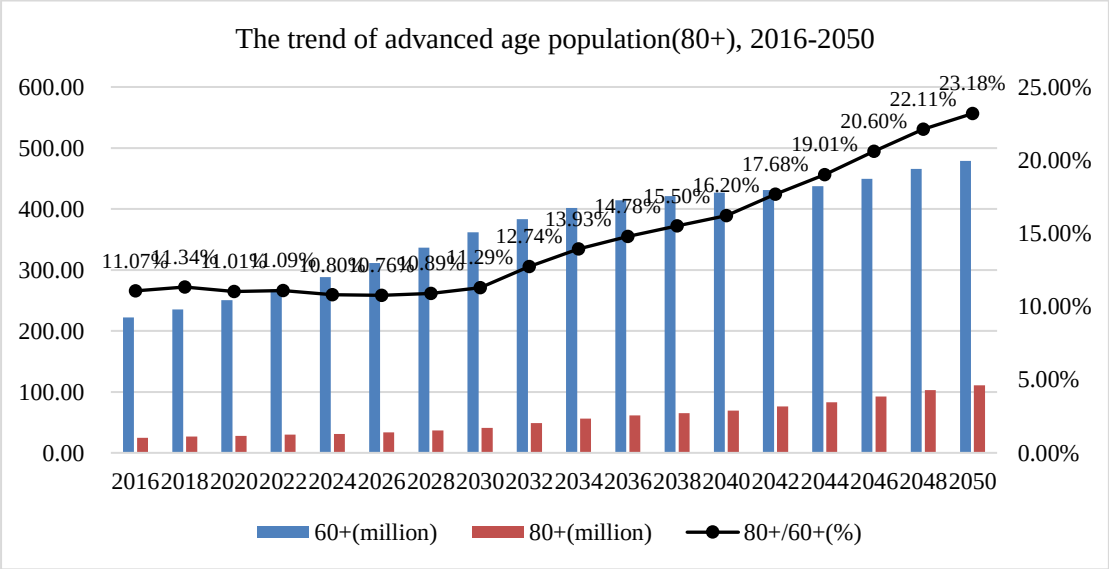


Figure 1-11 The trend of advanced age population(80+), 2016-2050

Sources: United Nations, Department of Economic and Social Affairs, Population Division (2017). World Population Prospects: The 2017 Revision, custom data acquired via website.

1.3 The trend of China's labor population

1.3.1 The scale of China's labor population

The intensification of population aging in China will lead to continued shrinkage of the overall working-age population in the future. On the one hand, the quantity of labor population will keep falling in the future. The quantities of the labor population aged 15-59 and 15-64 are projected to fall to around 690 million and 810 million respectively, by more than 20%. On the other hand, the proportion of labor population will successively descend from 2015 to 2050. After a long-term decrease, the proportions of labor population aged 15-59 and 15-64 are predicted to be 51% and 60% respectively.

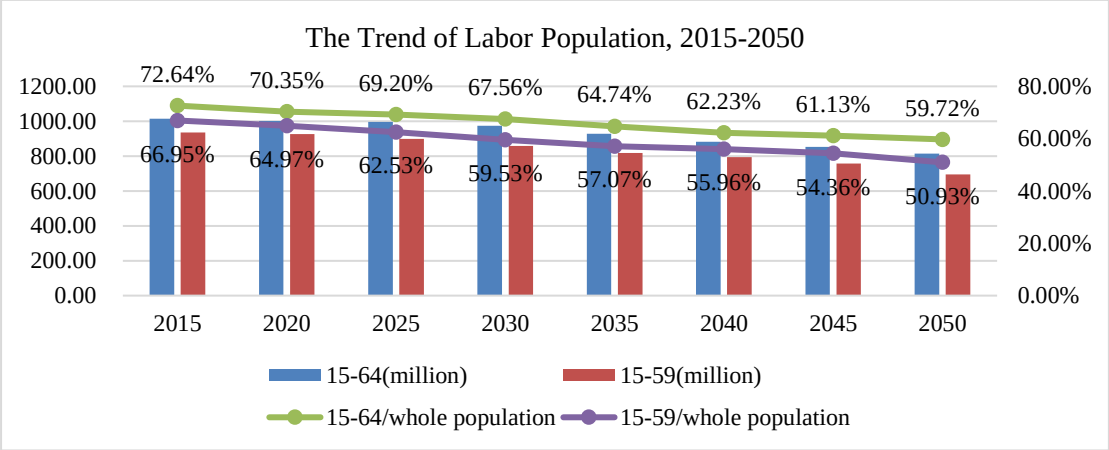


Figure 1-12 The Trend of Labor Population, 2015-2050

Sources: United Nations, Department of Economic and Social Affairs, Population Division (2017). World Population Prospects: The 2017 Revision, custom data acquired via website.

The continuous decline in the total working-age population and its proportion in the future will cause insufficient supply in the labor market and higher labor costs, which will affect China's economic development potential and ultimately hinder its economic growth.

1.3.2 The trend of the old-age dependency ratio

The increase of the old-age dependency ratio, comprehensively influenced by the increase of the aged population and the decrease of working age population, typically reflects the phenomenon of population aging. According to the division standard of demographic dividend and population debt, if the people aged 60 and above are regarded as the elderly, the old-age dependency ratio in China will increase from 33.31% in 2015 to 42.15% in 2050, during which the population will achieve a transition from demographic dividend period to population debt period. Then it will maintain in a period of population debt for a long time. In 2050, the old-age dependency ratio will reach 68.91%. If those aged 65 and above are regarded as the elderly, the old-age dependency ratio in China will reach 25% by 2030, in which the population will achieve a balanced state. However, the old-age dependency ratio will still accelerate in the following few decades and the ratio will rise to 47% by 2050. It shows that China will be in a long-term population debt period. No matter which standard will be applied, the labor population will be faced with enormous pressure because of the heavy burden of supporting the aged.

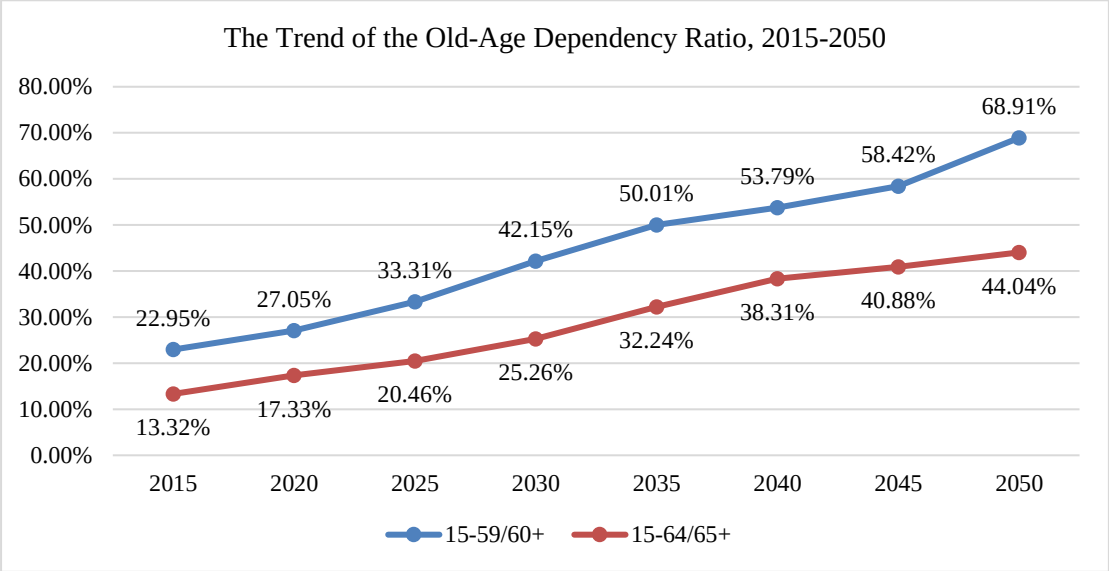


Figure 1-13 The Trend of the Old-Age Dependency Ratio, 2015-2050

Sources: United Nations, Department of Economic and Social Affairs, Population Division (2017). World Population Prospects: The 2017 Revision, custom data acquired via website.

2 Fiscal Responsibility and Status of China's Social Security

2.1 China's social security system and fiscal responsibility

China's current social security system is mainly composed of social assistance and social insurance. China's social assistance system includes a minimum living security system, a support system for special hardships, and a medical assistance system. It plays an important role in safeguarding the bottom line and promoting fairness. China's social insurance consists of pension insurance, medical insurance, work injury insurance, unemployment insurance and maternity insurance. Among them, pension insurance and medical insurance are the main parts, which play a primary security function. The healthy operation of the social security system is inseparable from the financial support of the government. In other words, the two are closely related. There are diverse forms and supports of financial responsibility in China's social security system, which is designed in accordance with the characteristics of different systems. The following is a detailed introduction to the institutional composition and financial responsibility of China's pension insurance system, medical insurance system and social assistance system.

2.1.1 The composition and financial responsibility of the pension insurance system

China's pension insurance system can be divided to three levels: the first level is the state-led basic pension insurance system, including the basic pension insurance system for urban enterprise employees, the basic pension insurance system for government and institution employees, and basic pension insurance for urban and rural residents; the second level is the unit-led occupational pension system, including the enterprise annuity system and the occupational annuity system; the third level is the individual-led individual voluntary savings-type pension insurance system. These three levels correspond to the first, second and third pillars of the international common three-pillar pension system. Here we mainly discuss the basic pension system of the first level (pillar).

As far as the basic pension insurance system is concerned, the present three types of basic pension insurance systems adopt an institutional model combining social pooling and individual accounts. The basic pension insurance for urban enterprise employees and the basic pension insurance for institutions are collectively referred to basic pension insurance for urban employees, which is funded by enterprises and individuals，while the basic pension insurance for urban and rural residents is funded by individual contributions and fiscal

subsidies. The basic conception of this system is that the basic pension system of social pooling implements the pay-as-you-go system,

Table 2-1 Current Pension System in China

Pillar	Category	Participant	Coerciveness	Account Mode
The first pillar	Basic Pension Insurance for the Urban Enterprise Employees	Urban enterprise employees	compulsive	Social pooling and individual account
	Basic Pension Insurance for the Government and Institutions Employees	Government and institutions employees	compulsive	Social pooling and individual account
	Basic Pension Insurance for Urban and Rural Residents	Urban and Rural Residents	voluntary	Social pooling and individual account
The second pillar	Enterprise Annuity	Urban enterprise employees	voluntary	individual account
	Occupational Annuity	Government and institutions employees	compulsive	individual account
The third pillar	Personal Voluntary Savings Pension (In experiment)			

Table 2-2 Fiscal Responsibility of Basic Pension Insurance

Category	Account Mode	Contribution	Benefit	Fiscal Responsibility
Basic Pension Insurance for the Urban Employees	Social pooling and individual account	20%(Employers) + 8%(Employees)	Basic pension + individual account pension	government undertaking tactics + historical debt
Basic Pension Insurance for Urban and Rural Residents	Social pooling and individual account	Individual payment + government subsidies	Basic pension + individual account pension	government subsidies in fund collection + basic pension

that is, laborers pay the pension for retirees, realizes the intergenerational transfer payment and the income redistribution; the individual account implements the fund accumulation system. It is intended to motivate individuals to take responsibility and mitigate the pension crisis brought about by the aging population. In addition, the basic pension insurance for urban employees is enforced through relevant policies, laws and regulations, and is legally binding; the basic pension insurance for urban and rural residents is encouraged and guided by the government, and it stimulated the residents to actively participate by giving fiscal subsidies.

The fund of basic pension insurance for urban employees consists of individual contributions, employer contributions, and government subsidies. Individual contributions all enter into individual accounts, and all employer contributions enter into the pool account. The government's fiscal responsibility includes two major parts: First, it is treated as contribution subsidies. Before the reform of state-owned enterprises and institutions, individuals and institutions did not pay fees. This part of the expenses, the so-called historical debts, was borne by the government. Second, it is treated as fund subsidies. When the fund is underpaid, the government pays the subsidy. For the basic pension insurance for urban and rural residents, the government assumes the fiscal responsibility of “two-head supplement”, that is, subsidies are provided in both the system financing and distribution: In the fund-raising process, the insurance is burdened by both the individual contributions and fiscal subsidies. In the issuance process, the pension is divided into two parts: individual account pension and basic pension - the individual account's pension comes from the individual account's storage, and the basic pension is paid entirely by the government’s finance.

2.1.2 The composition and financial responsibility of the medical insurance system

China's current basic medical insurance system is mainly composed of three basic systems: basic medical insurance for urban employees, basic medical insurance for urban residents and new rural cooperative medical care. The basic medical insurance for urban employees covers all employing units in cities and towns, including all kinds of enterprises, institutions, social organizations, private non-enterprise organizations and their employees. The basic medical insurance for urban employees adopts the institutional model of social pooling plus individual accounts, and the funds for medical insurance premiums are paid by employers and employees. The employer contribution rate is not less than 6% of the total wages of the employees, and the employee contribution rate is 2% of the salary of the employees. The retirees do not pay. According to relevant regulations, the government has no

financial support responsibility in the basic medical insurance for urban employees.

The main coverage of urban residents' basic medical insurance includes three types of people: firstly, the elderly who have not participated in the basic medical insurance for urban workers or who have not yet participated in public medical care; secondly, students who have not participated in basic medical insurance for urban employees or public medical care; thirdly, those who have not participated in the basic medical insurance for urban employees or the unemployed medical personnel. The system adopts the mode of local government co-ordination. Local governments can set reasonable payment grades based on the economic and social conditions, and individuals pay according to the selected grades. At the same time, the government finances subsidies for all insured residents and increases subsidies for special hardship groups in cities and towns. Personal contributions plus government subsidies form a medical insurance fund.

The new type of rural cooperative medical care is a peasant medical mutual aid and mutual aid system mainly based on major illnesses, organized, guided and supported by the government, voluntarily participated in by farmers, with funds raised in through individual, collective and government channels. In this way, it makes up for the basic medical security of the rural social security system. The new rural cooperative medical care system also adopts the institutional model of local government coordination. The personal contribution grades can be flexibly set according to the actual situation of the region. The fund consists of three parts: individual payment, township and village collective economic fund support and government subsidy. The government finance takes the subsidy responsibility during the payment.

Table 2-3 Fiscal Responsibility of Basic Medical Insurance

Category	**Account Mode**	**Contribution**	**Fiscal Responsibility**
Basic Medical Insurance for the Urban Employees	Social pooling and individual account	Employers + Employees	
Urban Residents Basic Medical Insurance	Social pooling	Individual payment + government subsidies	government subsidies
New Rural Cooperative Medical System	Social pooling	Individual payment + government subsidies	government subsidies

2.1.3 The composition and financial responsibility of the social assistance system

After more than 20 years of reform and development, China's social assistance system has gradually formed a relatively stable basic framework. The minimum living security system for urban and rural residents is the core content and main system of social assistance in China. In 1999, in order to solve the problem that the large number of unemployed people emerged in the transformation of state-owned enterprises and social reforms, the State Council promulgated the "Regulations on Minimum Living Security for Urban Residents" and formally established a minimum living security system for urban residents. Eight years later, in order to effectively solve the problem of lack of food and clothing for some impoverished rural residents, the State Council issued the "Notice on Establishing a Rural Minimum Living Security System in the Country" in July 2007 and decided to establish a minimum living security system in rural areas to protect the basic life of the people. With the continuous development and improvement of the minimum living security for urban and rural residents, some special assistance systems and temporary assistance systems have been gradually established, such as education assistance, housing assistance and disaster relief. In order to effectively integrate these rescue projects and better protect the basic life of the people, the State Council promulgated the "Interim Measures for Social Assistance" on February 21, 2014, which made a comprehensive study of the specific contents and related issues of China's social assistance system. It mainly includes the following eight items.

First, the minimum living guarantee is mainly for the urban and rural poor who have lower per capita net income than the minimum living security standards promulgated by the local government. Second, the poor people are supported, mainly to protect the elderly, minors and the disabled who are helpless. The basic survival of human beings is rescued through the form of decentralized support of the family and centralized support of the institutions. Third, the rescue of the victims is mainly to provide life assistance to the victims who cannot guarantee basic living due to natural disasters. Fourth, medical assistance mainly gives allowances or subsidies to the medical service of the poor population in urban and rural areas. The fifth is education assistance, which is mainly to provide fee reduction and grant scholarships for the children from urban and rural poor families. Sixth, housing assistance is mainly to provide low-cost housing, housing subsidies and renovation of dangerous houses to poor urban and rural people. The seventh is employment assistance, mainly to help the unemployed people with working ability in poor urban and rural families to achieve re-employment. The eight is temporary assistance, mainly offered to the families living under basic life standard caused by natural disasters and man-made disasters and vagrants and beggars.

The social assistance funds are all derived from the government's finance. At the same time, the state encourages social forces such as employers and individuals to participate in social assistance through donations, setting up assistance projects, establishing service agencies, and providing volunteer services. In addition, people and institutions participating in social assistance will enjoy financial subsidies, tax incentives, fee reduction and other policies in accordance with relevant state regulations.

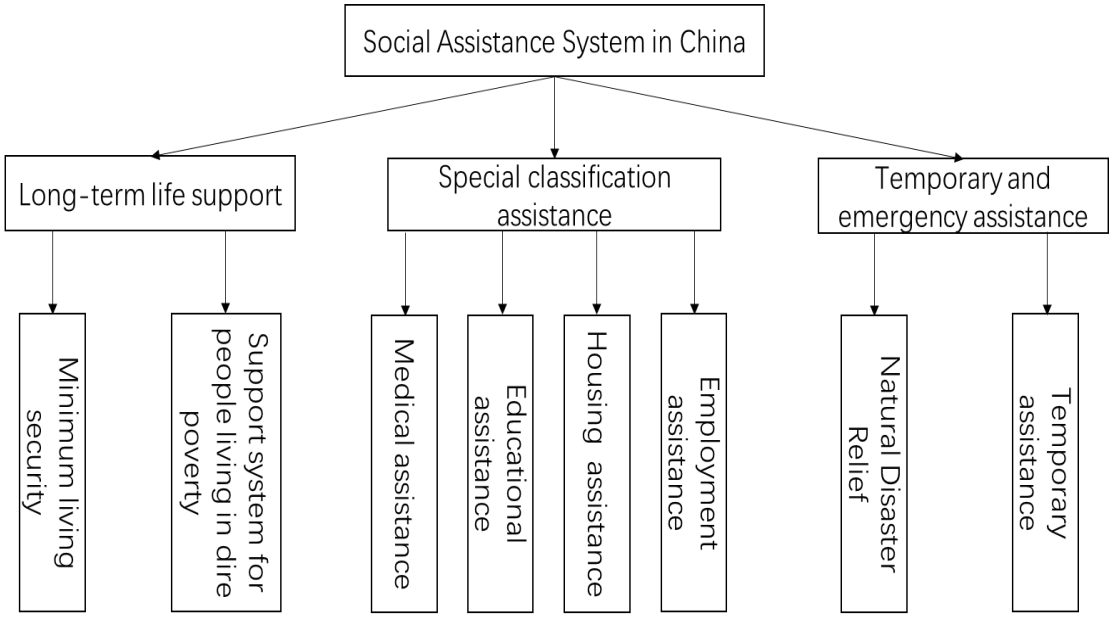


Figure 2-1 Social Assistance System in China

2.2 Current status of financial support for China's social security system

2.2.1 Financial status of basic pension insurance

The basic pension insurance includes basic pension insurance for urban workers and basic pension insurance for urban and rural residents. According to the China Statistical Yearbook, the number of participants in the basic pension insurance for urban workers in the 21st century has risen rapidly. As of 2016, it has reached 379 million people. In 2010, the basic pension insurance for urban and rural residents was officially established. The number of participants in insurance has doubled in the 2 years and continued rising steadily, reaching 508 million in 2016.

Through the operation of the fund for basic pension insurance in China since 2002, we can see that the fiscal expenditure for the basic pension insurance for urban employees

increased year by year, reaching 615.1 billion yuan in 2016. Although the fund balance is 4.4 trillion yuan, all of them actually come from the sum of fiscal subsidies over the years, individual accounts are run in a long-term state of "empty accounts", and there is much fund self-balancing pressure. On the other hand, the basic pension insurance for urban and rural residents completed in 2010 relied on government financial support in the design of the system. The amount of subsidies increased from 21.7 billion yuan in 2010 to 220.1 billion yuan in 2016. Fiscal subsidies have long occupied more than 70% of the fund income.

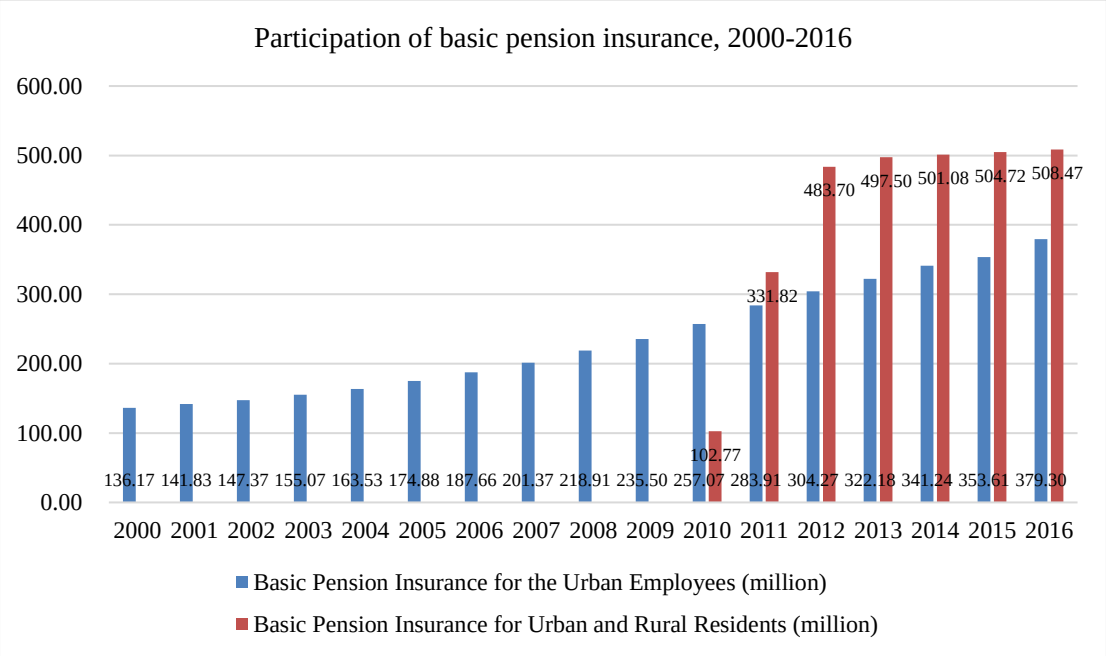


Figure 2-2 Participation of basic pension insurance, 2000-2016

Sources: *China Statistical Yearbook*

Table 2-4 Revenue, Expenditure and Fiscal Subsidies of Basic Pension Insurance Fund

Year	**Basic Pension Insurance for the Urban Employees (billion)**				**Basic Pension Insurance for Urban and Rural Residents (billion)**			
	Revenue	Expenditure	Balance	Subsidies	Revenue	Expenditure	Balance	Subsidies
2002	317	284	161	41				
2003	368	312	221	53				
2004	426	350	298	61				
2005	509	404	404	65				
2006	631	490	549	97				
2007	783	596	739	116				

2008	974	739	993	144				
2009	1149	889	1253	165				
2010	1342	1055	1537	195	45	20	42	22
2011	1689	1276	1950	227	111	60	123	69
2012	2000	1556	2394	265	183	115	230	124
2013	2268	1847	2827	302	205	135	301	142
2014	2531	2175	3180	355	231	157	384	164
2015	2934	2581	3534	472	285	212	459	216
2016	3506	3185	3858	651	293	215	539	220

Sources: *China Statistical Yearbook*, Annual Data From Ministry Of Human Resources and Social Security of China.

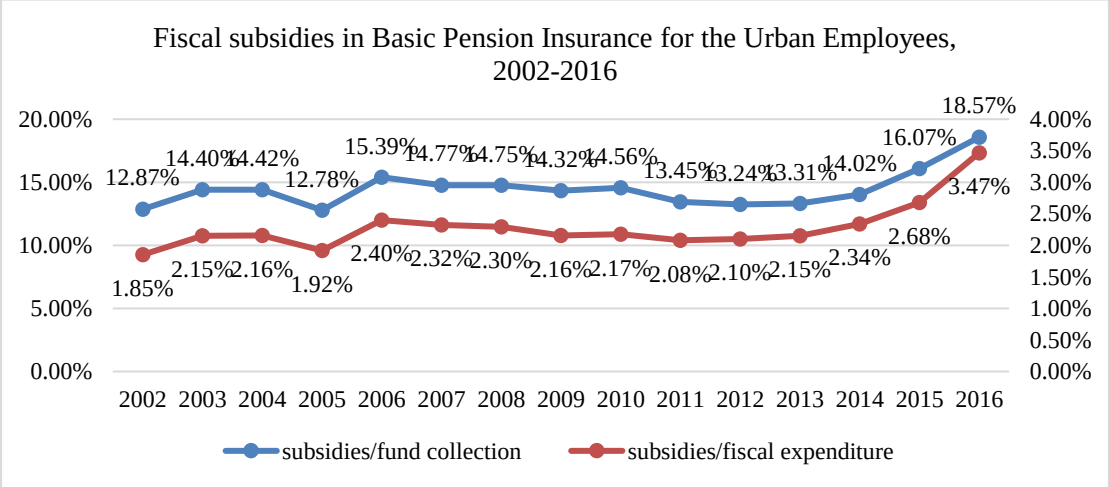


Figure 2-3 Fiscal subsidies in Basic Pension Insurance for the Urban Employees, 2002-2016

Sources: *China Statistical Yearbook*, Annual Data From Ministry Of Human Resources and Social Security of China.

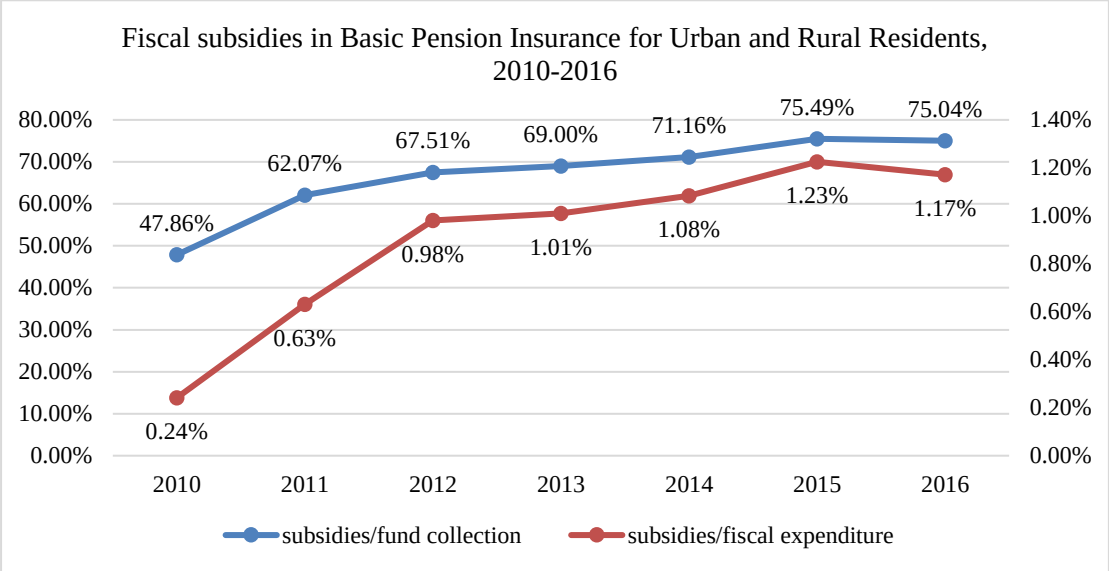


Figure 2-4 Fiscal subsidies in Basic Pension Insurance for Urban and Rural Residents, 2010-2016

Sources: *China Statistical Yearbook*, Annual Data From Ministry of Human Resources and Social Security of China.

From the perspective of the proportion of financial subsidies for basic pension insurance, the fiscal subsidies of urban employees' basic pension insurance accounted for the same proportion to fund income as the proportion to the total fiscal expenditures. Before 2012, they showed a slight fluctuation, and then quickly rose to a new high level. As of 2016, fiscal subsidies accounted for 18.57% of the fund's income and 3.47% of the total fiscal expenditures. The proportion of financial subsidies for basic pension insurance for urban and rural residents is basically in a monotonous upward trend. The proportion of fund income gradually increased from 47.86% in 2010 to 75.04% in 2016, and the proportion of total fiscal expenditure has risen rapidly from 0.24% to 1.23% in 2015. In 2016, it fell slightly to 1.17%.

2.2.2 Financial status of basic medical insurance

The basic medical insurance was first basic medical insurance for urban employees. Since 2000, the number of participants has increased steadily. At the end of 2016, there were nearly 300 million people. The number of people participating in the new rural cooperatives increased rapidly and then gradually decreased. The participation rate has basically reached 100% as of 2016, and the corresponding basic medical insurance for urban residents has been rising rapidly since 2007, which is in line with China's urbanization process. It is notable that at the beginning of 2016, the State Council issued the "Opinions of the State Council on Integrating the Basic Medical Insurance System for Urban and Rural Residents". The governments, in some areas, merged the new rural cooperative medical insurance into the urban residents' medical insurance, resulting in a rapid decline in the number of participants in

2016. In addition, due to the poor standardization of the dual-track system, some insured people participated in two medical insurance systems. These people were regulated after the systems were merged, which reduced the total number of people participating in residents' medical insurance.

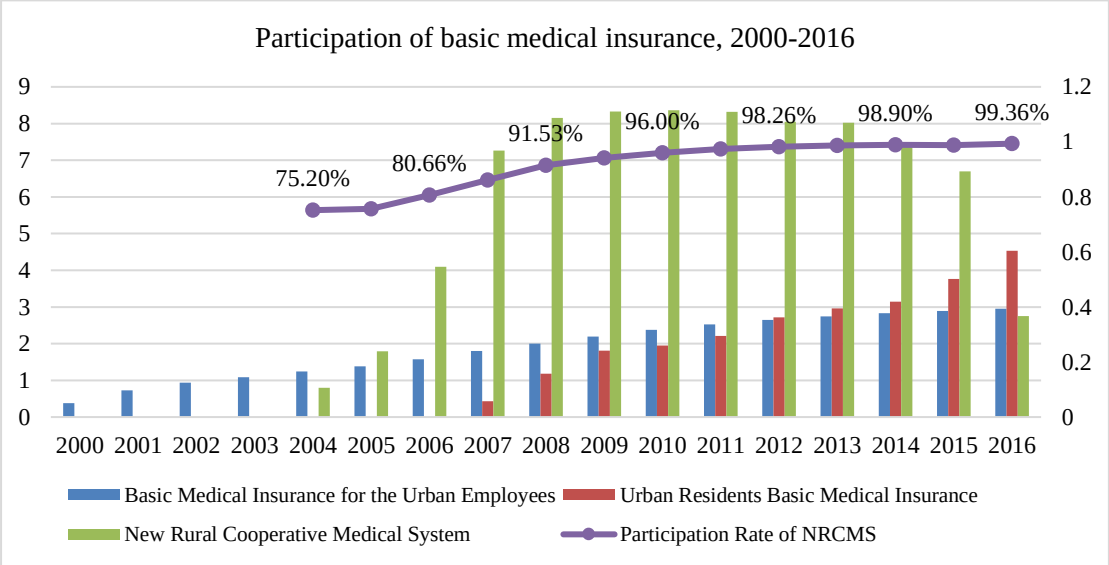


Figure 2-5 Participation of basic medical insurance, 2000-2016

Sources: *China Health and Family Planning Statistical Yearbook, China Statistical Yearbook.*

In addition to basic medical insurance, there are also medical insurance for civil servants and public institutions. The total expenditure on medical insurance steadily increased year by year. In 2016, it exceeded 600 billion-yuan, accounting for 3.31% of total fiscal expenditures. Among them, the new rural cooperative medical care has the largest proportion of fiscal expenditures, accounting for half of the total medical expenditure. Plus, the financial subsidies for urban residents' basic medical insurance., the two medical insurances account for more than 70% of the total medical expenditure.

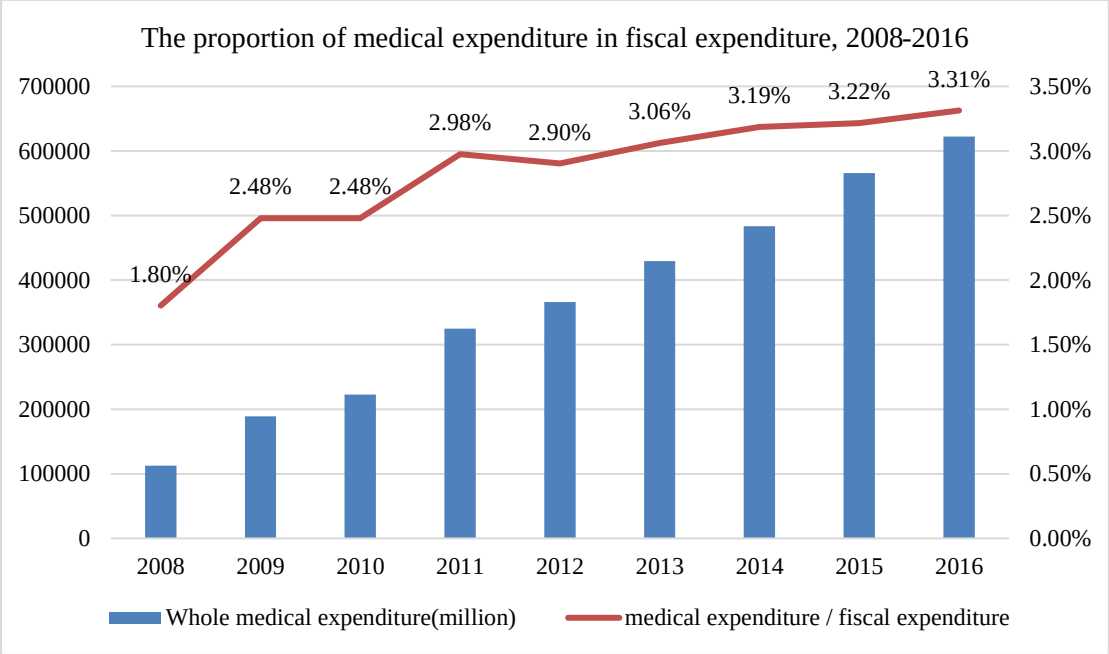


Figure 2-6 The proportion of medical expenditure in fiscal expenditure, 2008-2016

Sources: Annual Data From Ministry of Finance of China.

2.2.3 Financial situation of social assistance

The current social assistance system contains eight relief contents. Here are several major rescue projects as examples. The minimum number of people living in urban and rural areas generally shows a trend of increasing first and then decreasing. According to the historical data, farmers are still the mainstay of minimum living security. With the development of economy and society, the scale of the population guaranteed will further narrow down.

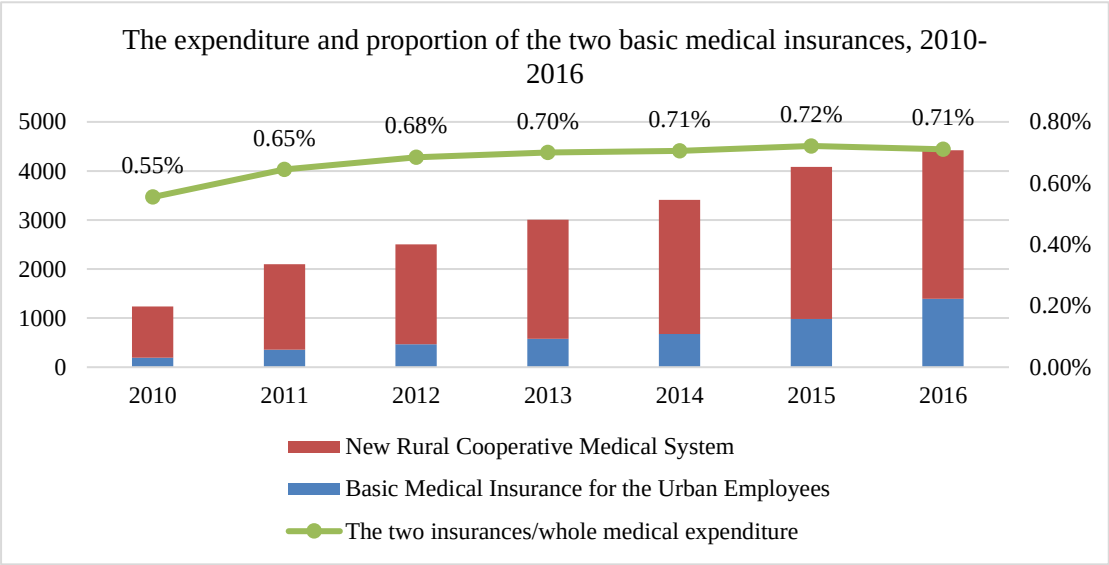


Figure 2-7 The expenditure and proportion of the two basic medical insurances, 2010-2016

Sources: *China Health and Family Planning Statistical Yearbook*, Annual Data From Ministry of Finance of China.

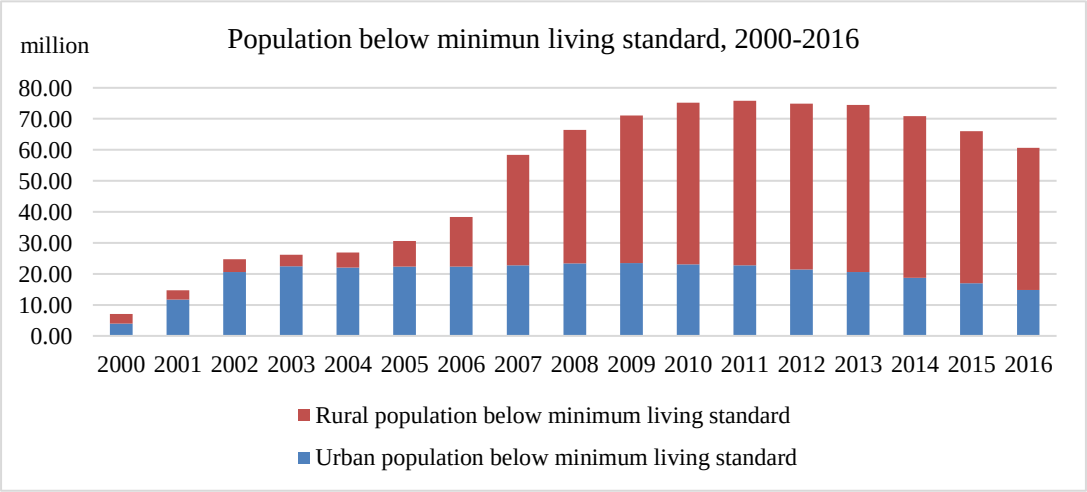


Figure 2-8 Population below minimun living standard, 2000-2016

Sources: *China Statistical Yearbook*.

Urban and rural minimum living security, support for special hardships, medical assistance, employment subsidies, and natural disaster living allowances constitute the main expenditures for social assistance. As shown in Figure 2-9, due to the differences in types of assistance, there are differences in the scale and changes of these rescue expenditures. Among them, rural and urban minimum living security and employment subsidies have the highest expenditures, reaching 94.13 billion yuan, 71.63 billion yuan and 78.5 billion yuan in 2016 respectively.

As shown in Figure 2-10, the sum of the six social assistance expenditures has increased year by year, and stabilized from 2015 to 2016, reaching a level of 320 billion yuan. In addition, the proportion of total social assistance expenditure to total fiscal expenditure experienced a process of rising first and then falling. 2016, it fell to 1.71%, down from 1.95% in 2007.

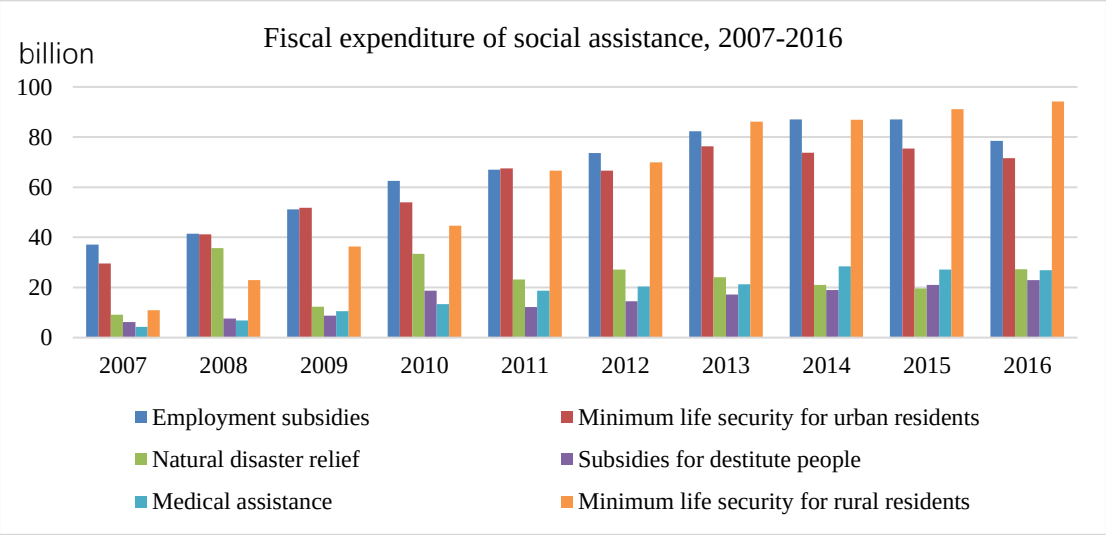


Figure 2-9 Fiscal expenditure of social assistance, 2007-2016

Sources: *Finance Yearbook of China*.

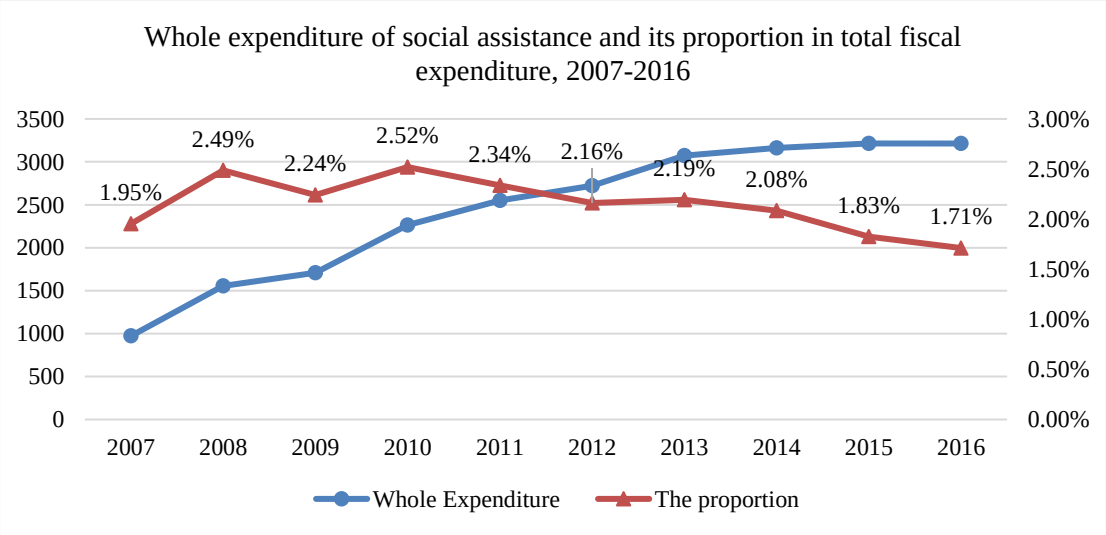


Figure 2-10 Whole expenditure of social assistance and its proportion in total fiscal expenditure, 2007-2016

Sources: *Finance Yearbook of China*.

3 The Trend of Fiscal Sustainability of China's Social Security

3.1 The trend of fiscal Burden of Basic Pension Insurance

3.1.1 Assumptions

The situation of basic pension insurance is very complicated. On the one hand, the system itself is very complicated; on the other hand, there are many problems in the actual operation process. In order to make the predicted results more scientific, it is necessary to make some assumptions about the prediction model:

① The model only predicts the "pooling part" of basic pension insurance, namely the fiscal burden of basic pension. In theory, individual accounts are independent and not require fiscal support.

② Based on the statistical data of 2016, the model predicts the revenue and expenditure situation and the trend of fiscal burden of basic pension insurance from 2018 to 2050.

③ The model assumes that the "pooling account" has realized the national pooling without considering the imbalance of basic pension revenue and expenditure in different regions.

④ In reality, social pension is paid and received by the month. In this case, it is assumed that social basic pension is paid and received by the year, which happen at the beginning of the year.

⑤ The model assumes that the existing accumulated fund of pension fund is zero.

⑥ The model is based on China's population trend data released by the United Nations Population Division.

3.1.2 Parameters determination

Table 3-1 Parameters Determination

Name	Details of Parameters	Name	Details of Parameters
Average age of retirement	55 years old	**Compliance rate of enterprise employees**	80.3% in 2016, and increases 1% per year, finally achieves 100%
The base of employed population	The population aged 20-54	**GDP growth**	6.7% in 2016, and slow down after, 6% in 2021-2030, 5% in 2031-2040, and 4% in 2041-2050
Urban employment population/Employment base	historical data for 2007-2016, and data of 2016-2050 is calculated according to the urbanization rate	**Average wage growth**	In line with GDP growth
Urbanization Rate	57% in 2016, will reach 70% in 2030, and will reach 80% in 2050	**Compliance rate of pension for urban employees**	16%
Employment population of government institutions	3.5% of total population	**Average replacement rate of pension for urban employees**	35%
Enterprise employee participation rate	70% in 2016 and increases year by year, will reach 90% in 2020 and slowly increases and stays 95%	**Basic level of pension for urban and rural residents**	According to the research results of Bian Shu (2017), it is divided into three grades: low, medium and high

a) Assume that the labor population of 20-54 years old is the base of the total employed population

Judging from the actual years of education in China, young people often enter the labor market after 20 years of age. Therefore, the conservative way is to use 20 years old as the lower age limit for the base of the contributors. As to the upper age limit, according to the information provided by the Ministry of Human Resources and Social Security, the average retirement age in China is 55 years old in 2017. Therefore, it is reasonable to use 54 years old as the upper age limit.

b) Assume that the proportion of the labor population aged 20-54 participating in pension insurance for urban employees is consistent with the urbanization process

It can be considered that part of the labor population aged 20-54 participate in the pension insurance for urban employee, and the other part participate in the pension insurance for urban and rural residents. The process of urbanization can be understood as the transfer of rural labor population to urban labor population. Therefore, it is reasonable to believe that the trend of urbanization rate is basically consistent with the trend of this transfer. Based on the historical data and the trend of urbanization rate from 2018 to 2050[4], we find that the ratio of urban employed population to whole employed population is 4 percentage points lower than the urbanization rate. According to this, combined with the data for the labor population aged 20-54 in each year, the base of the contributor of pension insurance for urban employees and the base of the contributor of pension insurance for urban and rural residents can be calculated.

c) Assume that the base of contributors of pension insurance for the government and institutions employees accounts for 3.5% of the whole population in China

According to the data since 2003, the proportion of government and institutions employees to whole population in China had increased slightly, and reached 1% and 2.4% respectively in 2014.[5] Thus, it is simply assumed that the proportion of government employees to whole population is 1% and the proportion of institutions employees to whole population is 2.5%, which means this number (3.5% of the whole population) is the base of contributors of pension insurance for the government and institutions employees.

d) Assume that the participation rate of pension insurance for urban enterprise employees has gradually increased to 95% year by year

According to the requirements of the 13th Five-Year Plan, the participation rate of basic pension insurance would reach 90% in 2020. Therefore, it is assumed that the growth rate will be around 4% per year starting in 2016, reaching 90% by 2020, and then increasing by 1% per year, finally maintaining this level after reaching 95%. The reasons why the participation rate is not assumed to be 100% are that some SMEs do not obey the rules, and some self-employed and flexible workers are insufficiently motivated to participate in the insurance. In addition, the unemployment rate is also taken into account.

e) Assume that the compliance rate of pension insurance for urban enterprise employees has gradually increased to 100% year by year

In fact, not only is the participation rate of pension insurance low, but some insured people do not pay or are unwilling to pay the fees, resulting in a rising participation rate but a declining contribution rate. Nowadays, the state is reforming the collection and management system for social security contribution. In the meanwhile, it is gradually promoting the social pooling at national level. Based on this, we assume that the compliance rate of urban enterprise employees starting from 80.3% of 2015, would increase by 1% every year until 100% in 2050.

[4] QIAO Wenyi, LI Le, GUAN Weihua, et al. Prediction of Urbanization Level in China: 2016-2050[J]. Economic Geography, 2018 (2): 51-58.

[5] Data from *Human Resources and Social Security Yearbook.*

f) Assume that the actual growth rate of the average salary of employees is compatible with the growth rate of GDP

Because of the long-term forecast, we use real growth rates to compare so as to eliminate the effects of inflation. In 2016, China's GDP growth rate was 6.7%, and the GDP growth rate in 2017 was 6.9%, better than expected. However, in the long run, according to the predictions of many organizations such as the World Bank, IMF, and PricewaterhouseCoopers, China's real GDP growth rate will gradually decline. Combining these factors above, without considering the fluctuation of the annual growth rate during the economic cycle and referring to the characteristics of the historical GDP growth rate of developed countries, we assume that the trend of China's GDP would be divided into three phases in the future. Phase one (2017-2030): GDP would drop by 0.1% from 6.7% per year, gradually to 6%, and then would remain until 2030. Phase two (2031-2040): The real GDP growth rate would remain at 5% during this period. Phase three (2041-2050): The real GDP growth rate would remain at 4% during this period. Further, based on the correlation between the real growth rate of average wages in China and the real growth rate of GDP in 2010, we assume that they would be equal in each year in the future.

g) Assume that the real contribution rate of pension insurance for urban employees is 16%

The establishment of China's basic pension insurance system began with local areas. Today, the social pooling at national level has not yet been achieved. Although the State Council set 20% of an enterprise's whole wages as the national standard of contribution rate, it varies greatly from region to region. Because the local governments have rights to make appropriate adjustments based on local conditions. It means that the real contribution base is less than 20% in many districts. In the context above, we assume that the real contribution rate is 16% of the average real wage of urban employees.

h) Assume that the average replacement rate of basic pension (social pooling part) for urban employees is 35%

According to the formula for calculating the basic pension (social pooling part) for urban employees, people who start working at 20 years old and retire at 55 years old, will receive 35% of their wages for one year before retirement as their basic pension. Therefore, we assume that the average replacement rate of basic pension (social pooling part) for urban employees is 35%.

i) Assume that the benefit of pension insurance for urban and rural residents is set to three grades: low, medium and high

According to the current policy of basic pension insurance for urban and rural residents, the social pooling part is fully subsidized by governments, and the insured has no payment responsibility but rights to enjoy benefits. This is actually a form of universal benefits pension, called zero pillar. It is assumed that this system will remain unchanged in the future, and according to the research results of Bian Shu (2017), the benefit is divided into three grades: low, medium and high. [6]

[6] BIAN Shu. Urban and Rural Residents Basic Pension Demand, Adjustment Mechanism and the Level of Urbanization[J]. Chinese Social Security Review, 2017(4): 58-72.

3.1.3 Fiscal burden forecast of basic pension insurance

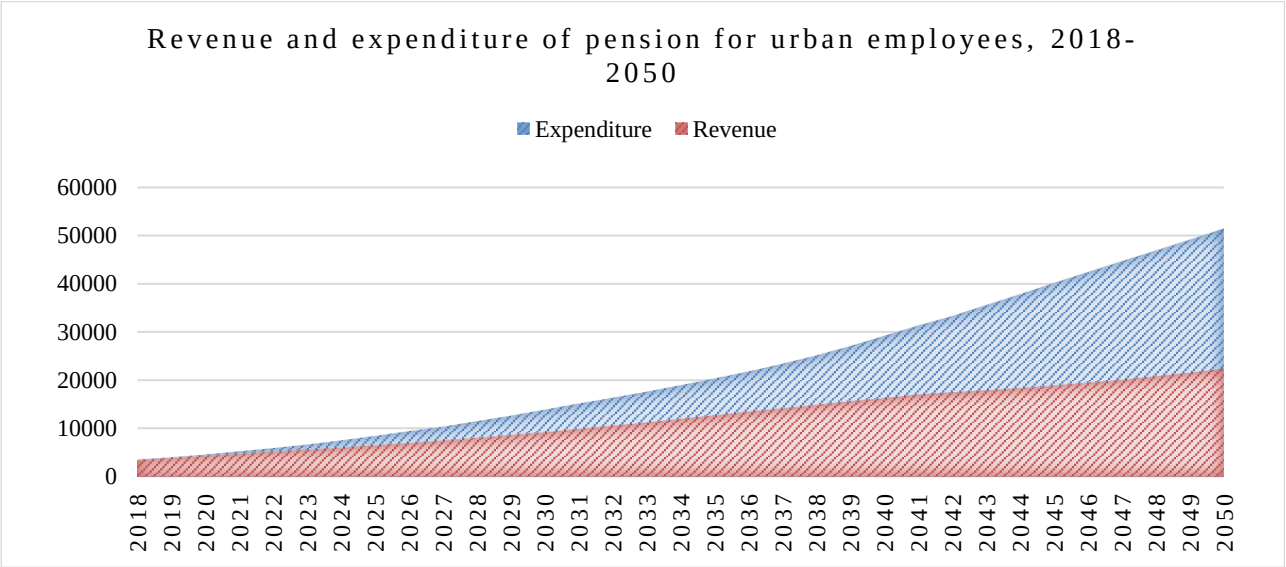


Figure 3-1 Revenue and expenditure of pension for urban employees, 2018-2050

Based on the forecasting model and statistical software, we forecast the revenue, expenditure and balance of China's basic pension insurance fund from 2018 to 2050, including pension for urban employees and pension for urban and rural residents.

Figure 3-1 and Figure 3-2 show the forecast results of basic pension for urban employees. It is predicted that in 2018 the balance of basic pension for urban employees will be RMB -109.4 billion, then the difference continues expanding. By 2050, then revenue will reach RMB 22 trillion, and the expenditure will reach RMB 51 trillion, thus, the gap will be RMB 29 trillion, 7% of GDP, and the accumulated gap will reach an all-time high of nearly RMB 326 trillion, 79% of GDP.

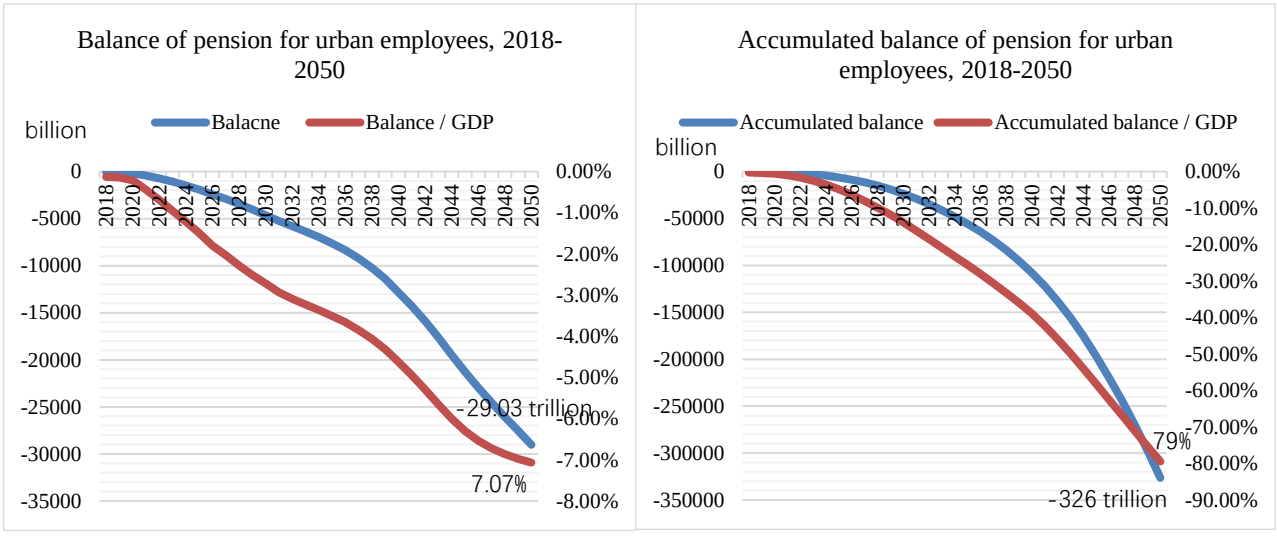


Figure 3-2 Balance of pension for urban employees, 2018-2050

The basic pension of urban and rural residents is completely borne by the government, and the insured does not need to pay any fees, so the expenditure scale corresponds to the fiscal burden scale. According to

the forecast, since 2018, the year when the basic pension expenditure scale showed a trend of steady rise, low, medium and high types of treatment standard has reached RMB1.35 trillion, RMB 2.26 trillion and RMB 4.61 trillion respectively. By 2050, the cumulative expenditure of the three types will reach RMB 31 trillion, RMB 50 trillion and RMB102 trillion respectively, accounting for 8%, 12% and 25% of GDP that year.

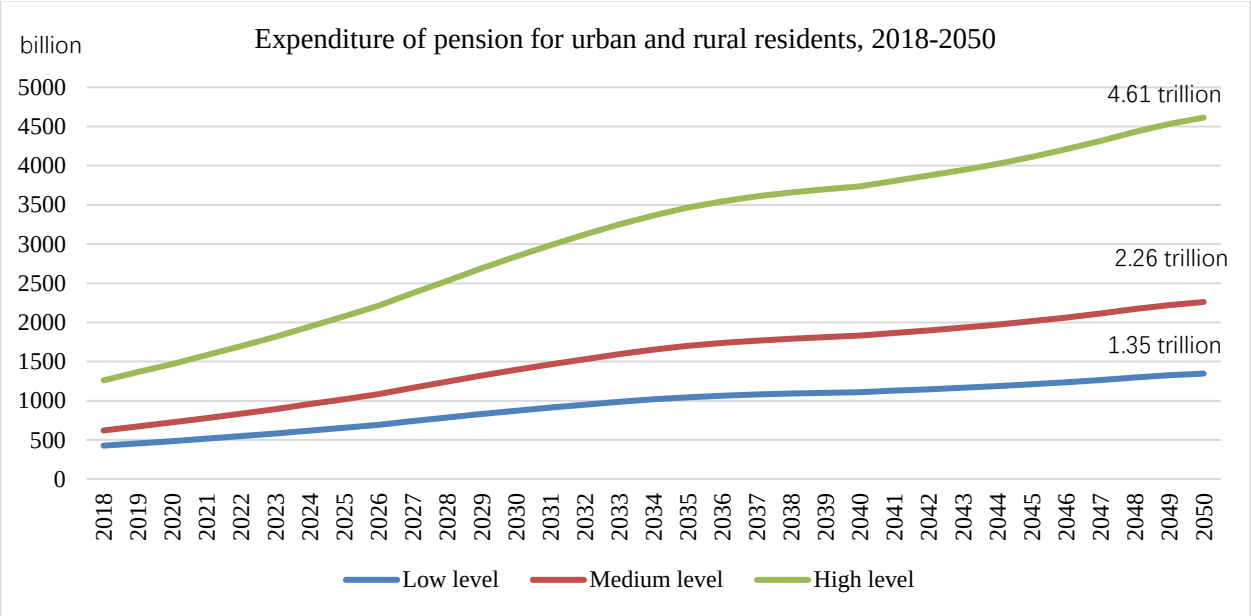


Figure 3-3 Expenditure of pension for urban and rural residents, 2018-2050

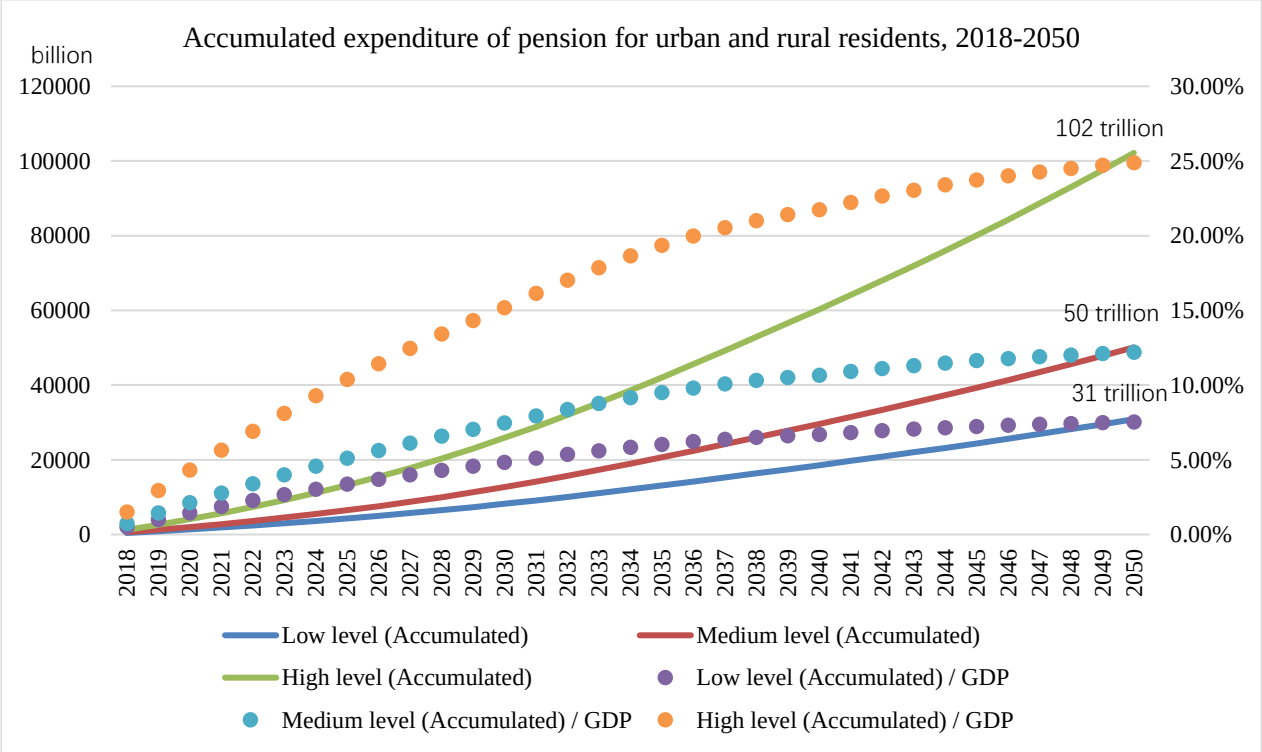


Figure 3-4 Accumulated expenditure of pension for urban and rural residents, 2018-2050

Combining the financial burden of pension for urban employees and pension for urban and rural residents, we will calculate the general financial burden trend of basic pension insurance.

Definition: Total fiscal burden for basic pension insurance = The absolute value of the gap between revenue and expenditure of pension for urban employees + High standard expenditure of pension for urban and rural residents

The results are displayed in Figure 3-5. From the perspective of the fiscal burden of basic pension insurance in the current year, the amount of expenditure that the government should bear in 2018-2050 will be on a rapid rise, reaching RMB 34 trillion in 2050, accounting for 8.19% of GDP that year. In terms of the accumulated fiscal burden, the accumulated pension expenditure that the government needs to bear will reach a staggering RMB 428 trillion in 2050, exceeding the total GDP of that year, accounting for 104%.

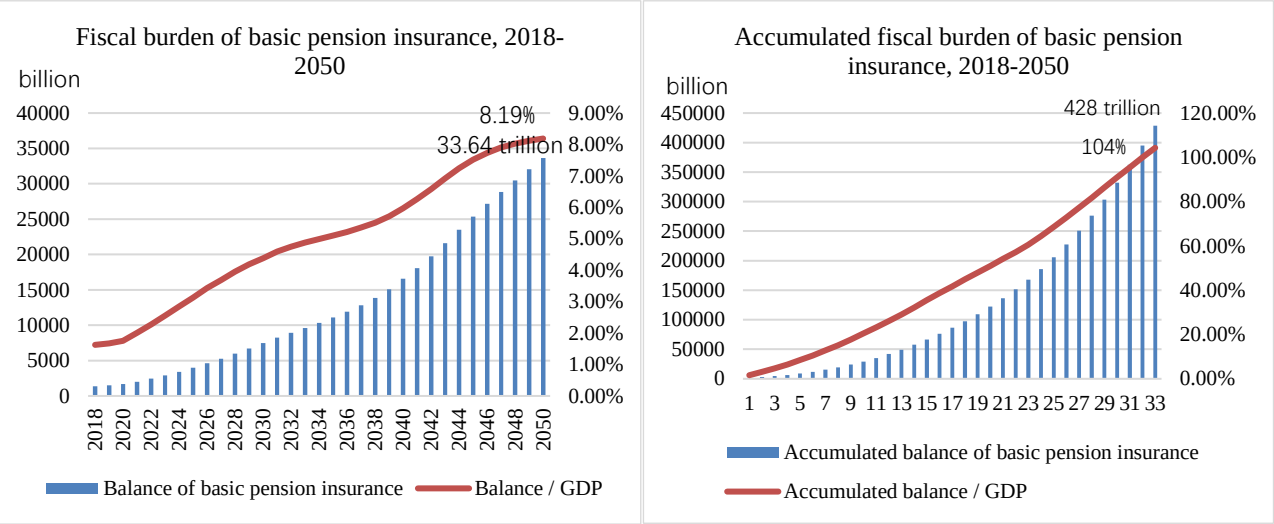


Figure 3-5 2018-2050 Fiscal burden of basic pension insurance, 2018-2050

3.2 The trend of fiscal burden for basic medical insurance

3.2.1 Assumptions

The prediction model used here refers to the actuarial model of Li Yaqing (2015). The establishment and derivation of the actuarial model are not described in detail here. The premise hypothesis of model establishment will be explained as follow:

① Take only the national average level into account, ignoring differences in medical insurance systems across the country.

② Focus only on funding per capita, without differentiating sources of funding.

③ The maximum age of survival for the insured is 100 years.

④ Regardless of the starting line, the proportion of fund payment and the maximum limit of payment, only the actual compensation ratio which comprehensively reflects the above factors is investigated.

⑤ The probability of population migration is only related to age.

⑥ The pooling fund's operation and management costs are zero.

⑦ Before reaching the target level of security, the actual compensation of the new rural cooperative and residents' medical insurance is adjusted once a year compared with the beginning of the year.

3.2.2 Parameters determination

a) The weight of medical expenses by age groups

The weight of medical expenses reflects the relative difference in medical expenses of different age groups. Table 3-1 reflects that the older the individual becomes, the higher the level of medical expenses is, reaching the peak at 80-84 years old. Therefore, aging will seriously affect the expenditures of basic medical insurance.

Table 3-1 Per capita medical cost and its weights by age groups

Age groups	Per capita medical cost (RMB)	Weights		Age groups	Per capita medical cost (RMB)	Weights
0~4	146.21	0.465		50~54	472.80	1.505
5~9	75.36	0.24		55~59	602.09	1.917
10~14	54.36	0.173		60~64	767.84	2.444
15~19	86.29	0.275		65~69	1051.79	3.348
20~24	1139.64	0.444		70~74	1317.10	4.193
25~29	186.46	0.594		75~79	1360.53	4.331
30~34	161.77	0.515		80~84	1408.71	4.484
35~39	231.19	0.736		85~89	1245.98	3.966
40~44	268.52	0.855		90+	1299.92	4.138
45~49	376.30	1.198		Average	314.15	1

Sources: Li Yaqing. Research on the Guarantee Level of Chinese Social Medical Insurance—Based on the Perspective of System Integration[D]. Guangzhou: Zhongshan University, 2012.

b) Growth rate of medical expenses

According to relevant researches, the income elasticity of Chinese farmers' health expenditure is close to 1.[7] Referring to the average annual growth rate of hospitalization expenses in 2008-2012, which is 8%,[8] this model sets the income elasticity of China's medical expenses to 1 and assumes that the future medical expenses growth rate is 8%, 7% and 6%.

c) Insurance factor

The insurance factor is a sensitive indicator that reflects the change in medical expenses with the level of protection (compensation ratio), that is, the degree of increase in the medical expenses caused by the increase in the compensation ratio. The formula is $f(U) = 1 + \beta(U - U_0)$, in which U is compensation ratio, U_0 is contrast compensation ratio, and β is undetermined coefficient. However, accurate estimates of

[7] PING Xinqiao. The Selection of Financing System of Medical and Health Service in the Rural Areas—a View Based on the Expending Behavior in Medical and Health Work for China's Peasants[J]. Management World, 2003(11): 52-63.

[8] Sources: *Statistical Bulletin on the Development of Health Care in China*.

insurance factors, which require natural experiments or advanced models, are very difficult. Limited by the data available, we refer to the insurance factor estimation table of Song Shibin (2009) [9]

3.2.3 The trend of fiscal subsidies of basic medical insurance

With the actuarial model and statistical software, we predict the change trend of the fiscal subsidies of China's basic medical insurance system from 2018 to 2050. Since the government has no subsidy responsibility for medical insurance for urban employees, the financial subsidies of medical insurance for urban and rural residents represent the financial subsidies of the whole basic medical insurance system.

Figure 3-6 and Figure 3-7 show the subsidies of medical insurance for rural residents from 2018-2050. Overall fiscal subsidies for medical insurance for rural residents will rise year by year. In 2050, under 3 medical expense growth rates - 6%, 7%, 8%, the subsidies will reach RMB 1.04 trillion, RMB 1.47 trillion and RMB 2.06 trillion respectively. In 2050, three medical expense growth rates under the scale of accumulated fiscal subsidies for medical insurance for rural residents will reach RMB 11.29 trillion, RMB 14.12 trillion, and RMB17.73 trillion, accounting for 4.3%, 3.4% and 2.7% of GDP.

Figure 3-8 and Figure 3-9 show the subsidies of medical insurance for urban residents from 2018-2050. Fiscal subsidies on medical insurance for urban residents will also rise year by year. In 2050, under 3 medical expense growth rates - 6%, 7%, 8%, the subsidies will reach RMB 2.08 trillion, RMB 2.91 trillion and RMB 4.05 trillion respectively. In 2050, three medical expense growth rates under the scale of accumulated fiscal subsidies for medical insurance for urban residents will reach RMB 15.74 trillion, RMB 20.03 trillion, and RMB 25.53 trillion, accounting for 3.8%, 4.9% and 6.2% of GDP.

Figure 3-10 and Figure 3-11 show the total fiscal burden of basic medical insurance from 2018-2050. In the forecast period, the total fiscal burden on basic medical insurance will also grow rapidly. In 2050, under 3 medical expense growth rates - 6%, 7%, 8%, the fiscal burden will reach RMB 3.12 trillion, RMB 4.38 trillion and RMB 6.12 trillion respectively. In 2050, three medical expense growth rates under the scale of accumulated fiscal burden for basic medical insurance will reach RMB 52.52 trillion, RMB 65.82 trillion, and RMB 83.16 trillion, accounting for 12.71%, 16.02% and 20.25% of GDP.

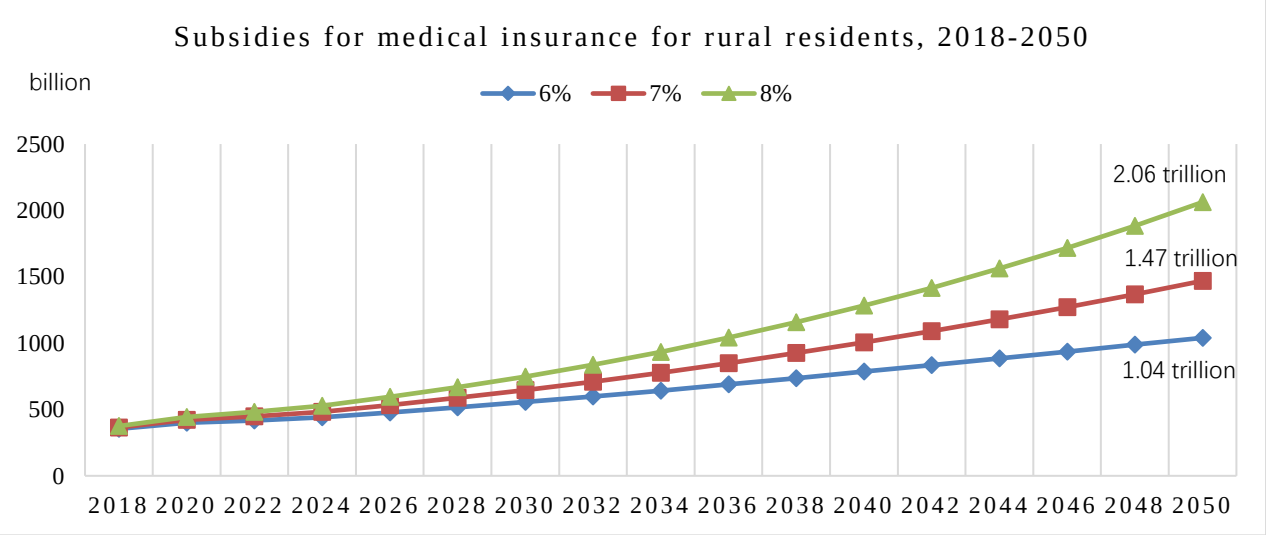


Figure 3-6 Subsidies of medical insurance for rural residents, 2018-2050

[9] SONG Shibin. Debt Risk and Sustainability Assessment of China's Medical Security System[M]. Economy & Management Publishing House, 2009: 79.

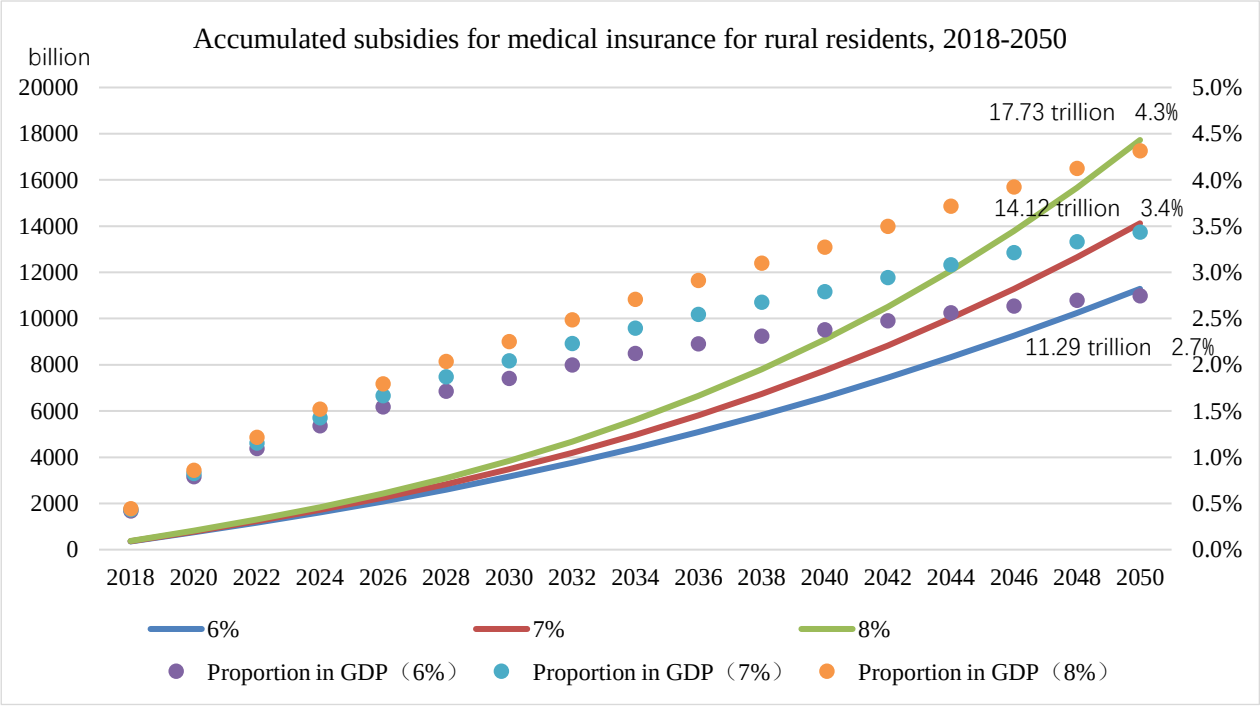


Figure 3-7 Accumulated subsidies for medical insurance for rural residents, 2018-2050

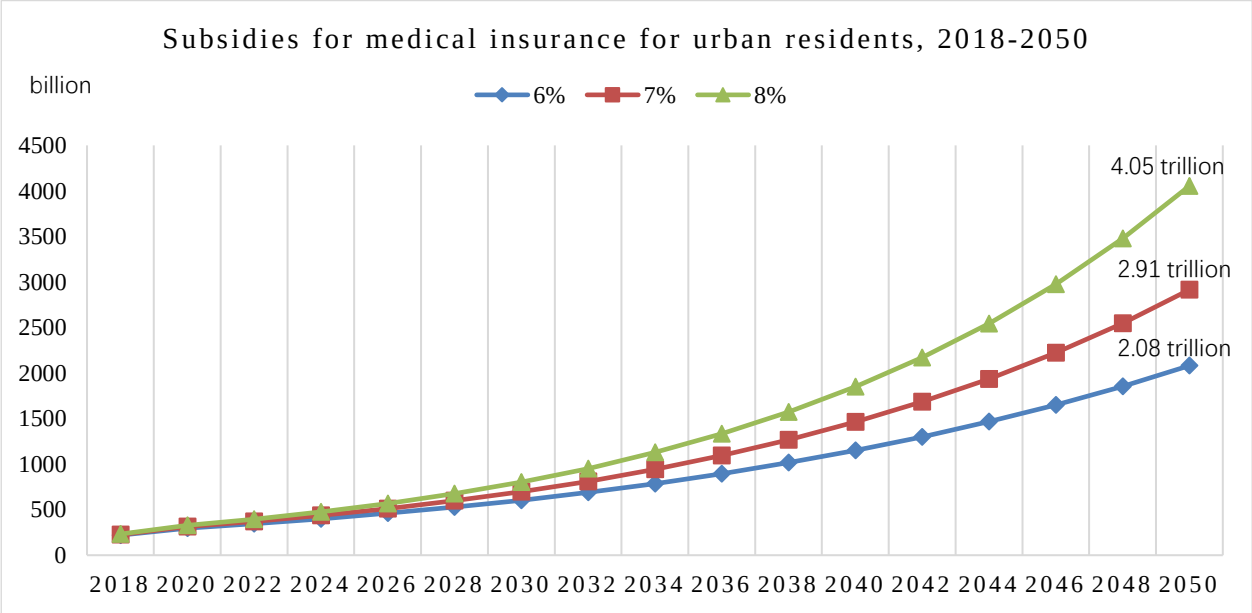


Figure 3-8 Subsidies for medical insurance for urban residents, 2018-2050

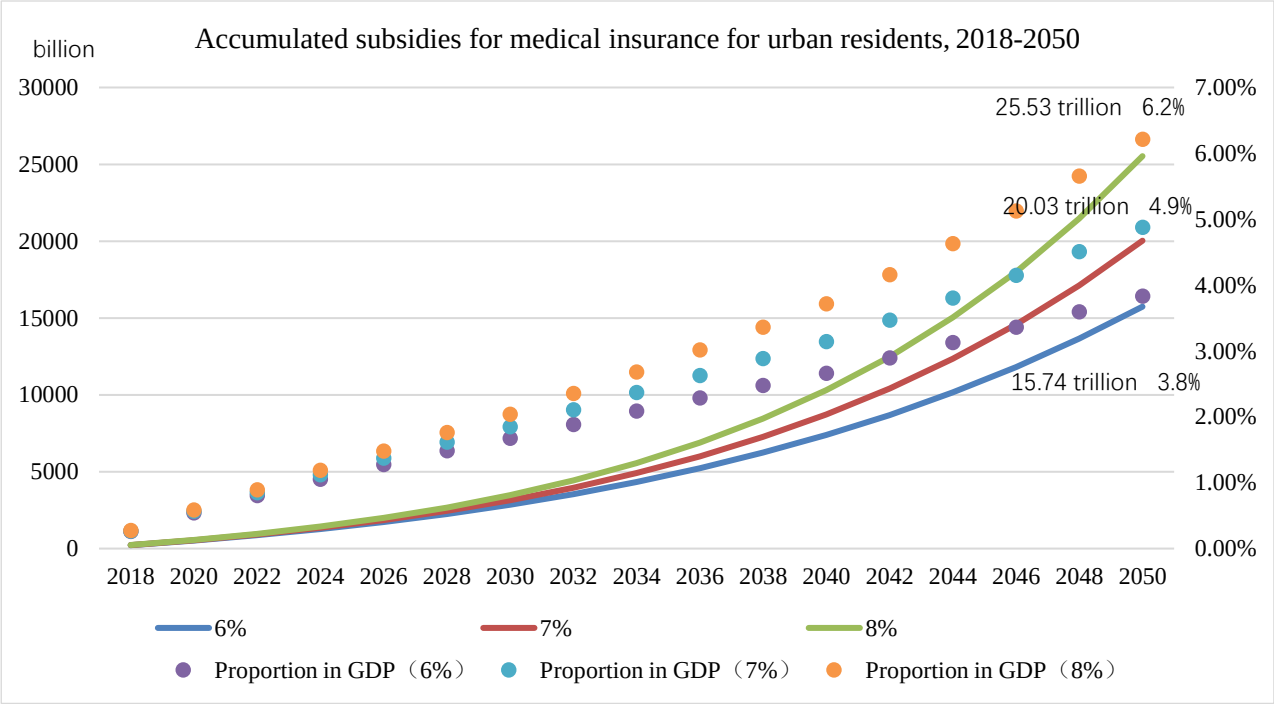


Figure 3-9 Accumulated subsidies for medical insurance for urban residents, 2018-2050

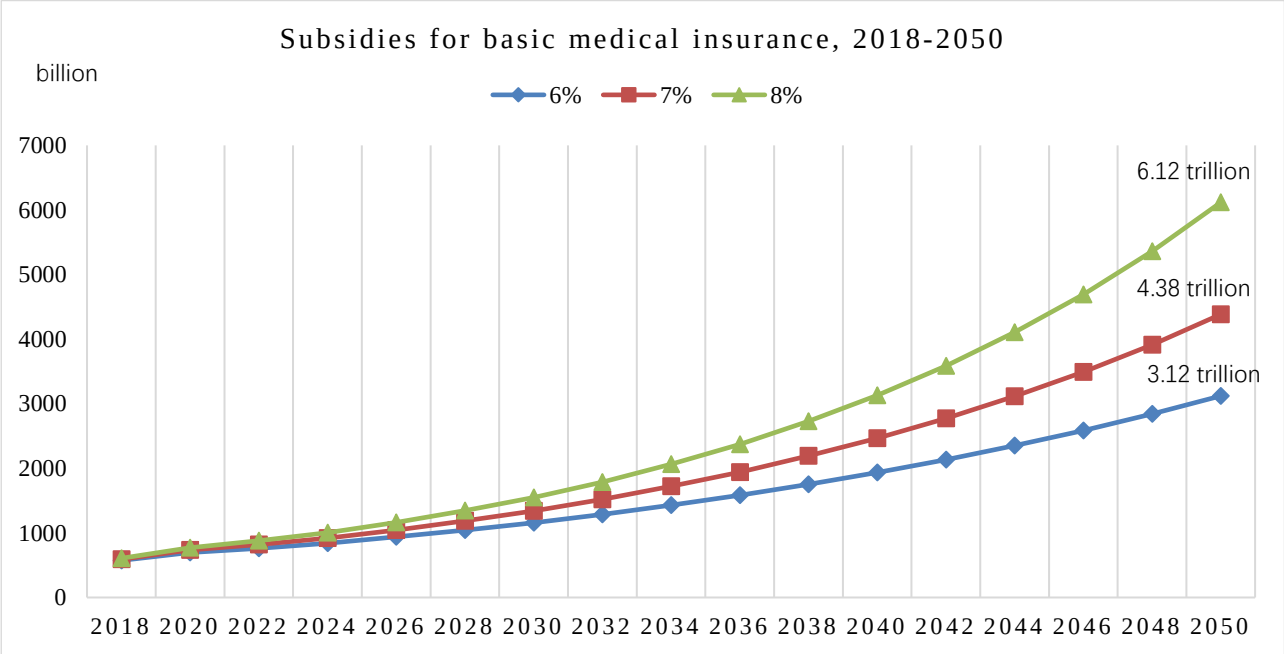


Figure 3-10 Subsidies for basic medical insurance, 2018-2050

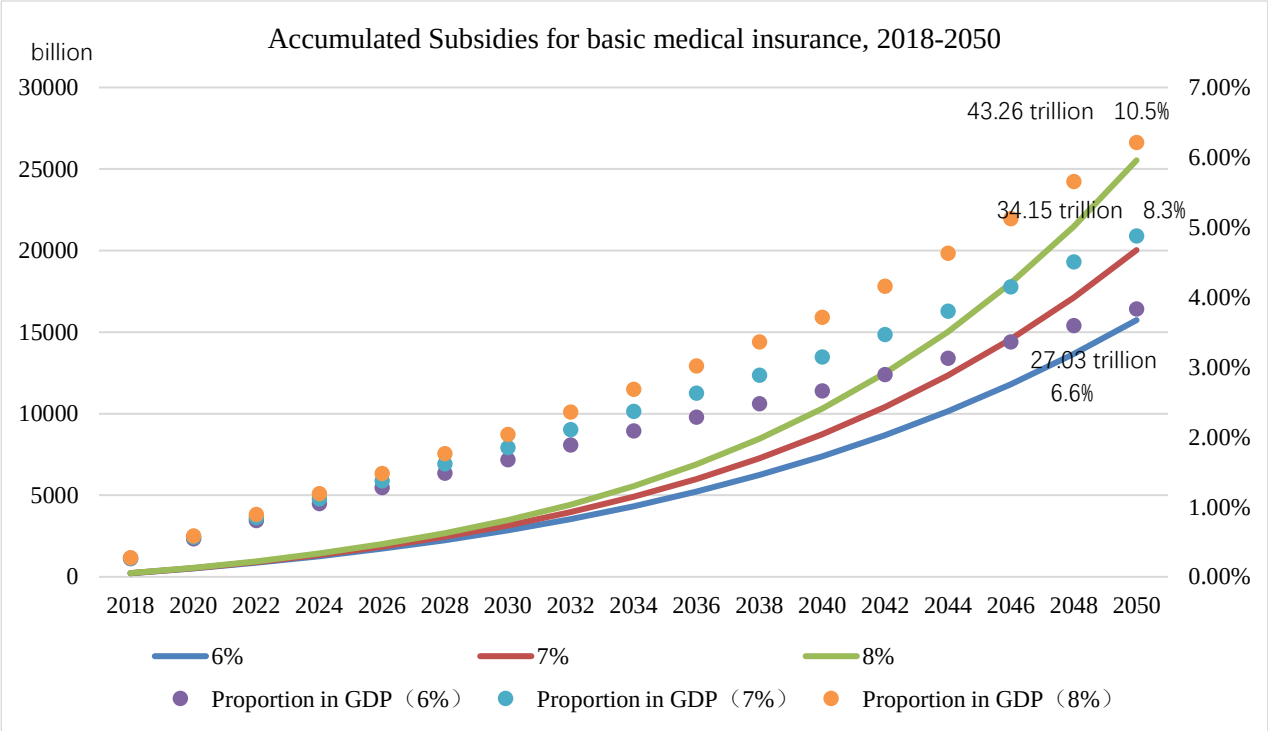


Figure 3-11 Accumulated Subsidies for basic medical insurance, 2018-2050

3.3 The trend of fiscal burden of social assistance

3.3.1 Model and assumptions

Different from pension and medical insurance, there is no obvious rules on the financial expenditure of the social assistance system. In addition, the target group and standard are also complicated. Therefore, it is impossible to construct an accurate forecasting model. Here, a simpler model is used to reflect the general trend of social assistance expenditures.

It is projected that absolute poverty will be solved in 2020, but relative poverty will remain for a long time In this way, the trend of social aid expenditure is designed as follows:

① According to the total social assistance expenditure in 2016 and the population of the poor in that year, the per capita assistance amount of the poor is obtained.

$$\text{The population of the poor} = \text{Whole population} \times \text{Poverty incidence rate}$$

② Based on the proportion of the relatively poor in major countries, the three levels of 8%, 10% and 12% are set for the estimation.

③ Assuming that the level of assistance is consistent with the national economic development trend, the growth rate of per capita assistance is set as the GDP growth rate.

3.3.2 The forecasting results of fiscal expenditure of social assistance

In 2016, the expenditure of social assistance was around RMB 320 billion, and the poverty incidence rate was 4.5% in that year. It can be calculated that the per capita poverty relief amount of 2016 was RMB 5,168.

Acording to Figure 3-12, the expenditure of social assistance from 2018 to 2050 will steadily rise, under the three kinds of relative poverty incidence rate - 8%, 10%, 12%, and the assistance expenditure in 2050 will reach RMB 3.07 trillion, RMB 3.83 trillion and RMB 4.6 trillion respectively.

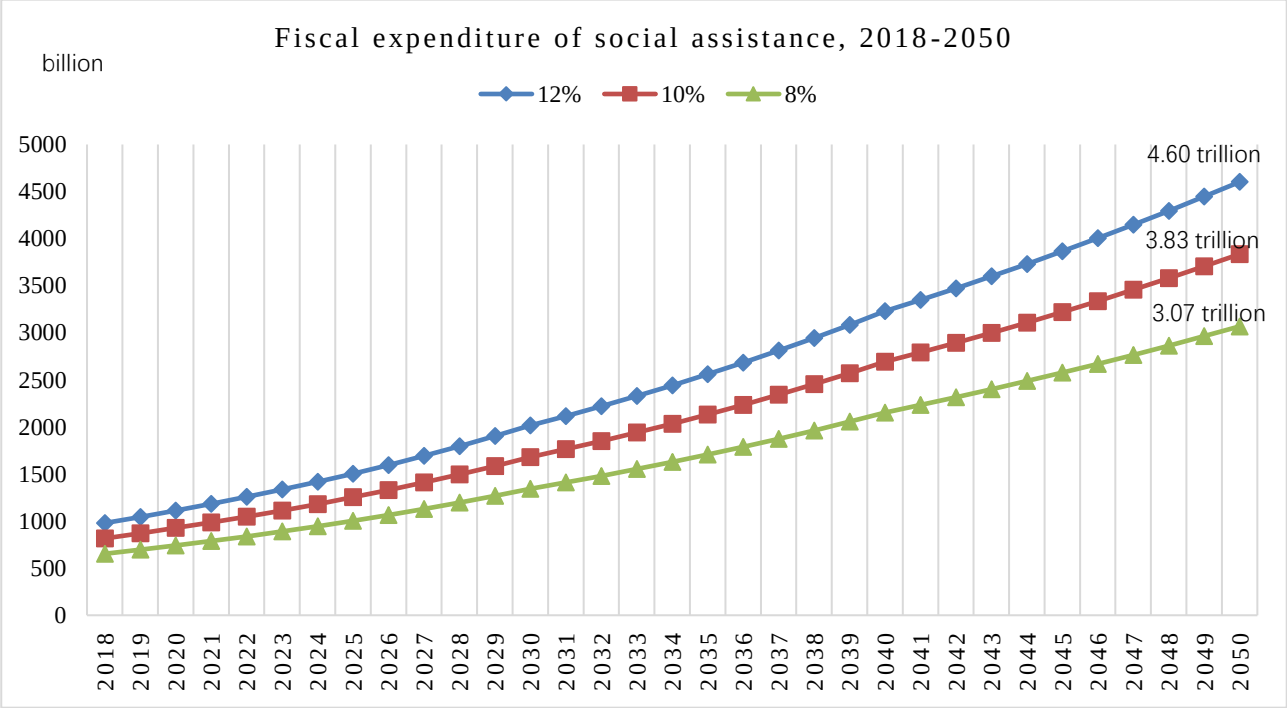
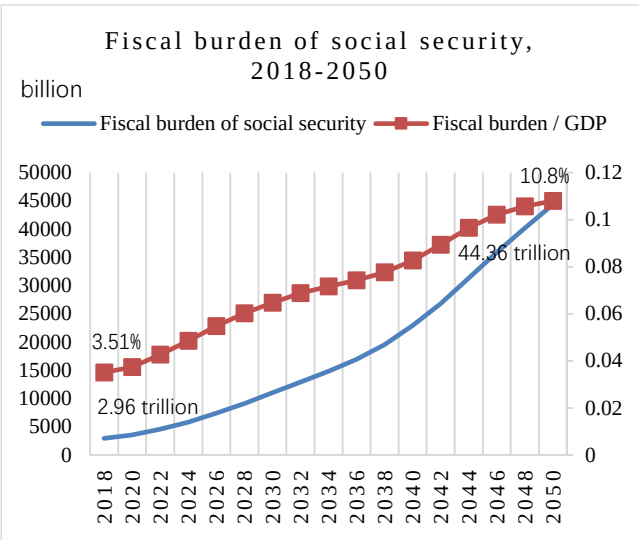


图 3-12 Fiscal expenditure of social assistance, 2018-2050

3.4 The trend of total fiscal burden of social security system

Basic pension insurance, basic medical insurance and social assistance constitute the core part of China's social security system. With the advent of the aging population, the proportion of elderly people aged 60+ or 65+ is rising, and the labor population are shrinking sharply. The result is that the fiscal expenditures to maintain the sustainable running of the social security system.

Figure 3-12 shows the trend of total fiscal burden of social security system from 2018 to 2050. We define that the fiscal burden of social security equals to the sum of pension insurance, medical insurance (8%) and social assistance (12%). From the perspective of the general social security system, when the fiscal burden in 2018 was 2.96 trillion yuan and 3.51% of GDP, it will quickly grow to 44,036 million in 2050 and 10.8% of GDP, with an average growth rate of 18%. With regard to accumulated fiscal burden, as of 2050, it will reach an unprecedented number of 596 trillion yuan, accounting for 145% of GDP, with an average growth rate of 39%.



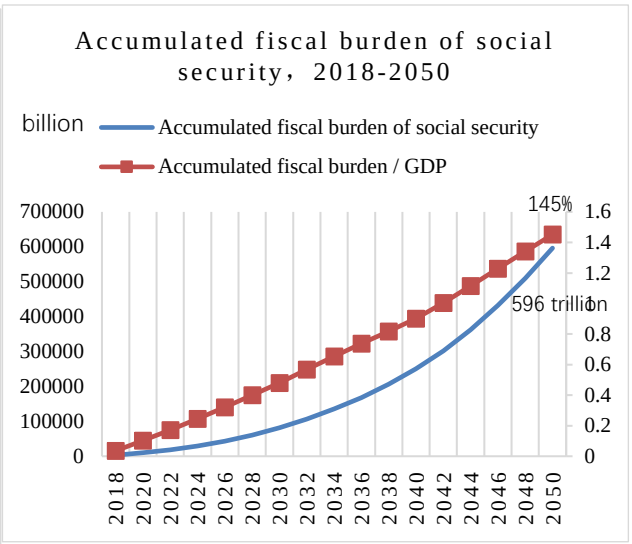


Figure 3-13 Fiscal burden of social security, 2018-2050

4 Measures to Improve the Fiscal Sustainability of Social Security

At present, there are two main ideas for Chinese society to deal with the financial crisis of social security brought about by the aging of population. The first one is to improve population structure. It is hoped that the population structure will be gradually adjusted by adjusting the birth policy and increasing the total fertility rate; thereby, the problem of aging can be alleviated and finally solved. The existing measure is " 'two-child' Policy", which was adopted by the Fifth Plenary Session of the 18th CPC Central Committee and officially implemented in 2016. Many experts believe that the next step will be to encourage fertility.

The second is to reform China's social security system. The development of China's pension system is relatively lagging, which is reflected in many aspects such as poor system standardization, weak binding force, obvious regional differences, and unclear subject rights and responsibilities. The government has to bear a huge financial responsibility. It can also be seen from the forecast results that the gap between income and expenditure of the basic pension fund is the main threat to the future social security sustainability. The main problem in medical insurance is the increase in medical expenses caused by the expansion of the elderly population and the unreasonable increase in medical fee. Therefore, the Chinese government and experts are working hard to improve China's pension insurance and medical insurance systems. Some effective measures have been proposed or taken to clarify the government's expenditure responsibilities and ease the pressure on fiscal expenditures.

4.1 To establish a unified tax and fees collection system

After the Third Plenary Session of the 19th CPC Central Committee, the CPC Central Committee issued the "Deepening Party and State Institutional Reform Plan". It mentioned that "In order to reduce the cost of collecting, rationalize the relationship of duties, improve the efficiency of collection and management, and provide taxpayers with high quality and efficient services, the sub-national taxation agencies will be merged and responsible for the taxation and non-tax revenue collection and management in the region. In order to improve the efficiency of social insurance fund collection and management, various social insurance premiums such as basic old-age insurance premiums, basic medical insurance premiums, and unemployment insurance premiums are paid to the taxation agencies for unified collection." In the past, the department responsible for social security fees was determined by the local authorities at the provincial level. It could be a tax department or a social security department. There were large differences among the regions, and the abilities to collect and manage the fees were not strong enough to meet the needs.

The loss of social security contribution is mainly reflected in two aspects. The first is the low compliance rate. According to the payment rate of social security insurance for urban employees issued by the Ministry of Human Resources and Social Security, the contribution rate in 2006 was 90%, and in 2015 it was 80.3%. In the decade, there was even a decrease of 10 percentage points.[10] In 2014, 1/5 employees in China interrupted capture to expend.[11] The second is the unclear contribution base. The documents promulgated by the State Council basically set 60% of the average salary of urban workers in the previous year as the lower limit of the contribution base of pension insurance for urban employees. However, even in economically developed areas like Beijing, when the contribution base of pension insurance for urban employees is calculated, the contribution base is further reduced to 40% of the average salary of urban workers in the previous year. In addition, the enthusiasm of small and medium enterprises for payment is not high, and state-owned enterprises also have deficits or arrears.

[10] See "China Social Insurance Development Annual Report 2015", September, 2016.

[11] See "China Social Insurance Development Annual Report 2014", June, 2015.

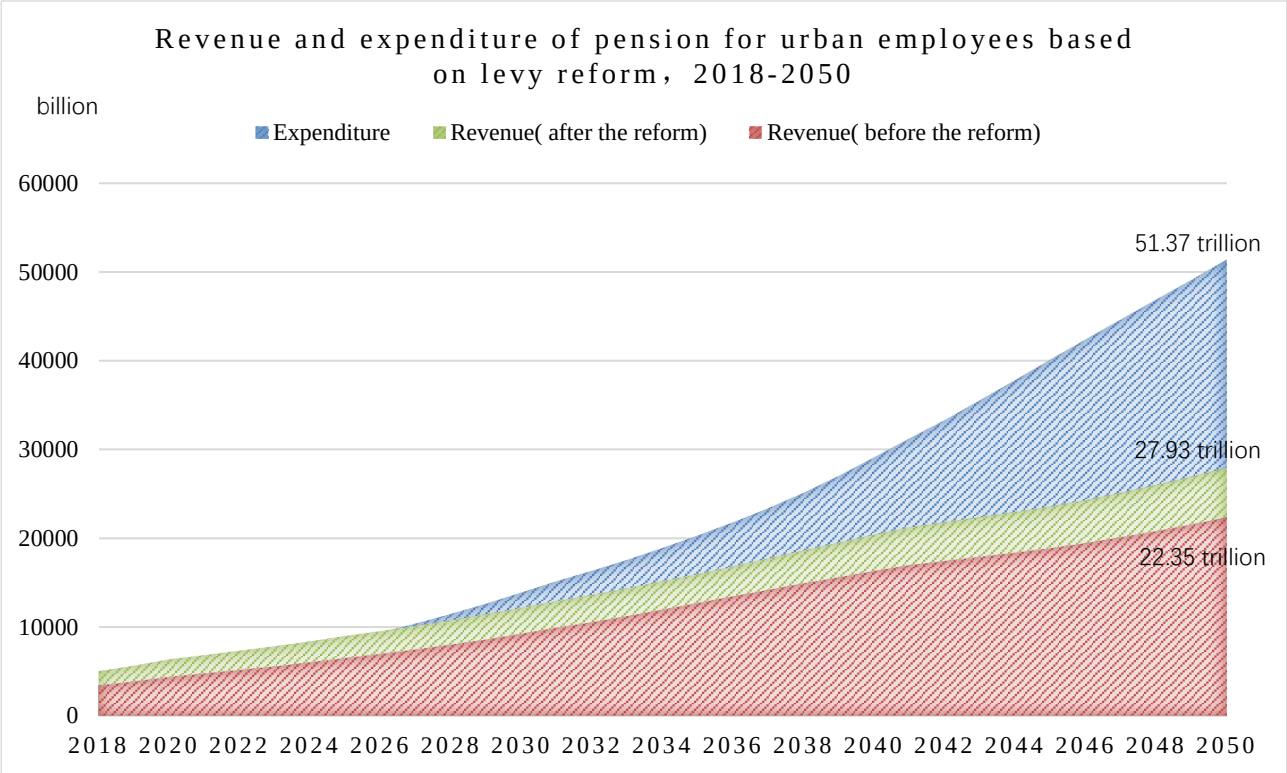
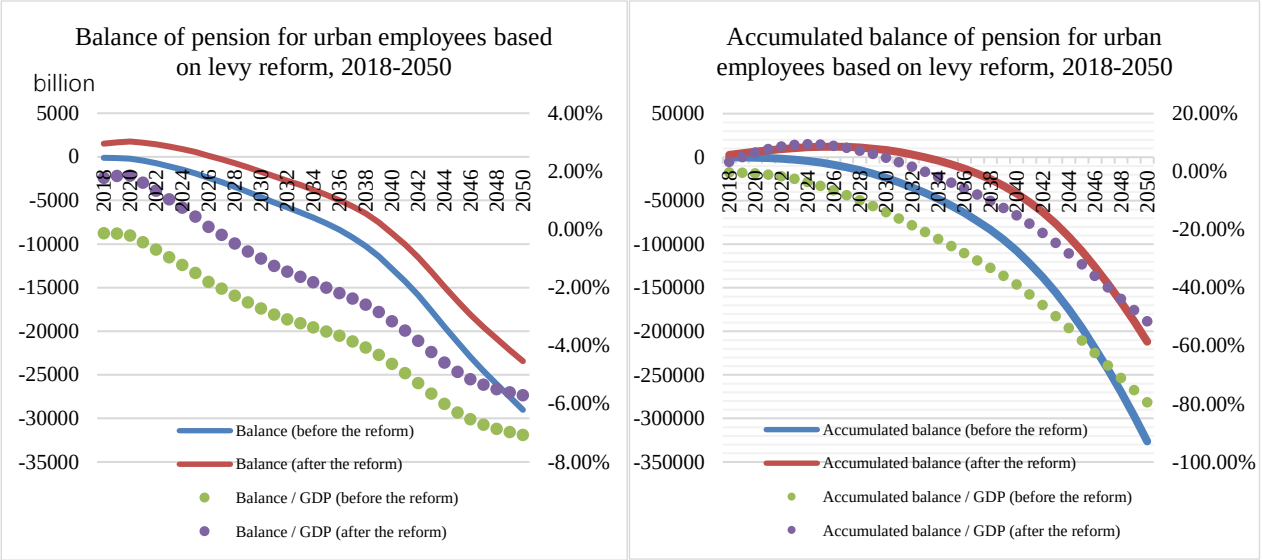


Figure 4-1 Revenue and expenditure of pension for urban employees based on levy reform，2018-2050

Social insurance premiums are collected by the tax authorities. After the unified tax and levy system formed, the capability of collection and administration is improved significantly, which is expected to fundamentally solve the two big problems—low payment rate and untrue payment base. It is assumed that after the unified collection of social insurance premiums by tax authorities, the compliance rate is 100%, and the average payment rate reaches 20% of the system design. Based on this, the fund revenues, expenditures and balance of basic pension insurance for urban employees in 2018-2050 are predicted in Figure 4-1. The figure compares the revenues collected in the current year before and after the reform of tax and fees collection system. It can be seen that after the reform the revenues collected in 2050 will reach RMB 27.93 trillion, with 5.5 trillion more than that before the reform. The figure 4-2 shows that after levy reform, the balance of pension for urban employees will be positive until 2026. And the balance in 2050 is RMB -23.44 trillion, accounting for 5.71% of GDP, which is obvious lower than RMB -29 trillion balance and 7.07% before the levy reform. There will be more obvious impacts which the reform has on the accumulated balance. The accumulated balance of pension for urban employees will be positive until 2032. And the accumulated balance in 2050will be RMB -212 trillion (114 trillion less than that before reform), accounting for 51.58% of GDP (28% lower than that before reform).

In conclusion, the reform of the taxes and fees collection system and the adjustment of the collection agency have a good effect. It is urgent to quickly promote the merger process of the national and sub-national taxation agencies, integrating the social security contribution into the existing tax collection system, and to implement new program as early as possible to ease the financial pressure.



Figuer 4-2 Balance of pension for urban employees based on levy reform, 2018-2050

4.2 To implement incremental delaying retirement policy

Retirement age is closely related to the contribution and benefits of pension for urban employees, which has a significant impact on the balance of social security funds. If the retirement age is low, the base of the contributor will be low, and the population base for receiving pensions will be high; vice versa. The incremental delaying retirement age and flexible retirement system have always been the hotspots in the field of social security. Scholars generally believe that China's retirement age is significantly lower than the international average. In the context of per capita life expectancy increasing and population aging, delayed retirement is an inevitable trend.

The Ministry of Human Resources and Social Security has publicly stated that, a delayed retirement plan would be introduced at the end of 2017, and will be officially implemented in 2022. During the transition period, there is still a difference in the age of delayed retirement between men and women, but this age gap will be gradually narrowed, and eventually the retirement age for men and women will be the same. [12] Based on the implementation of reformed taxes and fees collection system and the delaying retirement policy above, it is assumed that incremental delaying retirement policy will come into force in 2022. It means increasing 1 year old every four years from the current hypothesis of social average retirement age 55, that is, the retirement will get delayed three months per year, until the end of 2050. Meanwhile the average replacement rate has also risen from 35%, and will increase 1% when the retirement age is delayed 1 year.

The forecast results (Figure 4-3) show that raising the retirement age can significantly alleviate the expansion of the pension funding gap. the balance in current year, after the reform, the pension will continue to receive more than it needs to spend by 2029, and then there will be a deficit of RMB 10 trillion in 2050 (RMB 29 trillion at the beginning), accounting for 2.47% of GDP in that year (7.07% at the beginning).

As to Accumulated balance, after the reform, the accumulated balance of the fund will be positive by 2038, and then there will be a cumulative deficit, which will reach RMB 71 trillion in 2050 (RMB 326 trillion at the beginning), accounting for 17.31% (80% at the beginning) of the GDP.

[12] Beijing Youth Daily, March 1, 2016.

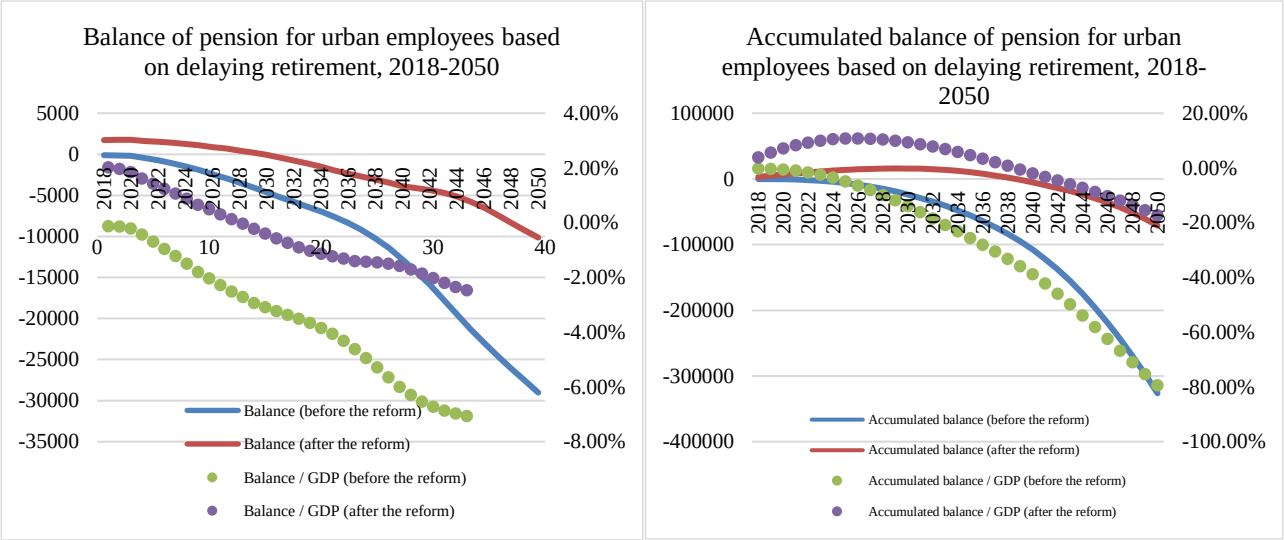


Figure 4-3 Balance of pension for urban employees based on delaying retirement, 2018-2050

It can be seen that the incremental delaying retirement policy effectively increases the contributor base of the pension insurance for urban employees and reduces the population base for receiving pensions. Such two-way adjustment has greatly alleviated the problem of pension funding gap brought about by aging, and all sectors of society have given high attention to rising retirement age. Although the policy of delaying retirement is more beneficial rather than harmful to the whole society, it will inevitably damage some people's interests. The government still needs to carefully design the program to implement the delaying retirement policy with the minimal cost to cope with the challenge from population aging.

4.3 Advancing the development of the third pillar

In April 2018, the Ministry of Finance and other five departments issued the “Notice on Launching a Pilot Program for Personal Tax Deferred Commercial Pension Insurance”, which declared that the personal tax deferred commercial pension insurance pilots would be implemented in Shanghai, Fujian (including Xiamen) and Suzhou Industrial Park in May 1, 2018. It implies that the Chinese government is actively exploring the third pillar of pension insurance, hoping to build a multi-level pension insurance system to ease fiscal pressure and ensure the long-term sustainability of the pension system.

In fact, China has not established the third pillar pension insurance for various reasons. Now we are actively exploring the construction of the third pillar of pension insurance, which mainly has the following three factors:

First, China’s first pillar of basic pension insurance has been unable to meet the needs of the elderly. Over the years, despite of the great progress made in the reform of the pension system, the basic pension insurance for urban employees is still a pay-as-you-go system in actual operation. With population aging speeding up, the proportion of China’s old-age population (60+ or 65+) expands rapidly. Correspondingly, the number of labor population has shrunk sharply. It has resulted in the decline of the number of contributors compared to the rise of the number of people receiving pension. According to the report of the 19th National Congress, the main contradiction in Chinese society has been transformed into “the contradictions between the people's ever-growing needs for a better life and the unbalanced and uneven development.” In order to alleviate the social contradictions of the "new era", there is a need for further improvement of the basic pension benefits. However, it is very difficult to raise the level of benefits considering the current conditions.

Second, from the perspective of establishing a multi-pillar pension system, the second pillar, enterprise annuity, is difficult to expand rapidly in the short term. Since the implementation of the enterprise annuity system in 2004, less than 10% of the employees have got enterprise annuities. Therefore, we cannot put our hopes of establishing a multi-pillar pension system on a large number of companies to establish enterprise annuities. The contribution rate of the first pillar basic pension is too high, and the enterprises has no enthusiasm to establish the second pillar. Therefore, there is no way for enterprise employees to enjoy tax benefits. But if there is a third pillar, employees can reserve pensions by themselves for their future.

Third, with the economic transformation, small and medium-sized enterprises have become the main force to attract labor population. There are still a large number of rural migrant workers, flexible workers and part-time workers in China. It is crucial to consider how to cover these workers. Not the second pillar but the third pillar can allow the workers in small and medium-sized enterprises or self-employed workers to enjoy pension tax incentives.

There are three key points in advancing the establishment of the third pillar. The first is that the system model must center on “individual account”, which means to set up individual account with unique identification, rely on multiple carriers to increase the coverage of the third pillar personal pension, and rely on social security card to establish the 3rd pillar individual account information platform, etc.

The second is to design reasonable tax preference model. The tips are reasonably using the tax extension model of EET or TEE, setting a reasonable preferential tax rate or quota, and considering to open the 2nd and 3rd pillar tax incentives, etc.

The third is the diversified participation in product and investment channels. Banks, funds, insurance and other types of pension financial products should be considered into the selection range, and consider to establish a product access system and a default investment vehicle mechanism.

4.4 Reasonable control of medical expenditure

Unlike the severe situation of the pension insurance system, the financial burden of the medical insurance system is still acceptable. However, while the national health expenditures and the medical insurance expenditures continue to increase, inpatient or outpatient services, total medical expenses, per capita medical expenses, and medical expenses all have increased at a high rate in recent years. Among them, there are both “reasonable growth” caused by the rise of medical technology level, and “unreasonable growth” caused by various reasons, especially the “profit-seeking mechanism” of the hospital. Therefore, to control the unreasonable growth of medical expenses is one of the important tasks of the reform and development of China's medical insurance system.

Although the government plays a pivotal role in the design of the institutional framework and the supervision and management mechanism, it does not rule out that the market and social forces play a unique role in controlling medical expenses. For the monitoring and management of medical expenses, local governments can actively explore the specific form of Public-Private Partnership (PPP), which can timely detect and process the abnormal changes in medical expenses to control moral hazard in medical needs and medical behavior with the help of third-party information platform and intelligent monitoring platform.

In addition, the function of the medical insurance system will inevitably lead to an increase in medical expenses to a certain extent. In view of the diversity and complexity of medical needs, the government should play a major role in the four aspects including legislation, planning, investment and supervision. Under this premise, the market mechanism should be introduced vigorously, which will not only improve the

fairness of medical insurance but improve the quality and efficiency of medical services. In terms of macroeconomic regulation and control, medical insurance should fairly treat public and private medical institutions, public and private rehabilitation institutions, public and private nutrition institutions, and other health service institutions; should eliminate discrimination, and meet the health needs of different individuals at different levels.

In addition to the above points, it is necessary to vigorously encourage the development of commercial medical insurance. The government promotes the development of commercial medical insurance by providing tax incentives, and lays a foundation for the establishment of a multi-level medical insurance system in the future. In this respect, China still has great potential.

4.5 Gradually relaxing the family planning policy

China's "two-child" policy was put forward in 2015 and implemented officially in 2016. Its purpose is to adjust the age structure of the population and meet the challenges of aging. In fact, since the implementation of the "two-child" policy, the effect is not as expected. 2017 is the second year of the implementation of the "two-child" policy. According to the hysteresis effect, it is generally judged that the number of people born in 2017 will be significantly higher than that of 2016. However, the data from the National Bureau of Statistics shows that the number of births in 2017 fell by 630,000 from 17.86 million in 2016. The birth rate in 2016 was 12.95 per thousand. It fell to 12.43 per thousand in 2017.

Health and Family Planning Commission explained in 2015: "There are about 90 million couples eligible for the policy, and the birth population is expected to exceed 20 million." But in reality, the birth population never exceeded 18 million, lower than the national health and family planning commission's forecast for 2017-2021.

The reason why the effect of the "two-child" policy is not good is that the Chinese people's fertility desires are not strong; as a result, the increase in total fertility rate is not significant. Just cancelling restrictions cannot solve this problem. There are two main factors leading to the reduction of Chinese fertility desires. Firstly, for individuals, the era when marriage and childbirth is a family obligation and responsibility has passed. With the development of urbanization, personal choice has replaced family responsibility. Secondly, China's high housing prices, high childcare costs, and fierce social competition cause a problem that having more children means more pressure.

There are many experts predicting the effects of the "two-child" policy on the future population structure of China and the pension income and expenditure. Gu Hejun & Li Qing (2017) combined the data of the fifth and sixth census data with the annual statistical yearbooks to estimate the new birth population after the implementation of the "two-child" policy. They found that the implementation of the "two-child" policy could not change the overall downward trend of the total labor population and the upward trend of the proportion of the elderly population, but only slightly reduced the rate of decline in the labor population. Gu Hejun et al. (2018) examined the impact of the "two-child" policy on China's long-term economic growth and found that this policy will not create new "demographic dividends" by the middle of the 21st century, and it is impossible to reverse the trend of increasing aging. Sui Lei (2017) established a generational overlap model to study the impact of the "two-child" policy on basic pension. He believes that the "two-child" policy can only improve the financial sustainability of the pension system to a certain extent in the future, and the effect on the growth rate of the birth rate is not significant. Some scholars further explored the effect of completely relaxing the family planning policy. Zhu Jianping (2017), based on the data from the sixth census, found that the effect of abolishing the birth restriction completely is very close to the "two-child"

policy, and the elderly dependency ratio will gradually increase. Therefore, he suggested that the government not only completely abolish the birth restriction, but also encourage birth.

The birth policy has a significant lag on the adjustment of China's current population structure, it cannot be achieved immediately. Therefore, it is necessary to comprehensively consider these factors and promote to completely relax the family planning policy as soon as possible. In addition, we must learn from the practices of some developed countries, to encourage fertility, and to improve the total fertility rate.

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Ageing of the society as challenge – policy measures in the EU and in the Czech Republic

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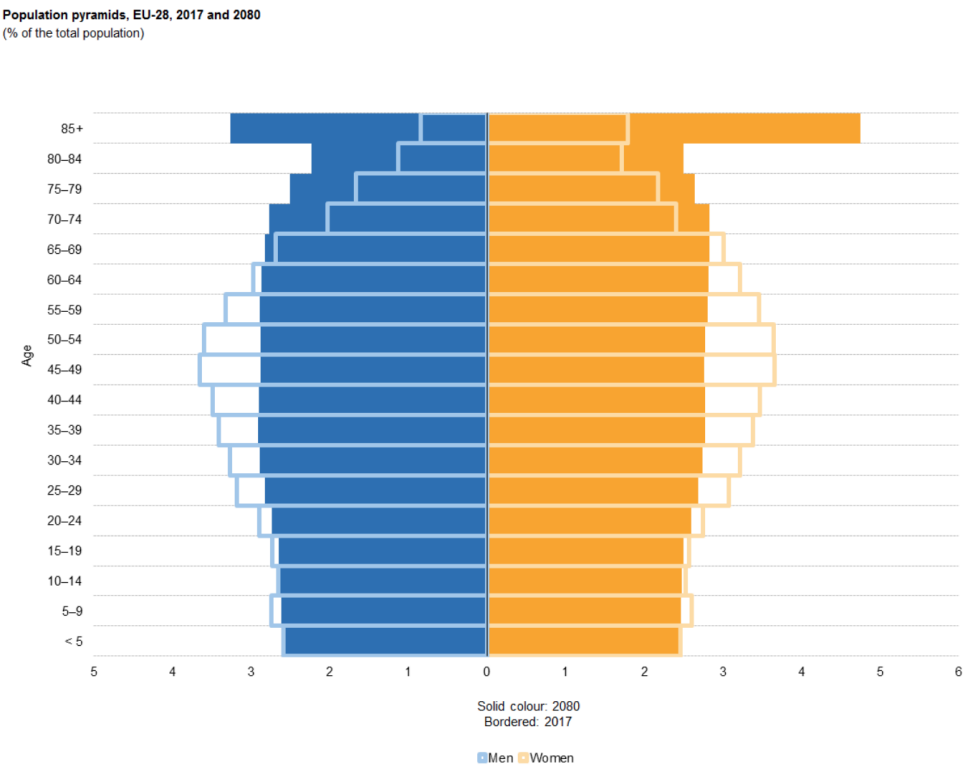
Contents

1. Population ageing in the European Union

Europeans are living significantly longer than half a century ago. Also, fewer Europeans are born. The consequent effect on the age ratios and demographic ageing is likely to be – together with digitalisation and potentially immigration – of major significance for social policy and the welfare state sustainability in the forthcoming decades. Consistent decline in fertility and the increase in life expectancy within the European Union (EU) are transforming its age pyramid (see graph 1).

Eurostat data shows[13] that in January 2017 the population of the European union was estimated at 511.8 million inhabitants, with a significant change of ratios between the age groups of 0-14, 15-64 and 65+. The most important change will be the marked shift towards a much older population structure, a development which is already becomes obvious in all EU member states. As a result, population growth is slowing down while population ageing accelerates. And this means that the ratio of working-age population in the EU is shrinking while the comparative number of those retired is expanding.

Graph 1: Age structure of the population in 2017 and 2080, source: Eurostat



[13]Eurostat: Population and population change statistics.

Persistent low fertility rates of the past decades have led to a marked reduction in the labour force in the near as well as more distant future. These developments reflect the deep transformations in the age composition of European populations. Along with changing family and household structures, they set a largely new demographic scene for development prospects in Europe. These prospects are nevertheless already being analysed an absorbed by European ministries and policy makers, since these challenges have been obvious in the past and most of the member states have already adopted strategies to cope with these challenges. In this respect, the experience with policy-making and the real effects of such aging could be a precursory for other countries with a demographic transition having taken place later than in Europe, including in China.

Ageing population in Europe sets new challenges for the whole social policy, especially for the pension system, health care system, new long term care schemes have to be developed across the whole European Union. It means also that we have to rethink the employment schemes if they risk to be unsustainable. There is also higher demand for housing policy and public residence construction as families or household structure seems to be smaller and people live longer. For all these reasons family policy goes through unexpected revival in all EU member states as it is regarded as partial solution to all aforementioned problems. Furthermore European women wish to have two or more children[14] but since they are left with all consequences alone they often decide against it.

Such challenges, which the EU faces are still rather different strikingly different from those Chinese public policy would be dealing with in immediate future. Nevertheless, the Chinese past strategy to limit population expansion already leads to rather similar public policy challenges. China has been coping in the last thirty years with different phenomena, including overpopulation of rural areas. The most dominant and discussed was of course the implementation of the one-child policy in 1979. This policy being a significant factor in shaping the Chinese population also predicts many of the challenges the Chinese population will be dealing with in the near future.

The one-child policy being officially phased out at the beginning of 2016 is a sign of a non-negligible change in approaching demographic policy in China. Many critical aspects of the European approach are therefore to be fully understood and analysed in order to devise policy recommendations also for the Chinese society and policy making.

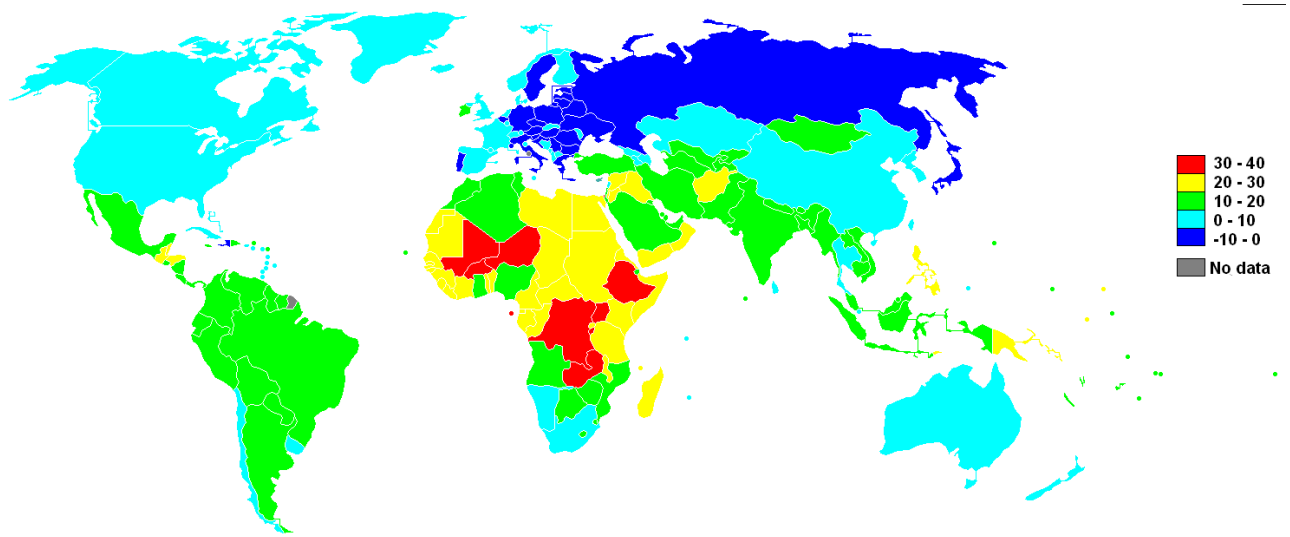
[14] Doepke and Kindermann.

1.1 Fewer children are born: Small natural increase being compensated by immigration inflows

In 2015, a little over 5 million children were born in the 28 states of the European union.[15] Eurostat data shows that during the period 1961–2015, the highest annual total for the number of live births in the EU was recorded in 1964, at 7.8 million births. From this relative high to the beginning of the 21st century, the number of live births in the EU-28 declined at a relatively steady pace, reaching a low of 5 million in 2002. This was followed by a modest rebound in the number of live births, with a high of 5.5 million children born in the twenty-eight countries of the EU in 2008, in turn followed by further annual reductions up to 2013.

Lower birth rates starting in the middle of the 20th century were largely compensated by rather large immigration inflows following the expansion of the European economy in the post-second-world-war order. The European population has thus continued to expand at a similar rate as the former natural increase in population would suggest. Overall the natural increase in population (without migration intake) in Europe is one of the lowest world-wide. In addition, a significant contributor to this natural increase is – in several EU countries – the relatively higher fertility of former immigrants, which continue to live in the country of destinations. Even the low natural increase in population is therefore to be understood under immigration lenses.

Graph 2: Natural increase in population per 1000 people, Source: CIA Factbook



[15] Eurostat: Fertility Statistics

In recent decades Europeans have generally been having fewer children, and this pattern partly explains the slowdown in the EU's population growth.[16]

In 2015, the total fertility rate in the EU was 1.58 live births per woman. The EU's total fertility rate increased from a low of 1.46 in 2001 and 2002 to a relative high of 1.62 in 2010, then slightly decreased to 1.55 in 2013 before a modest rebound in 2014.

Eurostat figures also show that the mean age of women at childbirth continued to rise between 2001 and 2015, from an average of 29.0 to 30.5 years. One possible explanation for the increase in the total fertility rate is that it may have been related to a catching-up process: following the trend to give birth later in life (witnessed by the increase in the mean age of the mother at childbirth), the total fertility rate might have declined first, before a subsequent increasing again. In this respect, the development of fertility could be more culturally linked to the increase in age of the mother at childbirth rather than cultural aspects, which have to do with smaller families and in general less children.

Among the EU Member States, France reported the highest total fertility rate in 2015, with 1.96 live births per woman. By contrast, the lowest total fertility rates in 2015 were recorded in Portugal (1.31 live births per woman), Poland and Cyprus (both 1.32 live births per woman), Greece and Spain (both 1.33 live births per woman). In most of the EU Member States, the total fertility rate declined considerably between 1980 and 2000–2003: by 2000, values had fallen below 1.30 in Bulgaria, the Czech Republic, Greece, Spain, Italy, Latvia, Slovenia and Slovakia. After reaching a low point between 2000 and 2003, the total fertility rate increased in most member states and by 2015, all of them reported total fertility rates that were above 1.30.[17] In the Czech case and probably also in other Central European countries, the drop in fertility is likely due to the worsening of the economic situation during the economic and political transition in the 1990s from centrally planned economies, but also it has to do with dismantling of family policy infrastructure.

In the past 45 years, total fertility rates in the EU Member States have, in general, been converging: in 1970, the disparity between the highest rates (Ireland) and the lowest rates (Finland) was around 2.0 live births per woman. By 1990 this difference — between a high in Cyprus and a low in Italy — had decreased to 1.1 live births per woman. By 2010, the difference had fallen again to 0.8 live births per woman with a high in Ireland and a low in Hungary. This difference of 0.8 live births per woman was repeated in both 2013 and 2004, when the highest total fertility rate was recorded in France and the lowest rate was recorded in Portugal. The same two Member States were at either end of the range in 2015, although the gap narrowed to 0.7 live births per woman, as the total fertility rate in France fell and that in Portugal rose.[18]

[16] More detailed Eurostat data are below.

[17] Source: Eurostat.

[18] Source: Eurostat.

Table 3: Births and fertility data in the EU 1960-2015 (live births per woman), source: Eurostat[19]

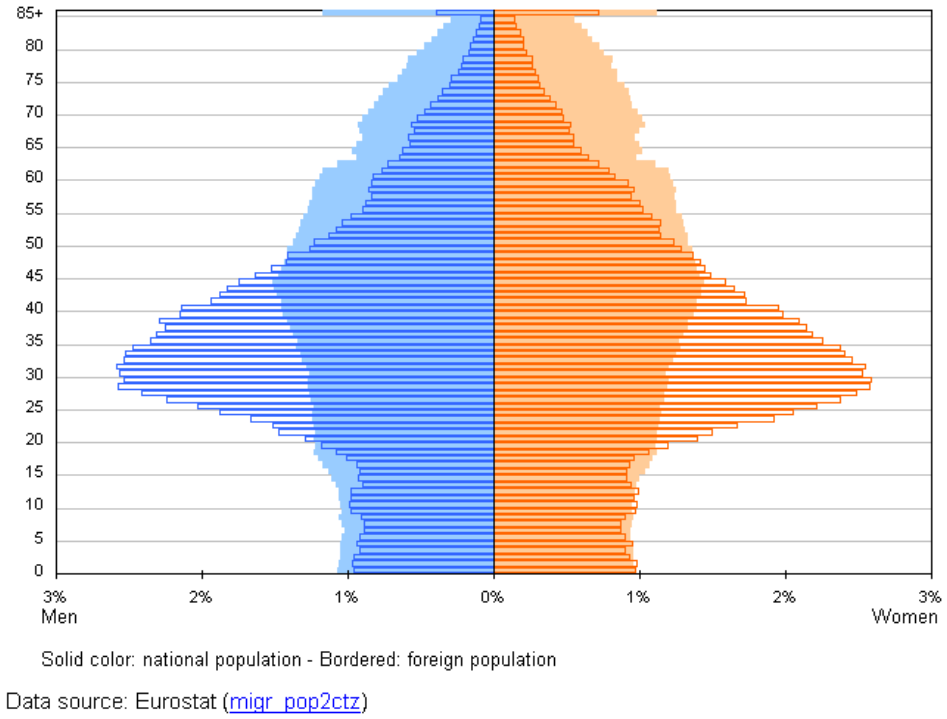
	1960	1970	1980	1990	2000	2010	2015
EU-28	:	:	:	:	:	1,62	*1,58*
Belgium	2,54	2,25	1,68	1,62	1,67	1,86	1,70
Bulgaria	2,31	2,17	2,05	1,82	1,26	1,57	1,53
Czech Republic	2,09	1,92	2,08	1,90	1,15	1,51	1,57
Denmark	2,57	1,95	1,55	1,67	1,77	1,87	1,71
Germany	:	:	:	:	1,38	1,39	1,50
Estonia	1,98	2,17	2,02	2,05	1,36	1,72	1,58
Ireland	3,78	3,85	3,21	2,11	1,89	2,05	*1,92*
Greece	2,23	2,40	2,23	1,39	1,25	1,48	1,33
Spain	:	:	2,20	1,36	1,23	1,37	1,33
France	:	:	:	:	1,89	2,03	*1,96*
Croatia	:	:	:	:	:	1,55	1,40
Italy	2,37	2,38	1,64	1,33	1,26	1,46	1,35
Cyprus	:	:	:	2,41	1,64	1,44	1,32
Latvia	:	:	:	:	1,25	1,36	1,70
Lithuania	:	2,40	1,99	2,03	1,39	1,50	1,70
Luxembourg	2,29	1,97	1,50	1,60	1,76	1,63	1,47
Hungary	2,02	1,98	1,91	1,87	1,32	1,25	1,45
Malta	:	:	1,99	2,04	1,70	1,36	1,45
Netherlands	3,12	2,57	1,60	1,62	1,72	1,79	1,66
Austria	2,69	2,29	1,65	1,46	1,36	1,44	1,49
Poland	:	:	:	2,06	1,37	1,41	1,32
Portugal	3,16	3,01	2,25	1,56	1,55	1,39	*1,31*
Romania	:	:	2,43	1,83	1,31	1,59	*1,58*
Slovenia	:	:	:	1,46	1,26	1,57	1,57
Slovakia	3,04	2,41	2,32	2,09	1,30	1,43	1,40
Finland	2,72	1,83	1,63	1,78	1,73	1,87	1,65

[19] Source: Eurostat Fertility statistics.

Sweden	:	1,92	1,68	2,13	1,54	1,98	1,85
United Kingdom	:	:	1,90	1,83	1,64	1,92	*1,80*

The number of fertility are therefore in all countries below the replacement rate. A significant factor keeping the European population stable and growing is therefore immigration. Although clearly beneficial from an economic perspective, population inflow due to immigration has been accompanied with an important and potentially critical societal reaction in the form of political movements challenging the immigration policy and criticizing the economic consensus based on the regular inflow of labour force to facilitate the economic expansion and the continuous GDP growth levels. These challenges have become extremely prominent in the public debate since 2015.[20] Although immigration to Europe will not stop, it is nevertheless likely that the solution to the aging population in the EU, which is represented in systematic immigration policy, would not be able to fulfil fully its role in the upcoming decades. The European Union will be challenged to cope with its demographic changes increasingly with domestic policy tools, including larger labour activity of elderly, increased employment and labour market participation rates as well as increasing productivity through other channels. To the time, nevertheless, immigration will probably remain a major tool for demographic adjustment as the incoming population tends to have a clearly productivity-age profile (see graph below).

Graph 4: Comparison of EU age pyramids between foreigners and nationals in the EU, Source: Eurostat



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1.2 Higher life expectancy

In 2015, some 5.2 million persons died in the EU-28. The annual number of deaths is the highest observed over the previous five decades. Furthermore, the crude death rate, which is the number of deaths per 1 000 persons, also reached a peak value of 10.2 in the EU-28 in 2015.

Life expectancy at birth in the EU was estimated in 2015 at 80.6 years (0.3 years lower than 2014), reaching 83.3 years for women (0.3 years lower than 2014), and 77.9 years (0.2 years lower than 2014) for men. However, over the last 15 years life expectancy in the EU increased by 2.9 years, from 77.7 to 80.6 years; the increase was 2.4 years for women and 3.4 years for men. In 2015 the life expectancy for women is still higher than the life expectancy for men. With a gender gap of 5.4 years of life in 2015, newly born women in the EU-28 should generally expect to outlive men. Furthermore, this gap varied substantially between EU Member States. In 2015, the largest difference between the sexes was found in Lithuania (10.5 years) and the smallest in the Netherlands (3.3 years).[21] More concrete statistics are in table 7 below.

1.3 Modest, but evident increase in number of healthy years lived

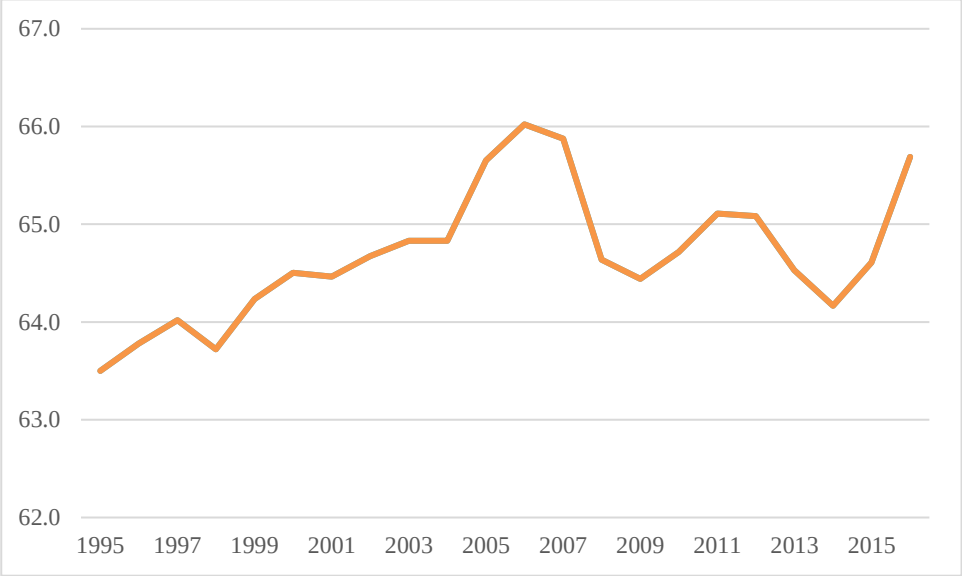
Although not as spectacular as in the case of life expectancy, the expectancy of living healthy lives at birth is also increasing, although depending strongly on the economic cycle (see graph below). In general terms, life expectancy has risen significantly more than healthy life expectancy. The difference between the life expectancy per se and the healthy-years expectancy point out to a potential problem of a large share of elderly not being necessarily able to remain at the labour market longer.

In 2015, the number of healthy life years at birth was estimated at 63.3 years for women and 62.6 years for men in the EU-28; this represented approximately 76 % and 80 % of total life expectancy for women and men.

Furthermore, the not as fast increasing number of healthy years expectations raise the stakes linked with health-care costs, as they would expand potentially even faster than the share of the elderly population.

[21] Source: Eurostat.

Graph 5: Healthy years expectancy at birth in countries with best data availability,[22] Source: Eurostat and own calculations



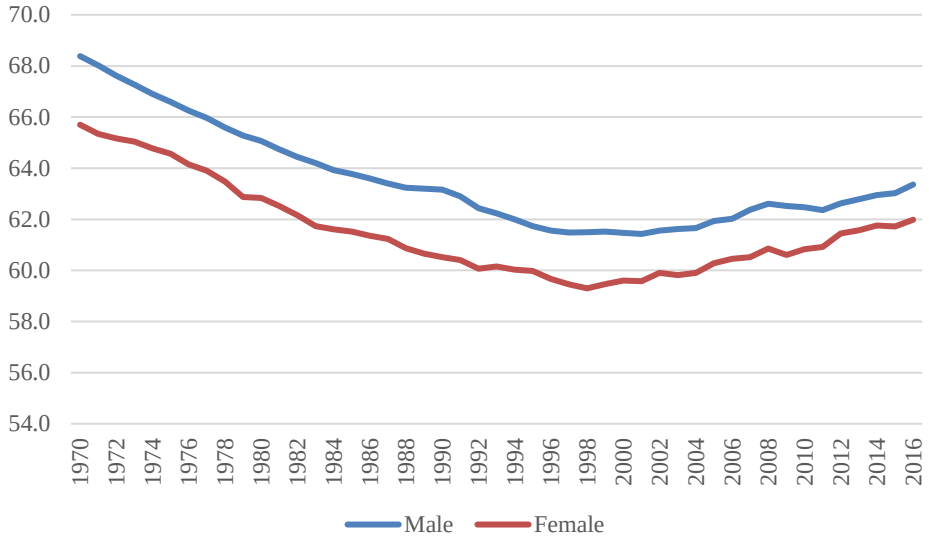
1.4 Effective age of retirement only slowly increasing and lower than 50 years ago

Furthermore, the effective retirement age has not actually increased over the past half a century. On the contrary, the trend since 1970s until 2000 has been in decreasing average retirement age for both women and men with a certain increase after the break of the century (first pressures on pension systems in a policy debate, where increasing the age of retirement has been a dominant policy tool next to a creation of a at least a partially pre-funded pension pillar) and also after the financial and economic crisis of 2010s, which were accompanied by several austerity measures, under which increasing of retirement age has been a dominant strategy.

Due to the limited increase in healthy-years expectancy as explained above, it is unlikely that later departures to pensions would become a prominent strategy to cope with aging society, but rather a complementary tool together with other policies. Indeed, living longer does not mean automatically proportional extension of the healthy years lived. In this respect, resources would have to cope with the fact that an ever increasing part of population would be in state of suboptimal health status and policy should focus on increasing the quality of life of elderly under these circumstances. Naturally, this would require higher financial resources from the state.

[22] Belgium, Denmark, Germany, Greece, Spain, France, Italy, Netherlands, Portugal, UK, non-weighted.

Graph 6: Average effective retirement age in EU, source: OECD



Since 2000, we can also observe a narrowing of the gap between male and female retirement age due to policies aiming at equalising conditions for retirement. Women still retire earlier on average nevertheless, increasing the average span of their retirement, which remains significantly longer than in the case of male population due to higher life expectancy.

Table 7: Life expectancy at birth (in years) from 1980-2015, source: Eurostat[23]

	Total					Males					Females				
	1980	1990	2000	*2010*	*2015*	1980	1990	2000	*2010*	*2015*	1980	1990	2000	*2010*	*2015*
EU-28 (1)	:	:	:	*79,9*	*80,6*	:	:	:	*76,9*	*77,9*	:	:	:	*82,8*	*83,3*
Belgium (2)	73,3	76,2	77,9	80,3	81,1	69,9	72,7	74,6	77,5	78,7	76,7	79,5	81,0	83,0	83,4
Bulgaria	71,1	71,2	71,6	73,8	74,7	68,4	68,0	68,4	70,3	71,2	73,9	74,7	75,0	77,4	78,2
Czech Republic	70,4	71,5	75,1	77,7	78,7	66,9	67,6	71,6	74,5	75,7	74,0	75,5	78,5	80,9	81,6
Denmark	74,2	74,9	76,9	79,3	80,8	71,2	72,0	74,5	77,2	78,8	77,3	77,8	79,2	81,4	82,7
Germany	73,1	75,4	78,3	80,5	80,7	69,6	72,0	75,1	78,0	78,3	76,2	78,5	81,2	83,0	83,1
Estonia (3)	69,5	69,9	71,1	76,0	78,0	64,2	64,7	65,6	70,9	73,2	74,3	74,9	76,4	80,8	82,2
Ireland (4)	:	74,8	76,6	80,8	*81,5*	:	72,1	74,0	78,5	*79,6*	:	77,7	79,2	83,1	*83,4*
Greece	75,3	77,1	78,6	80,6	81,1	73,0	74,7	75,9	78,0	78,5	77,5	79,5	81,3	83,3	83,7
Spain	75,5	76,9	79,3	82,4	83,0	72,3	73,3	75,8	79,2	80,1	78,5	80,6	82,8	85,5	85,8
France (5)	:	:	79,2	81,8	*82,4*	:	:	75,3	78,2	*79,2*	:	:	83,0	85,3	*85,5*
Croatia	:	:	:	76,7	77,5	:	:	:	73,4	74,4	:	:	:	79,9	80,5
Italy	:	77,1	79,9	82,2	82,7	:	73,8	76,9	79,5	80,3	:	80,3	82,8	84,7	84,9
Cyprus	:	:	77,7	81,5	81,8	:	:	75,4	79,2	79,9	:	:	80,1	83,9	83,7
Latvia	:	:	:	73,1	74,8	:	:	:	67,9	69,7	:	:	:	78,0	79,5
Lithuania	70,5	71,5	72,1	73,3	74,6	65,4	66,4	66,7	67,6	69,2	75,4	76,3	77,4	78,9	79,7
Luxembourg	72,8	75,7	78,0	80,8	82,4	70,0	72,4	74,6	77,9	80,0	75,6	78,7	81,3	83,5	84,7
Hungary	69,1	69,4	71,9	74,7	75,7	65,5	65,2	67,5	70,7	72,3	72,8	73,8	76,2	78,6	79,0

[23] Eurostat Mortality and Life Expectancy Statistics: http://ec.europa.eu/eurostat/statistics-explained/index.php/Mortality_and_life_expectancy_statistics

Malta	70,4	:	78,4	81,5	81,9	68,0	:	76,2	79,3	79,7	72,8	:	80,3	83,6	84,0
Netherlands	:	77,1	78,2	81,0	81,6	:	73,8	75,6	78,9	79,9	:	80,2	80,7	83,0	83,2
Austria	72,7	75,8	78,3	80,7	81,3	69,0	72,3	75,2	77,8	78,8	76,1	79,0	81,2	83,5	83,7
Poland ([6])	:	70,7	73,8	76,4	77,5	:	66,3	69,6	72,2	73,5	:	75,3	78,0	80,7	81,6
Portugal ([7])	71,5	74,1	76,8	80,1	*81,3*	67,9	70,6	73,3	76,8	*78,1*	74,9	77,5	80,4	83,2	*84,3*
Romania ([7])	69,2	69,9	71,2	73,7	*75,0*	66,6	66,7	67,7	70,0	*71,5*	71,9	73,1	74,8	77,7	*78,7*
Slovenia	:	73,9	76,2	79,8	80,9	:	69,8	72,2	76,4	77,8	:	77,8	79,9	83,1	83,9
Slovakia	70,4	71,1	73,3	75,6	76,7	66,7	66,7	69,2	71,8	73,1	74,4	75,7	77,5	79,3	80,2
Finland	73,7	75,1	77,8	80,2	81,6	69,2	71,0	74,2	76,9	78,7	78,0	79,0	81,2	83,5	84,4
Sweden	75,8	77,7	79,8	81,6	82,2	72,8	74,8	77,4	79,6	80,4	79,0	80,5	82,0	83,6	84,1
United Kingdom ([7])	:	:	78,0	80,6	*81,0*	:	:	75,5	78,6	*79,2*	:	:	80,3	82,6	*82,8*

1.5 EU Population structure

The share of older persons in the total population will increase significantly in the coming decades, as a greater proportion of the post-war baby-boom generation reaches retirement. This will, in turn, lead to an increased burden on those of working age to provide for the social expenditure required by the ageing population for a range of related services.

The population of the EU-28 on 1 January 2017 was estimated at 511.5 million. Young people (0 to 14 years old) made up 15.6 % of the EU-28's population (see table 1), while persons considered to be of working age (15 to 64 years old) accounted for 64.9 % of the population. Older persons (aged 65 or over) had a 19.4 % share (an increase of 0.2 percentage points compared with the previous year and an increase of 2.4 percentage points compared with 10 years earlier).

Across the EU Member States, the highest share of young people in the total population in 2017 was observed in Ireland (21.1 %), while the lowest share was recorded in Germany (13.4 %). Regarding the share of persons aged 65 or older in the total population, Italy (22.3 %), Greece (21.5 %) and Germany (21.2 %) had the highest shares, while Ireland had the lowest share (13.5 %).[24]

Table 8: Population structure and ageing in the EU28 in 2017 by major age groups (in percentage of total population), source: Eurostat

---	*0-14 years old*	*15-64 years old*	*65 years old and over*
EU-28	*15,6*	*64,9*	*19,4*
Belgium	17,0	64,6	18,5
Bulgaria	14,1	65,2	20,7
Czech Republic	15,6	65,7	18,8
Denmark	16,7	64,3	19,1
Germany	13,4	65,4	21,2
Estonia	16,2	64,4	19,3
Ireland	21,1	65,4	13,5
Greece	14,4	64,0	21,5
Spain	15,1	66,0	19,0

[24] Source: Eurostat.

France	*18,3*	*62,5*	*19,2*
Croatia	14,5	65,8	19,6
Italy	13,5	64,1	22,3
Cyprus	16,3	68,1	15,6
Latvia	15,6	64,6	19,9
Lithuania	14,8	65,9	19,3
Luxembourg	16,2	69,5	14,2
Hungary	14,5	66,8	18,7
Malta	14,1	67,0	18,8
Netherlands	16,3	65,2	18,5
Austria	14,4	67,1	18,5
Poland	15,1	68,3	16,5
Portugal	14,0	64,9	21,1
Romania	15,6	66,6	17,8
Slovenia	14,9	66,2	18,9
Slovakia	15,5	69,5	15,0
Finland	16,2	62,8	20,9
Sweden	17,6	62,6	19,8
United Kingdom	17,8	64,1	18,1

1.6 EU Median age

The median age of the EU's population was little under 42.8 years on 1 January 2017, which means that half of the EU's population was older than 42.8 years, while half was younger. Across the EU member states, the lowest median age was recorded in Ireland at 36.9 years and in Germany and Italy, both at 45.9 years, showing relatively old population structures in these two member states.

Interestingly, the median age in some candidate countries for EU membership is consistently lower. The median age in Iceland was in 2017 at 36.3 years. Also in Albania (35.6 years) and Turkey (31.4 years) the median ages were lower than in any member state of the EU. Albania as a potential future EU candidate has gone through a significant demographic change as it experienced the biggest increase in the median age over the past 10 years by 6.7 years, from 28.9 years in 2007 to 35.6 in 2017.

The median age in the EU increased since 2002 by 4.2 years (on average, by 0.3 years per year), rising from 38.6 years to 42.8 years in 2017. Between 2007 and 2017 the median age increased in all of the EU Member States, rising by 4.0 or more years in Romania, Portugal, Greece, Spain, and Lithuania, [25] which have all gone through non-negligible economic crisis since 2008, partially leading to less births and also some emigration of working-age citizens.

The median age increases significantly in general terms in Southern-European countries as these member states struggle with social reform and slow growth since 2008. Economically declining EU states and regions are further weakened through internal EU-emigration, worsening the dependency ratio and potentially showing an asymmetrical impact of aging on public policies and budgets, where Northern-European countries could be potentially better equipped to such changes as their fiscal situation and economic growth in general terms exceeds that of Southern Europe.

Table 9: Development of median age population in 2002-2017 (in years), source: Eurostat

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
EU-28	38,6	38,9	39,2	39,5	39,8	40,1	40,4	40,7	41,0	41,3	41,6	41,9	42,2	42,4	42,6	42,8

1.7 EU Population projection

The population projections for the next sixty years show consistently a trend towards an increasing of the dependence ratio. While the ratio of children (0-14 years) remains consistently unchanged, active population 15-64 should decrease by 10 percentage points between today and 2080.

Also the structure of elderly would change, as the ratio of population between 65 and 79 years would not increase excessively, the part of population older than 80 should nevertheless more than double over the next 60 years.

[25] Source: Eurostat.

This is again a clear sign that the costs related to aging will be most certainly growing faster than the ratio of elderly as health costs as well as other adjustment policies (such as barrier-free infrastructure) would have to rise more than the increase in the share of elderly on the general population.

Table 10: Population structure projection by major age groups, EU-28, years 2017-2080 (in percentage of total population), source: Eurostat

	2017	2020	2030	2040	2050	2060	2070	2080
0–14 years	15,6	15,5	14,9	14,7	14,8	14,9	15,0	15,2
15–64 years	65,0	64,2	61,2	58,3	56,7	56,1	56,2	55,6
65–79 years	14,0	14,5	16,7	17,9	17,4	16,9	16,3	16,4
80+ years	5,5	5,9	7,2	9,1	11,1	12,1	12,5	12,7

Beyond the debate on sustainability of pensions, there would be also a shift in purchase power if measures are taken to ensure appropriate income levels of elderly form the public. This shift of purchase power is likely to influence the structure of the economy.

2. Main areas of political action in the EU and the Czech Republic

Towards a prosperous and cohesive long-life society leads the way through a comprehensive approach and interdependent public policies. Preparing for aging society is primarily a matter of income – sufficient incomes, households and the state budget are a prerequisite for its successful management. Preparing for aging society should be seen as a topical social theme that can no longer be reduced to the question of the pension system.

Demographic developments require far broader changes in the area of state administration, affordable housing, financing and quality of social and health care, lifelong learning, employment, awarding and remuneration of work in social services, protection of seniors' rights and the functioning of the public space (especially in the context of its barrier-free). Last but not least, preparation for aging also includes creating conditions for personal activity in old age, civic engagement and volunteering, or the development of quality interpersonal and family relationships in general.

Demographic change in Europe is seen as a challenge for many policy areas: from family policy; through education, lifelong learning and labour market policy; to social protection systems, and pensions, health and long-term care in particular. As many of these areas involve a significant share of public finance expenditure, population ageing is also subject to examination from the perspective of fiscal sustainability.

2.1 Pension system

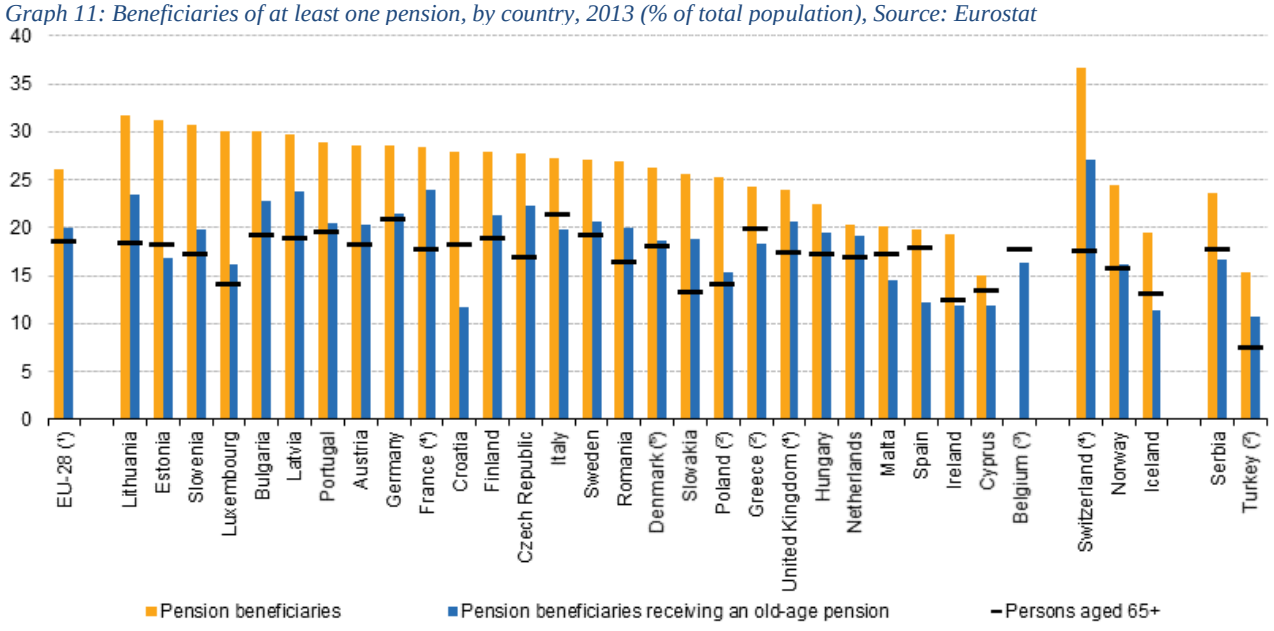
The pension system in Europe varies from purely pay as you go (PAYG) systems to those heavily dependent on funded pillar. Pension systems in Europe in the past thirty years have been under significant pressure to move more towards funded pillars with a smaller or bigger participation of the state and his regulatory powers. Progressivity of the system also varies significantly from highly digressive pensions in Central and Eastern Europe to sometimes strongly progressive ones in Western and Southern Europe. The funded pillar being believed to solve demographical issues has nevertheless shown its theoretical.

The PAYG state-administered and often subsidised system has shown its resilience and role in ensuring minimum pension standards for all pensioners. Also due to the demographic aging, the number of pensioners will increase significantly in all member states and under moderate GDP growth results would lead to an increase of GDP share devoted to the pension chapter. This has created speculations on the sustainability of

European pension schemes. It is clear that costs related to pensions and related services would increase, but if pensions remain a major policy priority for many governments due to an actively voting population among pensioners, it is unlikely that they could lead to a collapse of the system.

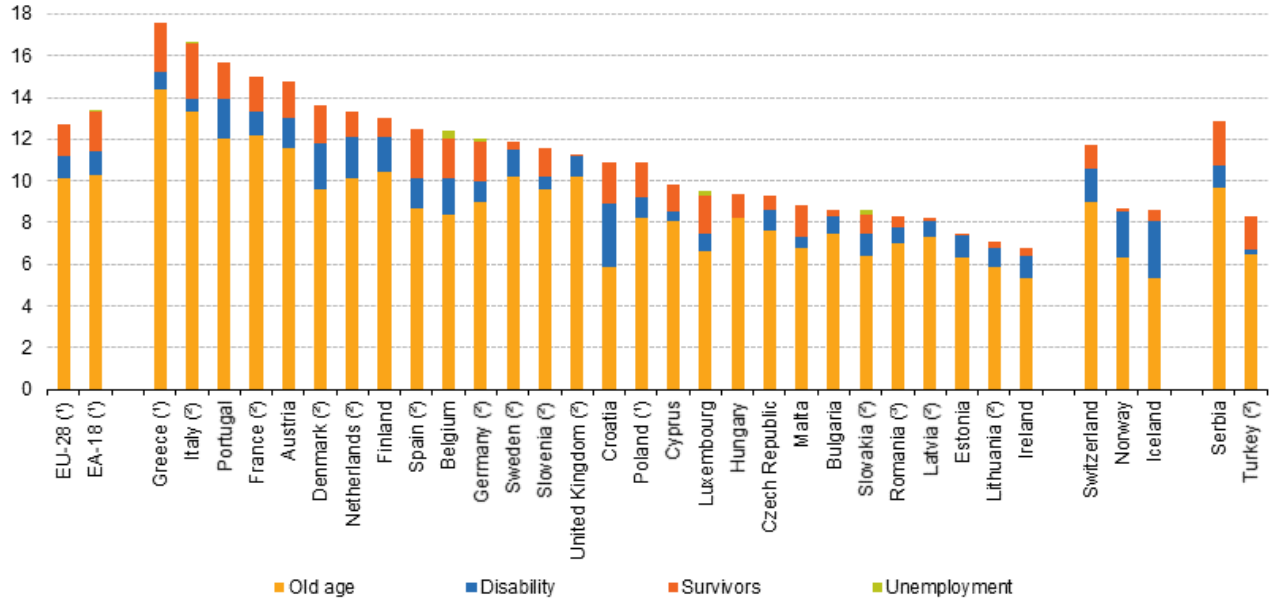
Although the share of population older than 65 years is rather consistent in the EU, the conditions for pension eligibility vary significantly. Old-age pension ratio varies from 11.7% in Croatia to 24.0% in France (with an EU average at 20.0%, see graph below) even though the ratio of 65+ by far not the highest in France or the lowest in Croatia. The degree of old-age pensioners is therefore not always consistent indicator of the old-age pension eligibility, mostly as national systems tend to have very different conditions on early retirement, specifically in France and elsewhere linked to major sectoral employees (generally public services).

Graph 11: Beneficiaries of at least one pension, by country, 2013 (% of total population), Source: Eurostat



Pension expenditures as a ratio on GDP vary more significantly, ranging in old-age pensions from 5.3% in Ireland to 14.4% in Greece with an EU-wide average at 10.1%. The ratio tends to be smaller in new member states from Central and Eastern Europe and larger in Southern Europe (see graph below). It is alarming that these countries still cope with a lower economic growth and higher indebtedness, making also in this comparison Southern member states more vulnerable to demographic change in general and population aging in particular. The combination of low growth levels, rather generous average pensions and large ratio of 65+ population is the most consistent sign of potential unsustainability. Reform of these pension systems nevertheless show sometimes very

Graph 12: Expenditure on pensions by function, 2013 (% of GDP), Source: Eurostat



In the past decade starting roughly in 1990s a clear tendency towards a pre-funded pension system was visible throughout Europe. Results of these reforms were limited and therefore their contribution to a larger sustainability of pension systems in Europe is doubtful also for purely economic and theoretical reasons.[26] For a sustainable pension system it seems most probable that an efficient system is often based on a strong pay-as-you-go central pillar with others (e.g. voluntary pre-funded or vocational) having only complementary role.

2.2 Health care

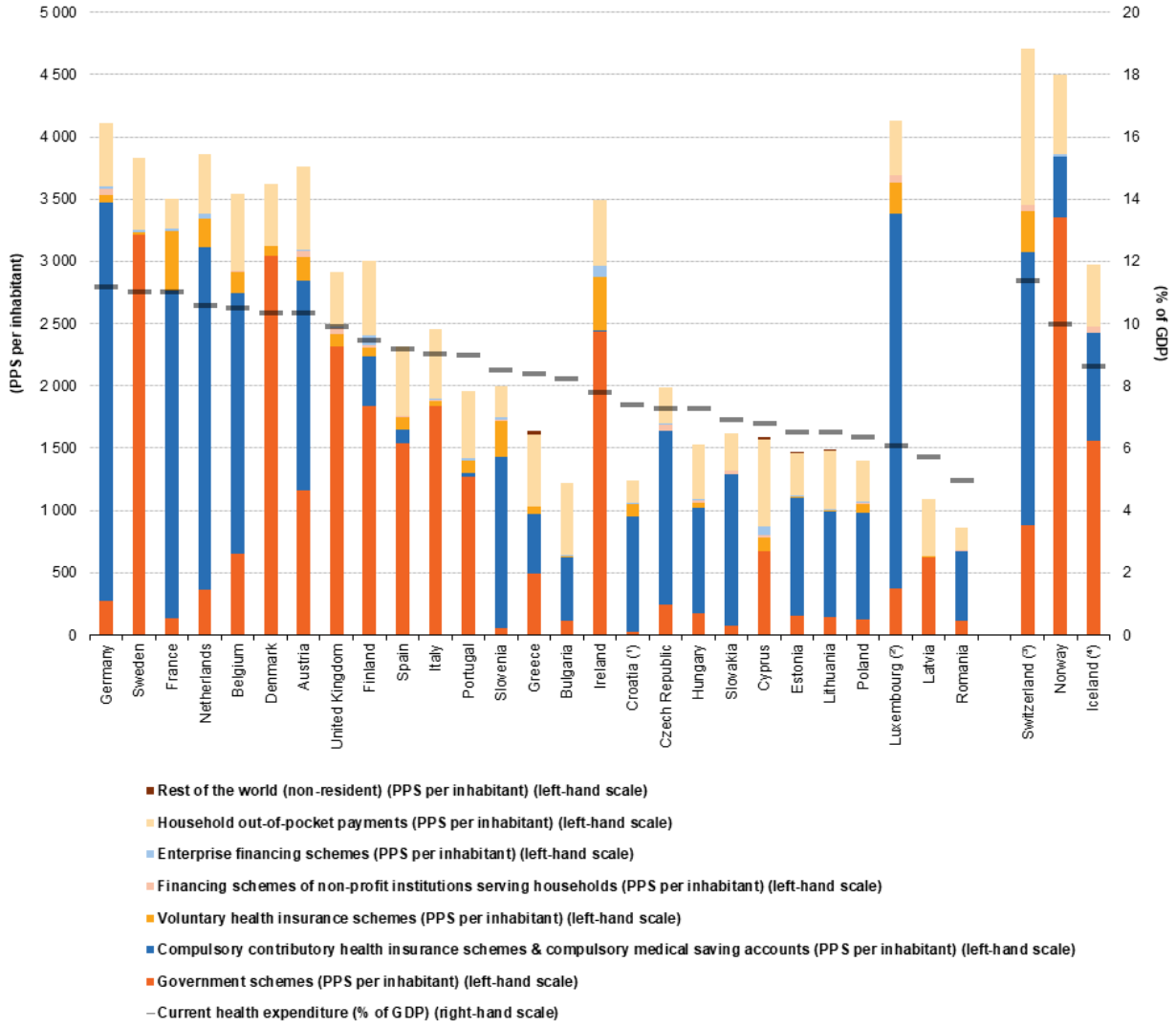
As discussed above, population gets older, people are living longer, but the length of healthy life does not expand as fast. Health care system is therefore a crucial component of any adjustment to an aging society. Also here the system and expenditures vary significantly between EU member states (see graph below).

Taking an experience from the Czech case, which covers in a public scheme the whole population and considering the growing importance of cost-effective measures, it is possible to conclude that there are clearly very strong advantages of a robust and widely universal system. Individualisation of insurances leads to a creation of high-end products and top-notch individual results (see American insurance system before

[26] Barr, Nicholas (2000), 'Reforming Pensions: Myths, Truths, and Policy Choices', Working Paper WP/00/139, Washington DC: International Monetary Fund, 2000.

Obamacare), but increases the overall costs, which are not invested most effectively in terms of results on length and quality of life, but are allocated according to the category of insurance. Those insured with more comprehensive schemes have better access to health care independently of the efficiency of resources being allocated to their specific treatment. In this respect, the Czech universal system based on public insurances, which are funded from direct health-care contributions devised from work income together with state-based contributions for the young, the elderly and unemployed, as well as with a public-managed hospitals and centres, shows to be in perspective of result-oriented cost-efficiency, an interesting model also for countries preparing for aging of the society.

Graph 13: Current health care expenditure, 2015, Source: Eurostat

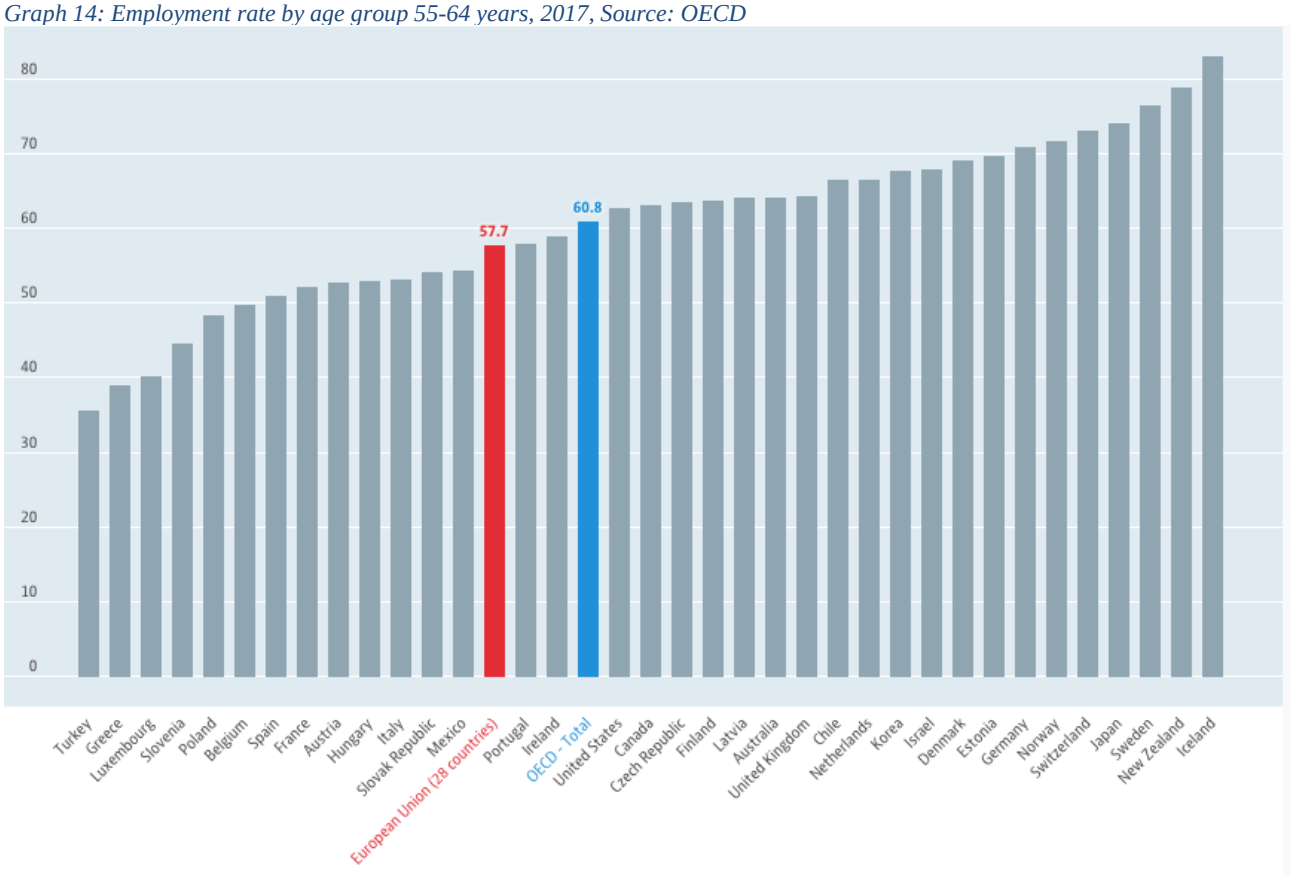


2.3 Employment

The old-age dependency ratio for the EU was 29.9 % on 1 January 2017, which means that there were just over three persons of working age for every person aged 65 or over. The old-age dependency ratio ranged across the EU member states from a low of 20.5 % in Luxembourg and 20.7 % in Ireland to highs of 34.8 % in Italy, 33.6 % in Greece, 33.2 % in Finland, thus with approximately three working age people for every person aged 65 or over.[27]

The situation is extremely challenging in terms of ensuring high employment not for elderly or population above 65 years, but for the socio-demographic grouping of pre-pensioners. The constant changes in the labour market together with higher skill requirements linked with many digital-related jobs, creates an important pressure on the employment level of pre-pensioners. Increasing active labour market policies in this area should also be one of the most important strategies for the aging society but focused mainly on pre-pensioners.

Graph 14: Employment rate by age group 55-64 years, 2017, Source: OECD



[27] Source: Eurostat and OECD: http://www.oecd.org/employment/ageingandemploymentpolicies.htm

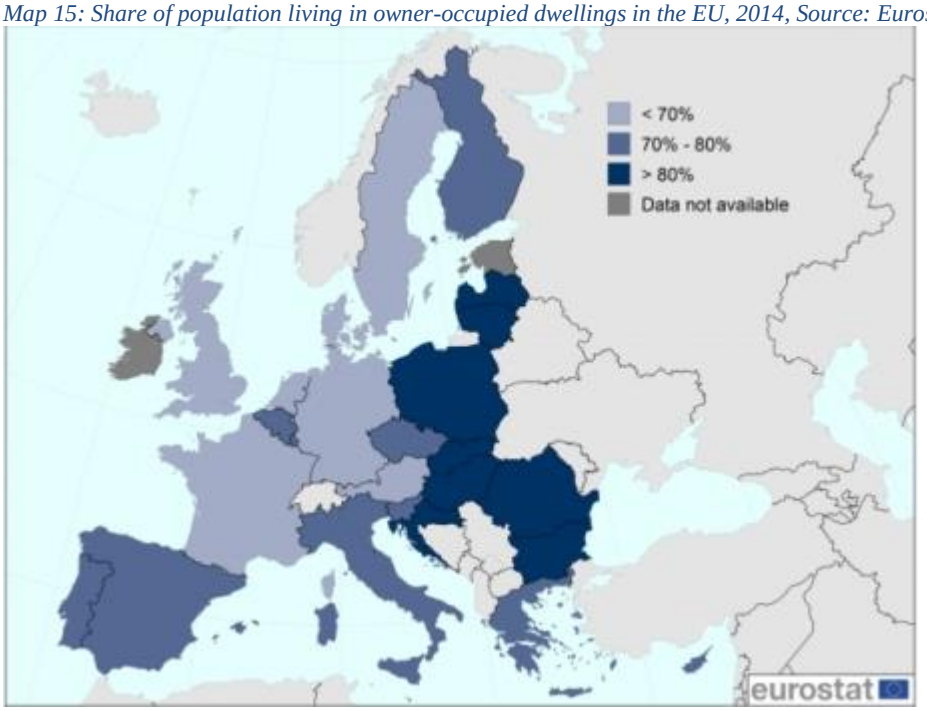
2.4 Housing

Housing policy has not been sufficiently analysed in connection with demographic change and aging. The clear tendency Europe-wide for smaller households increases naturally the demand for housing more than would correspond to the population increase. This is not fully reflected in European national strategies as the increasing demand for housing leads to an increase in prices and has an important impact therefore on the expenditure and purchase power of pensioners, but also the population at large. In general terms, the ratio of expenditure devoted for housing is increasing in Europe and the situation is very serious in urban areas of the Czech Republic. Social and public housing projects have been limited also due to unclear legal instruments for state aid and deregulation of real estate in the past decades.

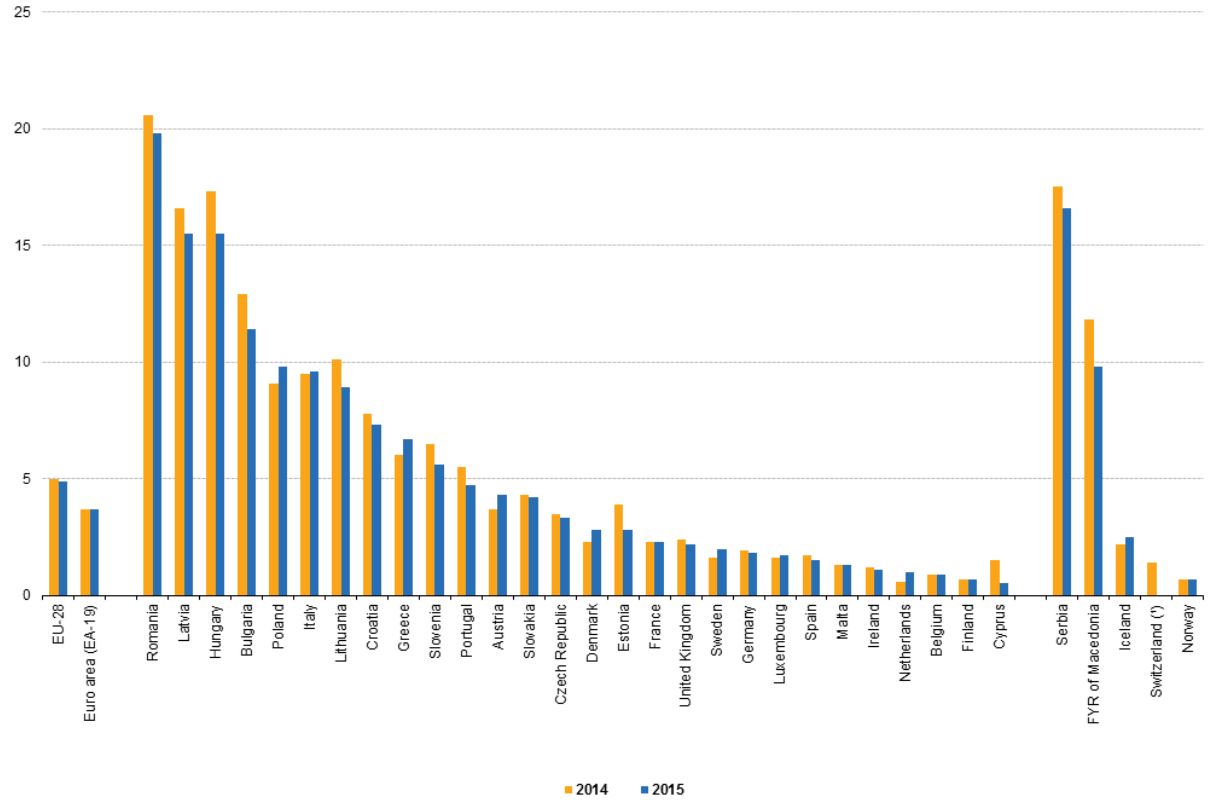
Housing policy has nevertheless an extremely important impact on the well-being of citizens and namely of pensioners. There is a clear tendency in Europe on market-based instruments to support housing policy, such as subsidies for low-income groups. This significant focus on demand driven instruments has discussable results as there is an asymmetry with tools increasing offer (e.g. new housing) and leads to relatively high real estate prices in Europe with an important impact on quality of life and purchase power of low-income groups, but also of old-age pensioners.

In new member states, there is historically a bigger tendency for owner-occupied dwellings when compared to Western Europe (see map below). Very often, high degree of owner-occupied dwellings is nevertheless linked with not sufficiently available rent-based housing. This leads to a large inflexibility of real estate markets and an inconsistency in housing and as a result paradoxically very often high sever housing deprivation, especially among groups at poverty risk (see graph below).

Map 15: Share of population living in owner-occupied dwellings in the EU, 2014, Source: Eurostat



Graph 16: Severe housing deprivation, 2014 and 2015 (% of population), Source: Eurostat



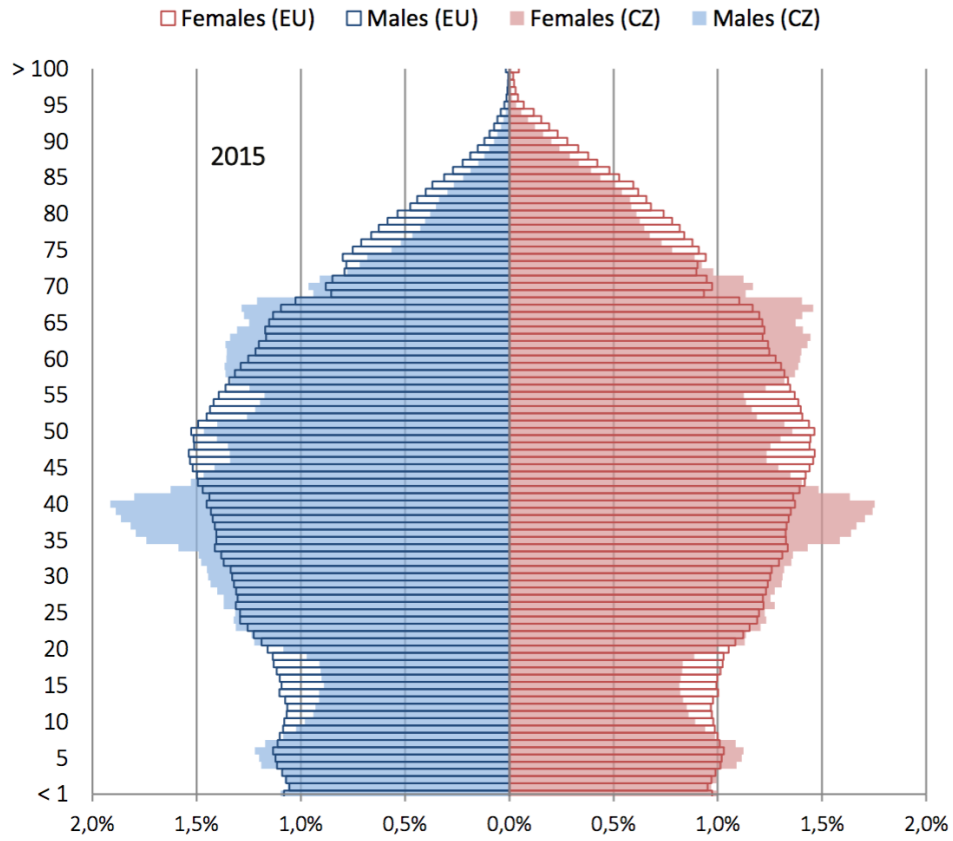
2.5 Policy specifics of the Czech Republic

The Czech Republic does not diverge much from an average structure of the EU and faces very similar future challenges. The expenditure on pensions, nevertheless, is significantly under the European average despite the fact that a universal PAYG system ensures a very effective protection from relative poverty (the robust pension system is one of the reasons why Czechia is among the countries with the lowest relative poverty worldwide as a quasi-totality the pensioners are covered in a way, which holds their income above the poverty line.

The demographic structure of the Czech society does not diverge much from the one in the EU. Czechia still has some specifics. One of them being a relatively lower prominence of baby boomer than in the rest of the EU, especially in the West. Secondly a phenomenon of a large baby boom in 1970s and 1980s (so called "Husák's Children" named after the then President of Czechoslovakia Husák and his strategy to increase fertility through public intervention) and subsequently an important drop in fertility rates in 1990s due to the economic situation and dismantling of the day care infrastructure. Challenges for aging remain nevertheless very similar to the EU as a whole with a certain delay (it would be the generations of 1970s and 1980s departure to pensions, which will cause similar shocks as baby boomers retiring in Western Europe).

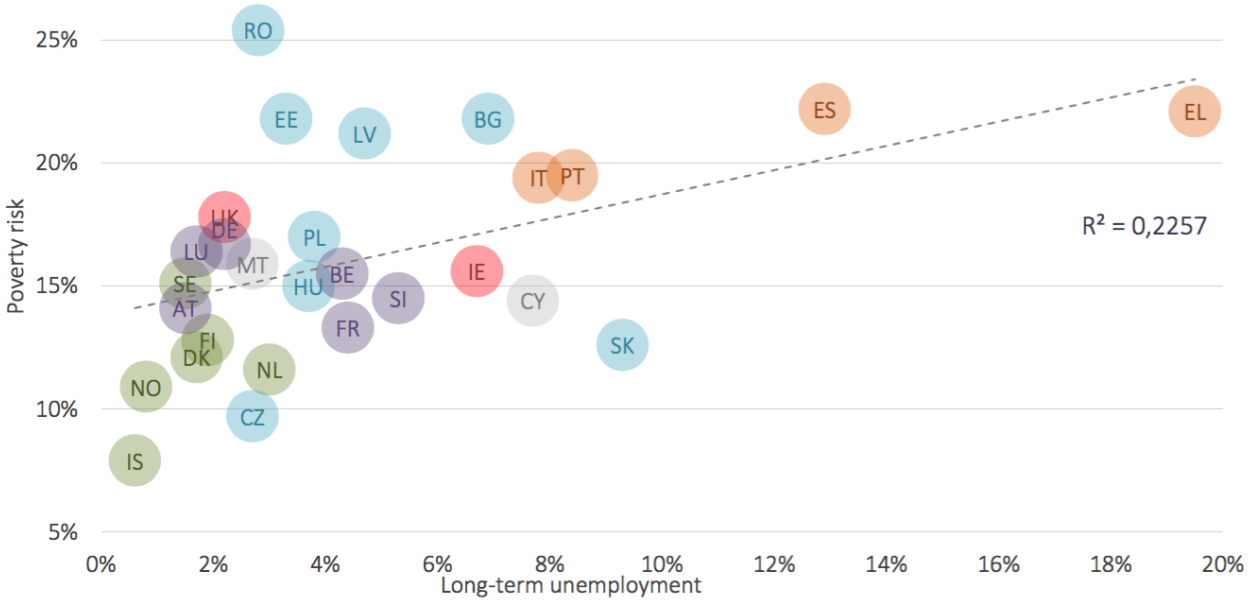
At present, there are 1.9 million senior citizens over the age of 65 in the Czech Republic. By 2030, it will be 2.5 million, or about a quarter, and by 3.2 million in 2050, which will be more than a third of all people living in the Czech Republic (the middle version of the CZSO demographic forecast). At the same time, by the year 2050, the number of people aged 85 and older will trip to nearly 0.6 million, accounting for about 6% of the population.

Graph 17: Demographic structure in 2015 – comparison between the Czech Republic and the EU average, Source: Czech Government Office – comparative analysis of the social pillar



In general terms, the Czech social system records very good results in terms of classical policy output measures, such as relative poverty risk and long-term unemployment (see graph below), where the Czech Republic is among the most comprehensive social systems of Scandinavia, but with significantly less resources devoted to social policy not just in absolute terms, but also as part of GDP.

Graph 18: Classification of countries according to basic quantities of performance of the social system and typology of social systems, Source: Czech Government Office – comparative analysis of the social pillar[28]



2.6 Long-term care in the Czech Republic

Aging population together with longer years lived with health limitations, has created in the Czech Republic a large demand for long-term care for the elderly. State institutions of course provide a rather universal coverage, but the aging population creates an ever increasing demand for such services. One of the aspects that the Czech Republic has implemented in order to cope with the impact of aging on society was a concept of long-term care for family members or partners of a person in need of long-term care through state assistance. This policy was designed mainly to alleviate pressure mostly from pre-pension women taking care of their parents among which a significant drop in employment is registered when crossing 50 years. Under the scheme, there are clear rules and insurances that such person could come back to work and would therefore not fall out the labour market because of a need to provide long-term care to family members or partners. The programme will take effect this year (June 2018), but is expected to have a significant impact on the way, how long-term care in the context of aging is ensured from the state.

[28] Colours correspond to Esping-Andersen's typology from 2013.

3. Conclusions and executive summary

Aging policy is a horizontal topic, which is dealt in the EU mostly still on a national level with EU institutions or OECD playing only a consultative or recommending role. It is obvious that population in Europe is aging and that dependence ratios would become critically low, putting a strain on public finance. Immigration would probably remain an important factor in shaping European labour market and society, but it is not to be excluded that after a significant migration crisis of 2015, the tendency will be lower and EU will have to cope with aging population internally.

Furthermore, the relative low degree of healthy year increase will create further pressures on health system and on the system of long-term care. Mostly Southern European states are under larger pressure due to faster aging and rather large pension expenditures combined with low economic growth and rather generous individual pensions. Effective age of retirement in Europe has been increasing slightly in the past 20 years, but is significantly lower than 50 years ago. The pace by which individual member states get older varies significantly, but there is a clearly a trend of convergence between member states in values such as median age.

Population projections clearly indicate that without immigration, European population will decline significantly in the next decades putting further pressure on dependency ratio and on the European economy. Pension systems remain in some member states very important in volume, but in most states still very manageable, stable and sustainable. Health care systems and health expenditures vary, but universal systems have a tendency to be cost-effective and result-oriented. Employment strategies should focus on pre-pensioners (55 to 64 years) as the probable rate of activation of older ones will remain limited due to a relatively low increase in health years lived and therefore relatively limited availability for the labour market when compared to the general life expectancy.

Housing should play a bigger role in ensuring good conditions for ageing population. The Czech Republic remains a country rather similar in social structure to the EU, with some specifics, including a rather efficient social systems oriented on relative low poverty rate (due mainly to the robustness of the PAYG pension system) and low unemployment despite low social expenditure when compared with other member states. One of the aspects, the Czech Republic has been active in the past years in terms of a concrete adjustment to ageing society was creation of an insurance-based system for long-term care for family members or partners (mostly oriented towards the elderly).

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POLICY SUGGESTIONS - PART ONE

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Contents

1. Measure 1: Unified Taxes and Fees Collection System

After the Third Plenary Session of the 19th CPC Central Committee, the CPC Central Committee issued the "Deepening Party and State Institutional Reform Plan". It mentioned that “In order to reduce the cost of collecting, rationalize the relationship of duties, improve the efficiency of collection and management, and provide taxpayers with high quality and efficient services, the sub-national taxation agencies will be merged and responsible for the taxation and non-tax revenue collection and management in the region. In order to improve the efficiency of social insurance fund collection and management, various social insurance premiums such as basic old-age insurance premiums, basic medical insurance premiums, and unemployment insurance premiums are paid to the taxation agencies for unified collection.” Then in July, the “ Reform Plan of National Tax and Local Tax Collection and Management System” clarified that from January 1, 2019, basic pension insurance fees, basic medical insurance fees, unemployment insurance fees, work injury insurance fees, and maternity insurance fees will be collected by the tax authorities.

In the past, the department responsible for social security fees was determined by the local authorities at the provincial level. It could be a tax department or a social security department. There were large differences among the regions, and the abilities to collect and manage the fees were not strong enough to meet the needs. The loss of social security contribution is mainly reflected in two aspects. The first is the low compliance rate. According to the payment rate of social security insurance for urban employees issued by the Ministry of Human Resources and Social Security, the contribution rate in 2006 was 90%, and in 2015 it was 80.3%. In the decade, there was even a decrease of 10 percentage points.[29] In 2014, 1/5 employees in China interrupted capture to expend.[30] The second is the unclear contribution base. The documents promulgated by the State Council basically set 60% of the average salary of urban workers in the previous year as the lower limit of the contribution base of pension insurance for urban employees. However, even in economically developed areas like Beijing, when the contribution base of pension insurance for urban employees is calculated, the contribution base is further reduced to 40% of the average salary of urban workers in the previous year. In addition, the enthusiasm of small and medium enterprises for payment is not high, and state-owned enterprises also have deficits or arrears.

After social insurance premiums are collected by the tax authorities and the unified tax and levy system has been formed, the capability of collection and administration will be improved significantly, which is expected to fundamentally solve the two big problems—low payment rate and untrue payment base. It is assumed that after the unified collection of social insurance premiums by tax authorities, the compliance rate is 100%, and the average payment rate reaches 20% of the system design. Based on this, the fund revenues, expenditures and balance of basic pension insurance for urban employees in 2018-2050 are predicted in Figure 1-1.

The figure compares the revenues collected in the current year before and after the reform of tax and fees collection system. It can be seen that after the reform the revenues collected in 2050 will reach RMB 27.93 trillion, with 5.5 trillion more than that before the reform. The figure -2 shows that after levy reform, the balance of pension for urban employees will be positive until 2026. And the balance in 2050 is RMB -23.44 trillion, accounting for 5.71% of GDP, which is obvious lower than RMB -29 trillion balance and 7.07% before the levy reform. There will be more obvious impacts which the reform has on the accumulated balance. The accumulated balance of pension for urban employees will be positive until 2032. And the

[29] See “China Social Insurance Development Annual Report 2015”, September, 2016.

[30] See “China Social Insurance Development Annual Report 2014”, June, 2015.

accumulated balance in 2050will be RMB -212 trillion (114 trillion less than that before reform), accounting for 51.58% of GDP (28% lower than that before reform).

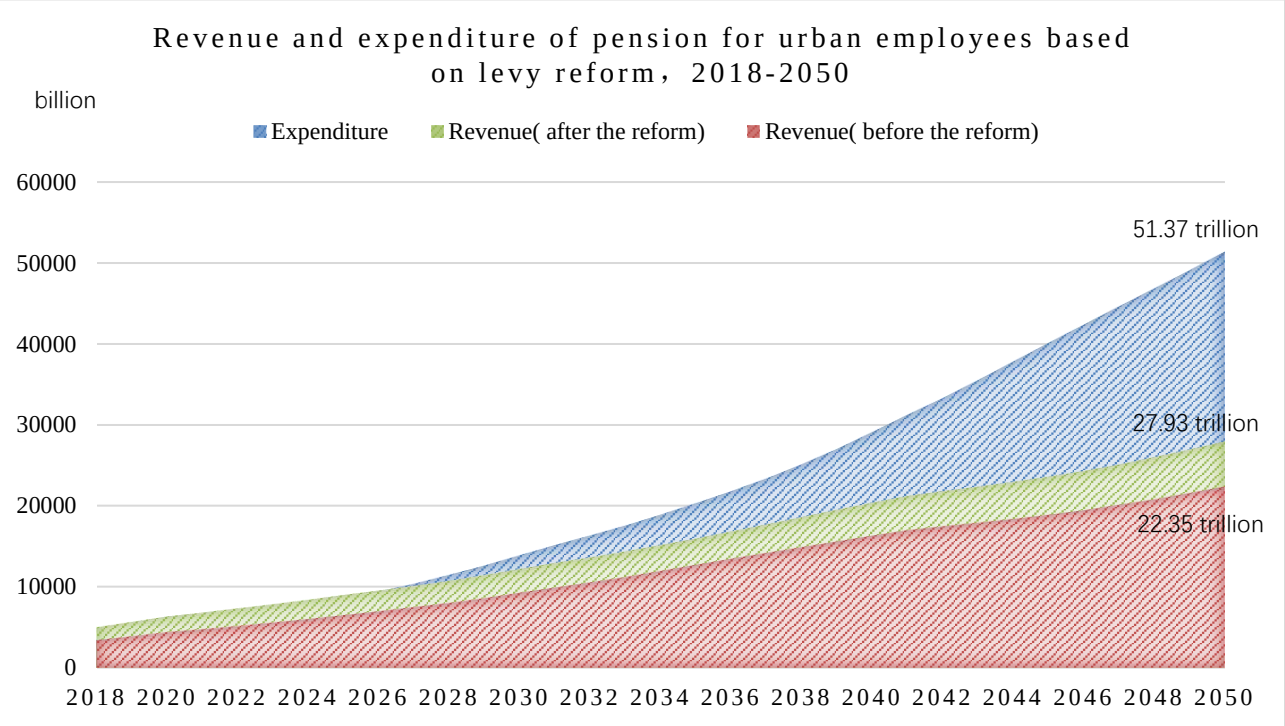
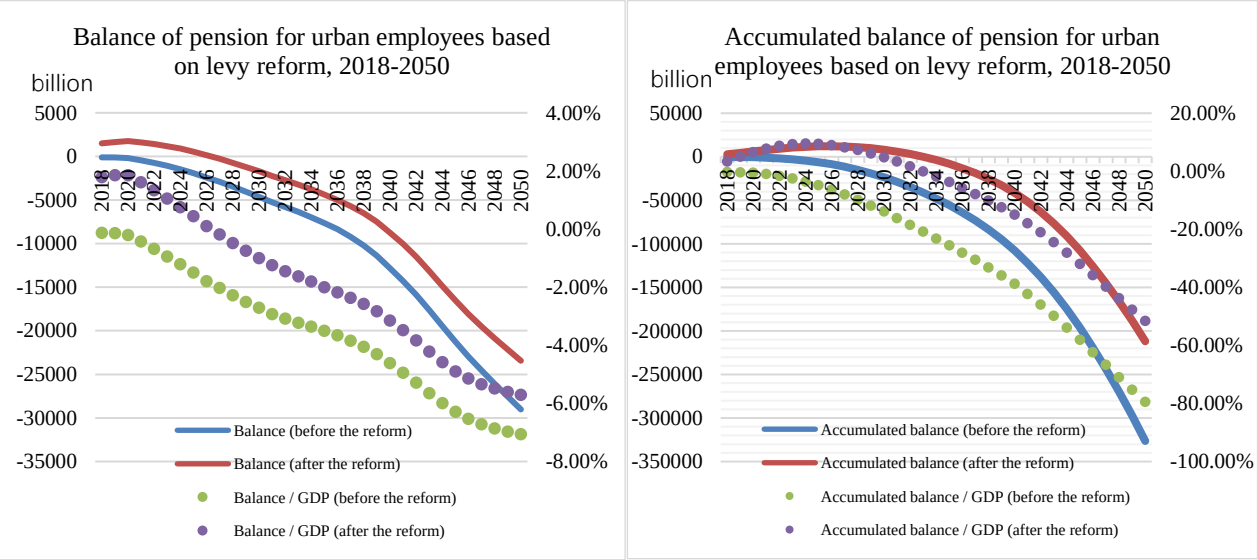


Figure 1-1 Revenue and expenditure of pension for urban employees based on levy reform，2018-2050



Figuer 1-2 Balance of pension for urban employees based on levy reform, 2018-2050

Although the reform of the collection and management system can effectively narrow the financial gap of the social security fund, once the policy decision is announced, the reaction of the markert is very significant. Since the payment base is not a universal problem, it is likely to increase the burden on enterprises and the implementation of the policy will encounter resistance. In the face of this situation, the reforms should be smooth and systematic, and the suggestions are made as follow:

First, regarding national pooling of basic pension insurance as the goal at institutional level. The national pooling of the basic pension insurance is the goal that the Party Central Committee has already determined, and it is also the correct decision in line with the nature of the basic pension insurance system. The root cause of the unclear contribution base is regional separation. The fundamental solution to the problem is the national pooling.

Second, the most worrying issue in society related to the form is the burden on enterprises, which can be gradually resolved through financial subsidies. In 2016, the number of subsidies reached 651.1 billion yuan. The fund balance (4 trillion yuan) almost came from the sum of fiscal subsidies over the years, or the cumulative balance is the result of financial subsidies from the governments. Under the premise of social pooling, if it is clear that the amount of financial subsidies will continue to increase according to the growth rate of previous years, it can lift the concerns of the public. In fact, recent years is the retirement peak period of population born in the late 1950s and early 1960s. Due to the conversion cost of pension insurance system, the state financial subsidies must be increased.

Third, clarifying the reasons for collection and determining the amount of collection. At present, China's basic pension insurance adopts a social pooling and personal account system. In theory, the system is embodied in the combination of pay-as-you-go and full-accumulation. However, in practice, the two parts of funds are not managed separately, but are managed together. This led to the misappropriation of funds from individual accounts in some provinces, resulting in "empty accounts". The government should take advantage of the timing of the reform of the collection system to achieve the separation of social pooling and individual accounts, and clarify the pay-as-you-go system of basic pension insurance. The basic pension insurance should still be paid jointly by the employer and the employee, and the collected funds are used to pay the retired people. Therefore, the funds collected in the current period plus the financial subsidies should be equal to the total amount of pensions paid to retirees.

Fourth, clarifying the relationship between contribution base and contribution rate. The total amount of pensions in the whole society minus financial subsidies will be equal to the amount of funds that should be collected from the working generation. In the case that the amount of funds to be collected has been fixed, the contribution base and the contribution rate have a trade-off relationship. A large base result in a low rate, and a small base result in a high rate. Now, China's nominal contribution rate is very high. Once the problem of unclear contribution base is resolved, the contribution rate can be truly reduced.

Fifth, clarifying the relationship between the contribution base and the benefits. On the basis of determining the contribution base and contribution rate, it is necessary to further improve the benefits calculation method, appropriately increase the proportion of individual contributions in the benefits calculation formula and strengthen the linkage between contribution and benefits. When the public can understand and recognize the system concept of "more contribution detemining more benefits", the enthusiasm for contribution and the system compliance rate will be significantly improved.

Sixth, using preferential policies to achieve policy transitions. Through the above methods, the national unified contribution base and the national unified contribution rate can be determined. If some regions and small and medium-sized enterprises have a large gap with the above standards, it is recommended to adopt preferential policies for three to five years to gradually meet the requirements of unified standards. After understanding the system concept of "more contribution determining more benefits", the employees will promote the employer to speed up the transition period for their own future interests.

2. Measure 2: Improving retirement system

In 2013, the "Decision of the Central Committee of the Communist Party of China on Several Major Issues Concerning Comprehensively Deepening Reform" pointed out: Study and formulate the scheme of progressively raising the retirement age. Then, the Ministry of Human Resources and Social Security stated that the scheme of progressively raising the retirement age will be open to the public in 2016 and will be officially launched in 2017. Five years after the launch of the program, it will be implemented gradually. However, due to various factors, the plan has not yet been implemented.

The main reason for domestic scholars to study the issue of delayed retirement is the sustainability of pensions. In general, China's pension system for urban employees is still a pay-as-you-go system. From the current perspective, the pensions are balanced, and there are balances. However, from the perspective of development trends, the problem is more serious. According to estimates, the number of basic pension insurance contributors will decline after 2030, while retirees continue to grow. If not to change the retirement age, China will have a dependency ratio of 1:1 in 2050. For the pay-as-you-go pension system, if not to change pension system, there are three means to deal with population aging. The first is to increase the contribution rate. China's contribution rate is already high, and there is not much room for increase. The second is to reduce the benefits of retirees. The benefits of retired employees in China is not high, and there is not much room for reducing the replacement rate. The third is to delay retirement. This is also the usual way for developed countries' pay-as-you-go pension system to address the aging crisis, and it is also the most feasible reform path in China. According to the design, women will be delayed by 1 year every 3 years, and men will be extended by 1 year every 6 years, and eventually reach the legal retirement age of 65. This means that for those who retired at the age of 60, their payment period will increase by 5 years while the treatment period will be reduce by 5 years. This is beneficial for alleviating the pressure on pension funds. The incremental delaying retirement age and flexible retirement system have always been the hotspots in the field of social security. Scholars generally believe that China's retirement age is significantly lower than the international average. In the context of per capita life expectancy increasing and population aging, delayed retirement is an inevitable trend.

In order to visualize the effect of delayed retirement schemes on pension sustainability. Based on the implementation of reformed taxes and fees collection system and the delaying retirement policy above, it is assumed that incremental delaying retirement policy will come into force in 2022. It means increasing 1 year old every four years from the current hypothesis of social average retirement age 55, that is, the retirement will get delayed three months per year, until the end of 2050. Meanwhile the average replacement rate has also risen from 35% and will increase 1% when the retirement age is delayed 1 year.

The forecast results (Figure 2-1) show that raising the retirement age can significantly alleviate the expansion of the pension funding gap. the balance in current year, after the reform, the pension will continue to receive more than it needs to spend by 2029, and then there will be a deficit of RMB 10 trillion in 2050 (RMB 29 trillion at the beginning), accounting for 2.47% of GDP in that year (7.07% at the beginning). As to Accumulated balance, after the reform, the accumulated balance of the fund will be positive by 2038, and then there will be a cumulative deficit, which will reach RMB 71 trillion in 2050 (RMB 326 trillion at the beginning), accounting for 17.31% (80% at the beginning) of the GDP.

The extension of the retirement age can effectively alleviate the pressure on pension funds, but from an institutional perspective, it is not scientific to decide the retirement by age. The current retirement age system mainly has the following three problems.:

First, compared with developed countries, China's population life expectancy is not very different from that of developed countries, but compared with developed countries, the current legal retirement age is low. This results in a short payback period for pay-as-you-go pensions and a long period of collection. The pressure on the fund is high.

Second, according to the current method of determining pension benefits, the legal retirement age is more disadvantageous for those who have been educated for a longer period of time, or a unified retirement age is not conducive to high human capital owners. If you are retired at the age of 60, the longer the human capital investment period, the shorter the actual working life. For example, a doctoral student can get a Ph.D. at the earliest 28 years old. It's been 10 years late than a high school graduate who was working at 18 years old.

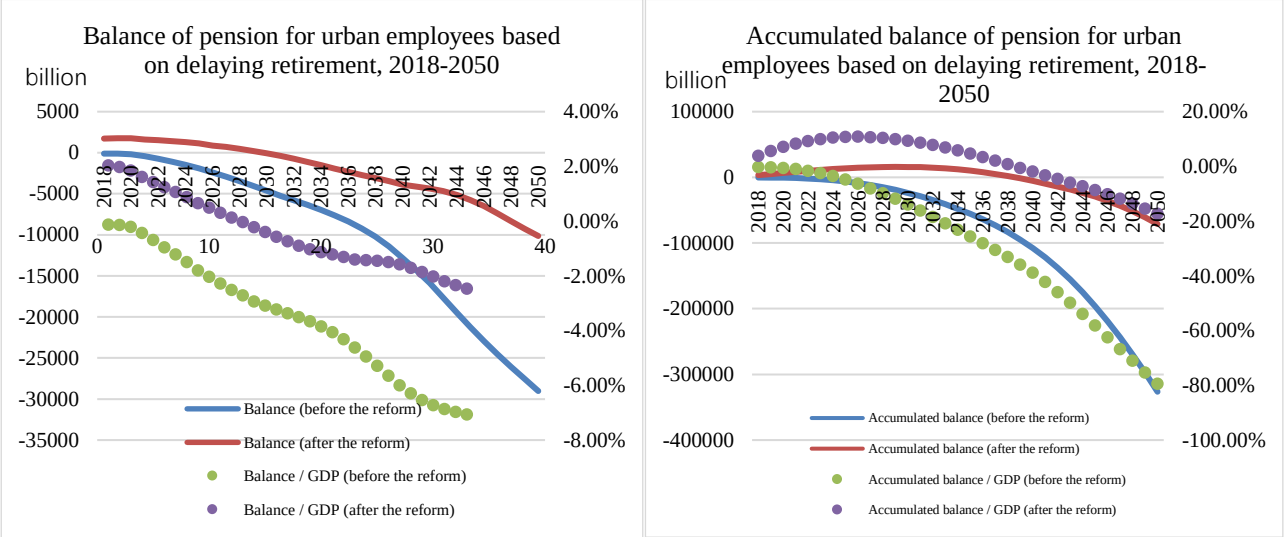


Figure 2-1 Balance of pension for urban employees based on delaying retirement, 2018-2050

Thirdly, the policy of being eligible for pensions after accumulated contributions for 15 years has been misunderstood, resulting in an increase in the interruption of payment.

Therefore, the focus of the reform should be on closely linking the retirement benefits to the payment period, and achieving the goal of "more contribution determining more benefits". At the same time, through the strict law of collection, employees are not allowed to stop contribution during the employment period. In response, the following suggestions are proposed:

First, the pension could be divided into three categories: the minimum standard pension (equivalent to the minimum wage in the wage policy), the full pension (the pension calculated by the institutional replacement rate), and the preferential pension (policy encouragement).

Second, calculating the pension benefits based on the pension payment period. Based on the parameters such as employment, wages, contribution rate, and policy-expected replacement rate, the cumulative contribution period for receiving the minimum standard pension is determined through actuarial calculation. Generally, the cumulative contribution period for receiving the minimum standard pension should not be less than 15 years, and the collection standard should be lower than the minimum salary. It should be noted that this standard only applies to intermittent employment, or people who withdraw from the employment team in advance for various reasons.

Third, determine the period of eligibility for full pension. According to the experience of developed countries, the cumulative minimum contribution period should be determined at around 35 years. Retirees who are less than 35 years old will permanently reduce their pension benefits based on the number of years of non-payment. In addition, according to the changes in the age structure of the population and the status of the pension fund, the standard of contribution period for full pension could be adjusted and will gradually increase to 40 years in the future.

Fourth, formulate policies to encourage employees who have accumulated contributions for more than 35 years to receive progressive preferential pensions. At the same time, in order to balance the age structure of the workforce, the offer can be capped for 45 years.

Through the above reform, the government gives the initiative to retire to the workers. Instead of setting a statutory retirement age, the government encourages employees to delay retirement through a treatment mechanism.

3. Measure 3: Advancing the Development of the Third Pillar

In April 2018, the Ministry of Finance and other five departments issued the “Notice on Launching a Pilot Program for Personal Tax Deferred Commercial Pension Insurance”, which declared that the personal tax deferred commercial pension insurance pilots would be implemented in Shanghai, Fujian (including Xiamen) and Suzhou Industrial Park in May 1, 2018. It implies that the Chinese government is actively exploring the third pillar of pension insurance, hoping to build a multi-level pension insurance system to ease fiscal pressure and ensure the long-term sustainability of the pension system.

In fact, China has not established the third pillar pension insurance for various reasons. Now we are actively exploring the construction of the third pillar of pension insurance, which mainly has the following three factors:

First, China’s first pillar of basic pension insurance has been unable to meet the needs of the elderly. Over the years, despite of the great progress made in the reform of the pension system, the basic pension insurance for urban employees is still a pay-as-you-go system in actual operation. With population aging speeding up, the proportion of China’s old-age population (60+ or 65+) expands rapidly. Correspondingly, the number of labor population has shrunk sharply. It has resulted in the decline of the number of contributors compared to the rise of the number of people receiving pension. According to the report of the 19th National Congress, the main contradiction in Chinese society has been transformed into “the contradictions between the people's ever-growing needs for a better life and the unbalanced and uneven development.” In order to alleviate the social contradictions of the "new era", there is a need for further improvement of the basic pension benefits. However, it is very difficult to raise the level of benefits considering the current conditions.

Second, from the perspective of establishing a multi-pillar pension system, the second pillar, enterprise annuity, is difficult to expand rapidly in the short term. Since the implementation of the enterprise annuity system in 2004, less than 10% of the employees have got enterprise annuities. Therefore, we cannot put our hopes of establishing a multi-pillar pension system on a large number of companies to establish enterprise annuities. The contribution rate of the first pillar basic pension is too high, and the enterprises has no enthusiasm to establish the second pillar. Therefore, there is no way for enterprise employees to enjoy tax benefits. But if there is a third pillar, employees can reserve pensions by themselves for their future.

Third, with the economic transformation, small and medium-sized enterprises have become the main force to attract labor population. There are still a large number of rural migrant workers, flexible workers and part-time workers in China. It is crucial to consider how to cover these workers. Not the second pillar but the third pillar can allow the workers in small and medium-sized enterprises or self-employed workers to enjoy pension tax incentives.

There are three key points in advancing the establishment of the third pillar. The first is that the system model must center on "individual account", which means to set up individual account with unique identification, rely on multiple carriers to increase the coverage of the third pillar personal pension, and rely on social security card to establish the 3rd pillar individual account information platform, etc.

The second is to design reasonable tax preference model. The tips are reasonably using the tax extension model of EET or TEE, setting a reasonable preferential tax rate or quota, and considering opening the 2nd and 3rd pillar tax incentives, etc.

The third is the diversified participation in product and investment channels. Banks, funds, insurance and other types of pension financial products should be considered into the selection range and consider to establish a product access system and a default investment vehicle mechanism.

4. Measure 4: Reasonable Control of Medical Expenditure

Unlike the severe situation of the pension insurance system, the financial burden of the medical insurance system is still acceptable. However, while the national health expenditures and the medical insurance expenditures continue to increase, inpatient or outpatient services, total medical expenses, per capita medical expenses, and medical expenses all have increased at a high rate in recent years. Among them, there are both "reasonable growth" caused by the rise of medical technology level, and "unreasonable growth" caused by various reasons, especially the "profit-seeking mechanism" of the hospital. Therefore, to control the unreasonable growth of medical expenses is one of the important tasks of the reform and development of China's medical insurance system.

Although the government plays a pivotal role in the design of the institutional framework and the supervision and management mechanism, it does not rule out that the market and social forces play a unique role in controlling medical expenses. For the monitoring and management of medical expenses, local governments can actively explore the specific form of Public-Private Partnership (PPP), which can timely detect and process the abnormal changes in medical expenses to control moral hazard in medical needs and medical behavior with the help of third-party information platform and intelligent monitoring platform.

In addition, the function of the medical insurance system will inevitably lead to an increase in medical expenses to a certain extent. In view of the diversity and complexity of medical needs, the government should play a major role in the four aspects including legislation, planning, investment and supervision. Under this premise, the market mechanism should be introduced vigorously, which will not only improve the fairness of medical insurance but improve the quality and efficiency of medical services. In terms of macroeconomic regulation and control, medical insurance should fairly treat public and private medical institutions, public and private rehabilitation institutions, public and private nutrition institutions, and other health service institutions; should eliminate discrimination, and meet the health needs of different individuals at different levels.

In addition to the above points, it is necessary to vigorously encourage the development of commercial medical insurance. The government promotes the development of commercial medical insurance by providing tax incentives, and lays a foundation for the establishment of a multi-level medical insurance system in the future. In this respect, China still has great potential.

5. Measure 5: Gradually Relaxing the Family Planning Policy

China's "two-child" policy was put forward in 2015 and implemented officially in 2016. Its purpose is to adjust the age structure of the population and meet the challenges of aging. In fact, since the implementation of the "two-child" policy, the effect is not as expected. 2017 is the second year of the implementation of the "two-child" policy. According to the hysteresis effect, it is generally judged that the number of people born in 2017 will be significantly higher than that of 2016. However, the data from the National Bureau of Statistics shows that the number of births in 2017 fell by 630,000 from 17.86 million in 2016. The birth rate in 2016 was 12.95 per thousand. It fell to 12.43 per thousand in 2017.

Health and Family Planning Commission explained in 2015: "There are about 90 million couples eligible for the policy, and the birth population is expected to exceed 20 million." But in reality, the birth population never exceeded 18 million, lower than the national health and family planning commission's forecast for 2017-2021.

The reason why the effect of the "two-child" policy is not good is that the Chinese people's fertility desires are not strong; as a result, the increase in total fertility rate is not significant. Just cancelling restrictions cannot solve this problem. There are two main factors leading to the reduction of Chinese fertility desires. Firstly, for individuals, the era when marriage and childbirth is a family obligation and responsibility has passed. With the development of urbanization, personal choice has replaced family responsibility. Secondly, China's high housing prices, high childcare costs, and fierce social competition cause a problem that having more children means more pressure.

There are many experts predicting the effects of the "two-child" policy on the future population structure of China and the pension income and expenditure. Gu Hejun & Li Qing (2017) combined the data of the fifth and sixth census data with the annual statistical yearbooks to estimate the new birth population after the implementation of the "two-child" policy. They found that the implementation of the "two-child" policy could not change the overall downward trend of the total labor population and the upward trend of the proportion of the elderly population, but only slightly reduced the rate of decline in the labor population. Gu Hejun et al. (2018) examined the impact of the "two-child" policy on China's long-term economic growth and found that this policy will not create new "demographic dividends" by the middle of the 21st century, and it is impossible to reverse the trend of increasing aging. Sui Lei (2017) established a generational overlap model to study the impact of the "two-child" policy on basic pension. He believes that the "two-child" policy can only improve the financial sustainability of the pension system to a certain extent in the future, and the effect on the growth rate of the birth rate is not significant. Some scholars further explored the effect of completely relaxing the family planning policy. Zhu Jianping (2017), based on the data from the sixth census, found that the effect of abolishing the birth restriction completely is very close to the "two-child" policy, and the elderly dependency ratio will gradually increase. Therefore, he suggested that the government not only completely abolish the birth restriction, but also encourage birth.

The birth policy has a significant lag on the adjustment of China's current population structure, it cannot be achieved immediately. Therefore, it is necessary to comprehensively consider these factors and promote

to completely relax the family planning policy as soon as possible. In addition, we must learn from the practices of some developed countries, to encourage fertility, and to improve the total fertility rate.

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POLICY SUGGESTIONS - PART TWO

How to prepare for the ageing of the society

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Contents

1. Population Ageing in the heart of policy making process

China faces similar demographic trends as Europe and Czech Republic. Both countries experience so called demographic ageing. Our societies have more people 50+ and 60+ and the birth rate is not sufficient enough to secure natural renewal of the population. Therefore ageing policies are in the spotlight of policy making process. Political actors, experts and institution mainly from social and health care sector are focused on the topic of population ageing and its impacts on our society. It must be said that ageing is not just threat as it often presented, ageing of the society also indicates that the quality of life and personal well-being improves and life expectancy is getting higher. Besides increasing life expectancy we need to stress the importance of the quality of life, and health of citizens and their economic situation.

It is important that ageing policies are put to the centre of social and family policies. These policies strongly influence socie-economic position of people in the society, older people and elderly included. It is important to keep in mind that ageing is a cross-sectional issue. It involves and impacts other policies – labour market and employment policies, security or insurance measures. Ageing policies and position of older generation in the society is also strongly connected to work-life balance, position of women in the society and family policy.

1.1. Evidence-based policy

Evidence based policy is very important tool for conscious, responsible and on facts based policies. Without data and strict evidence we cannot prepare policies which can bring positive impacts and positive change in the field. Therm evidence-based policy refers to situations in which policy decisions are framed by rigorously established objective evidence. It is hard, especially in social policies, to have strict quantitative data, but we can use also qualitative studies or outcomes from pilot programmes or knowledge from case studies. The evidence-based policy approach was popularized by the Brittish government and at the time prime minister Tony Blair. A UK Government white paper published in 1999 (*"Modernising Government"*) noted that government must "produce policies that really deal with problems, that are forward-looking and shaped by evidence rather than a response to short-term pressures; that tackle causes not symptoms".[31]

Evidence-based policy is linked also to the effective work with data and statistical evidence at the beginning of the policy preparation and implementation. It stresses the importance of monitoring statistical outcomes and results of policies and evaluation.

If we want to prepare good-quality national strategy on ageing or any other issues we need to have sufficient statistics, case studies and evidence from experts, academics or politicians. It is useful to work with official statistical data from the national statistical office, then to use robust and representative studies from academic and research institutions, qualitative studies and evidence from the instututions which work in the relevant field on everyday basis – social services, diverse various organizations, state instituions etc. This evidence should be use to describe the current situation and to elaborate future tendencies and trends under described circumstances.

Why work with data and facts, and not just with our subjective opinions and speculation:

- to describe current situation

[31] *Department for Environment, Food and Rural Affairs (21 September 2006). "Evidence-based policy making". Archived from the original on 14 January 2011. Retrieved 6 March 2010.*

- to describe target groups in detail with regard to specific age groups, gender, health and economic situation
- to provide information about future trends and tendencies
- to provide basic insight into the cost and profit of proposed policies and programmes

2. Ageing and Sustainability

As it was written above the data can be used not only for the description of the current situation but also for extrapolation of future tendencies and trends. If we consider sustainability of the society and proposed policies, we need to take into account connections of ageing to the situation on the labour market and in economy in general. We need to ask questions about the structure of key professions which we need to sustain basic societal functions.

Society need to have enough:

- teachers to teach young generations
- doctors and nurses to care for people's health, especially in the ageing society
- workers for key economic sectors
- state officials to secure basic functions of the state
- social workers to secure social care, especially in the ageing society

We should elaborate the situation in defined key professions with regard to current and future situation. We may have enough teachers today, but it is important to segregate data according to age groups, gender etd. This will show us the moment in which we might have insufficient numbers of people in certain professions. It enables us to identify measures to change the trend.

3. Cooperation

To gain robust and sufficient information we need to reach data from the national, regional and local level. It is important also to get knowledge from different actors in the society: hospitals, universities, public administration, providers of social care etc. It is also important to collect examples and situation descriptions from foreign countries which could be culturally similar or totally different. We need to take into account differences in legislation, political and economical context and adapt them for our own context. Foreign examples can show us dead ends which experienced other countries or can be great positive inspiration for effort in the field of population ageing.

One of the best ways to secure effective sharing of information is to set up working group on ageing. It can help us sharing experience with different key actors in the society, to discuss diverse points of views and effectively spread information.

The Government Council for Older Persons

The Government Council for Older Persons (hereinafter „the Council") was established on March 22, 2006 by Government resolution No. 1482 on implementation of the National Programme of Preparation for

Ageing for the period 2003 - 2007.

The Council is a permanent advisory body to the Government of the Czech Republic on issues related to ageing and older persons.

The Council's mission is to promote conditions for healthy and active ageing, dignity in old age, and active participation of older persons in economic and social development in the context of demographic ageing. It aims to ensure equal rights for older persons in all areas of life, to protect their human rights and support development of intergenerational relationships in family and society.

The Council meets at least three times a year. The Chairperson of the Council is the Minister of Labour and Social Affairs. The secretariat of the Council is a part of the organizational structure of the Ministry of Labour and Social Affairs of the Czech Republic. The members consist of the experts from non-profit sector, social services providers, academic experts, representative from trade unions and employers and from ministries responsible for ageing of the society.

4. Strategical planning: ageing and policy focus

To prepare and implement complex and effective policies it is important to draft strategical plan for the ageing and its impact on the society. It is crucial to use statistical data and information from the analytical work and cooperation activities. Participation of different key actors provides realibility and credibility of included information and proposed policies and measures. Among other things it is important to know who will be responsible for the coordination, implementation and evaluation of the strategy. There are different approaches in national EU states. In the Czech Republic Ministry of Labour and Social Affaires is responsible for the coordination of the national plan for active ageing. It would be also possible that Office of the Government could coordinate in some extent also coordinate ageing strategy plan.

The main strategy should focus on the national level, but you can also cover regional and local level. It can also set up framework for the creation of partial strategies/ concepts for selected sectors of economy or ministries according to their importance. Every strategy should also set SMART goals and measures.

SMART means:

- S – Specific: all goals shoud be sufficiently specific and concrete
- M – Measurable. all goals should be measurabe, it means you should set up transparent and realistic indicators
- A - Achievable/Acceptable: it is not clever to set up unrealistic goals, which cannot be reached
- R - Realistic/Relevant: all goals should be relevant according to the re/sources
- T - Time Specific/Trackable: every goal should have its time table and time milestone

If you have already started to alaborate your strategical plan on ageing you need to decide several aspects which influence the overalI direction and meaning of this document. Work on your ageing strategy should follow basic instructions for strategical planning with strict time table and list of stakeholders.

Basic questions you need to answer and solve in the process of making strategical plan:

1. **What level do you want to address?**

Is it national, regional or local level? Do you have enough resources and tools to reach all three levels? Sometimes less is more if we consider the whole complexity and demanding character of the issue.

2. Who do you want to address?

It is also important to know who will be the administrators of policy areas and its aims. Is it government, ministries, regional governments, employers, institutions or citizens?

2. **What do you want to achieve?**

You should answer what should be main outcomes in the implementation proces. Is it system change, change in the society or simple and easily measurable activities?

3. **What time period do you want to cover?**

To decide if you want short or longtime stratégy is onother important thing. One year is too short time to write strategic plan for and ten years may be too long, becuase it is difficult to foresee different future scenarios. Certainly it is helpful to include one year action plan in every strategical document to plan up-to-date steps and follow-ups.

4. **Start drafting main mission - vision of your strategy**

Before drafting specific aims and choosing measures to reach them you need to draft mission statement. The mission frames the whole philosophy and approach of the strategy and it determines definition of main aims, measures and areas to cover.

5. **Areas of the ageing strategy**

Based on your research and data and main vision of the strategy you need to decide what areast you need to cover. The scope of areas is influenced not only by the research and context but also by resources you have for the strategy and its implementation.

Czech strategy on ageing covers more areas, it starts with social services, health care, education, volunteering, but deals also with human dignity, intergeneration solidarity, provisions for families etc. It is complex roadmap for the ageing policies in the Czech Republic.

Ageing impacts almost on all areas of the society:

- **Employment**

  The sustainable labour market needs sustainable workforce including young employees and employees with experience. Ageing population indicates shortage in numbers of people who are able to work. Thus you need to prepare society and employers on such situation by modern and inovative work tools and approaches to work. It also means that empleyers have to attract enough people and use talent of all members in the society, it means workplace without discrimination and age stereotypes. Modern workplace is an environment where more experienced and older workers can transfer their knowledge and experience to younger ones without fear of losing job. Younger workers on the contrary can teach the older ones in new technologies, new procedures etc. State can also balance younger and older workers on the labour market by setting the retirement age and legal conditions for work in retirement period.

- **Health care**

  To stabilize national finances you need to promote healthy life style, prevention and early care. But also the health care system needs to be ready for more people who need financially more demanding care. Health care system can also be influenced by the socio-demographic composition of the medical work force. It is very important issue which need to be taken into account.

- **Transport**

  Elderly people and people with disabilities require accessible transport vehicles and environment.

- **Social policies**

- To stabilize national finance the society needs to have in balance family care and social services, financial support (allowances) and services. Ageing society requires higher financial costs for securing social services and care for elderly people and people with disabilities. To reflect on the direction of the whole social system and system of the social services, it is very important to decide if you want to support mainly family care or institutional care and services. Health and social care is very difficult task for famiies. If the state decides to support primarily family care, it needs to be taken into account that it affects possibilities for work. People who care on the daily basis can‘t be on the labour market everyday, so it is important to prepare special allowances (if you want to secure basic economic position and human dignity). Otherwise such families fall into the poverty. Family care affects in most countries particularly women, who are primary responsible for caring**.** Family care requires professional support from psychologists, medical experts etc. Everyday care is difficult,

it brings problems to people who are cared for and also for informal carers. Without psychological support there can be lot of problems, including in the area of domestic violence.

If the combination of family and institutional care is chosen by the state authorities, the life of family carers and whole families is easier. But this type of policy means to institutionalised social and health services on the state, regional and local level. Regions, municipalities or other bodies then provide daily/ weekly care centres or field services – social professionals support family carers in their natural environment. Social workers or professional carers can also provide care instead of family members during work week at home or in special centres. People with disabilites can be cared for in special care and senior houses. It is very important to secure very high standards in human dignity and human rights in the instituions.

Social services in the Czech context mediate assistance in the care of one's own person, providing meals, accommodation, assistance in running a household, care and assistance with bringing up a child, providing information, mediation of contact with social environments, psychotherapy and social therapy, assistance in assuring one's rights and interests. **Social services help people to live a normal life** - they allow them to work, shop, attend school and places of faith, participate in leisure time activities, take care of themselves, their home, etc. The services aim to maintain the highest possible quality and dignity in their lives. Social services are provided to individuals, families, as well as to groups of people. **Social services are administered to people in adverse social situations** if the people are permanent or long-term residents of the Czech Republic. The most numerous groups of beneficiaries are, particularly, the elderly, people with disabilities, families with children however also, people living on the fringes of society for various reasons. Social services are provided by the municipalities and regions, NGO's.

The services aim amongst other things to:

- promote development, or at least maintenance, of the existing self-sufficiency of the user, the user's return into his/her own home environment, renewal or maintenance of their original lifestyle
- enhance the user's abilities and enable them to lead an independent life where possible
- limit social and health risks associated with the users' lifestyle[32]

Care allowance is another important support for people with disabilities in the Czech Republic. The care allowance is provided to persons who are due to their long term unfavourable health condition dependent on another person's assistance when dealing with basic living needs: mobility, orientation, communication, self-feeding, putting on clothes and footwear, washing oneself, toileting, looking after one's health, personal activities and household tasks. The amount of care allowance corresponds to the degree of "dependence on care" which is based upon an assessment of ability to manage the above mentioned 10 basic living needs. There are 4 levels of dependence – from the slight dependence (I) to total dependence (IV).[33] Care allowance can be used for professional care or for family members who informally care in the household. People can decide, what type of care they want, they are not forced to use institutional care. On the other hand it is quiet costly allowance, it

[32] Ministry of Labour and Social Affaires, Social services, available at: https://www.mpsv.cz/en/1613#sspaa.

[33] Ministry of Labour and Social Affaires, Social services, available at: https://www.mpsv.cz/en/1612#sabfpwd .

doesn‘t cover health and social insuracne for informal/ family carers, so they are without any social security.

- **Pension system**

  Sustainable pension system refers to the stability of the state finances but also possility of retirees to live particularly well with their pension pot. The whole sustainality of the pension system is influenced by the pension age and total number of active workforce.

- **Education**

  It includes whole education system for ageing workforce like longlife learning and also special education for retired people (universities of the third age) etc. The **University of the Third Age** is an international movement whose aims are the education and stimulation of mainly retired members of the community, for those in their third age of life. Universities of the third age are very popular in the Czech Republic, senior students attend university courses and acquire diploma. But they are not entitled to use this diploma on the labour market. It is rather prevention of social exclusion and social and network programme for seniors.

- **Safety**

  Elderly people are objectively more vulnerable to criminality and subjectively they feel also less safely than younger generations. It is something what needs to be taken into account in the safety policies. In general older people make more complaints and are more sensitive towards new trends in society which they perceive very often as negative. In many European countries criminality affecting senior people is perceived as more serious criminal offence. In the Czech Republic municipalities invest into prevention programmes – special travel trips for senior people for the purpose of socializing, prevention of loneliness.

4.1 Global and Strategies on Ageing

The first WHO World Report on Ageing and Health, released in 2015, defines Healthy Ageing as “the process of developing and maintaining the functional ability that enables well-being in older age.” The overall objective of healthy ageing is well-being, which is holistic and encompasses all of the elements and components of life and living that people value. This perspective provides a new approach to frame comprehensive health policies and implement actions within and across countries. The report identifies priorities that are already shared by many of governments and stakeholders and considers further areas that are likely to be effective.[34]

The WHO Global strategy and action plan on ageing and health (2016 – 2020) has two goals**:**

- five years of evidence-based action to maximize functional ability that reaches every person; and

[34] World Health Organization, WHO Global Strategy and Action Plan on Ageing and Health. Available at: http://www.who.int/ageing/ageing-global-strategy-survey-report-en.pdf.

- by 2020, establish evidence and partnerships necessary to support a Decade of *Healthy Ageing* from 2020 to 2030.

Specifically the Strategy focuses on five **strategic objectives**:

- commitment to action on *Healthy Ageing* in every country;
- developing age-friendly environments;
- aligning health systems to the needs of older populations;
- developing sustainable and equitable systems for providing long-term care (home, communities, institutions); and
- improving measurement, monitoring and research on *Healthy Ageing*.

4.2 National strategies on ageing: Czech Strategy on Ageing

Czech government approved National Action Plan Promoting Positive Ageing 2013 – 2017, which it the main national strategic document. The main aim of this strategy is to change attitude of society towards active ageing and increase interest of society in the ageing.

The Czech national strategy on ageing sets up political framework for the national policies of ageing, focuses on the preparation of the state bodies for the situation of ageing society and it marks out main priorities in this area. It is said in its introduction that: „The population ageing concerns all areas of the lifeof a society and is reflected in a broad spectrum of political measures. Policies responding to ageing of the population may only be effective if they are based on a comprehensive approach, coordination of all adopted measures and shall be compliant with the long-term outlook for the maximum use of the potential of older workers and seniors. Our common goal is to create individual policies ableto flexibly respond to the ongoing and expected demographic changes in compliance with challenges that arise from the population ageing.“ [35] The Czech natioal plan for active ageing needs to be seen in the context of the whole family policy and it is also based on the premise that prevention is better than dealing with consequences (active ageing, healfy life style).

The main stakeholders in the Czech Republic for the drafting and implementing strategical goals and measures in the area of the (active) ageing are:

- on the national level - government, ministries, Office of Ombudsman
- on the regional and local level – counties, regions, cities, towns, municipalities, other central and regional
- authorities, research institutes, academic sphere
- non-governmental organizations (NGOs) and other bodies
- specific role of the Government Council for Older People and Ageing Population a permanent advisory

[35] National Action Plan Promoting Positive Ageing for 2013 – 2017, Ministry of Labour and Social Affaires. Available at: https://www.mpsv.cz/files/clanky/21727/NAP_EN_web.pdf.

- body to the government for issues related to older people and population ageing

The eight areas of the National Action Plan:

- Implementation of the Ageing Policy in the Czech Republic
- Securing and Protecting the Human Rights of Older People
- Life-long learning
- Employment of older workers
- Quality life environment for seniors
- Volunteering and intergenerational cooperation
- Healthy ageing
- Care for the elderly

The main Objectives of the national strategy:

- Coordination and cooperation at national and local levels
- Funding and personnel strengthening of ageing policy
- Role of Focal Point Contacts
- Role of Family
- Intergenerational Relations
- Informal Care

5. Final conclusions

Pupulation ageing is a global trend, challenge and problem in one. The problems and challenges in this area can be resolved only by the pro-active and systematic approach by gevernments and transnational bodies and networks. To prepare complex, sustainable and effective strategy on ageing it is important to involve all important stakeholders like public bodies, municipalities, regions, universities etc. Ageing policy need to be linked to the family policy and work-life balance strategies. Ageing of the society can be slowed down by the effective family policies which support families with children and prevent barriers for them. It is also very important to strenghten intergeneration relations and solidarity. And always remember: prevention is easier and less costly than elimination of negative impacts.