

The Chinese Pension System: The Fragmented System



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Abstract This chapter provides a detailed overview of the reform and current state of the pension system in China. China is the largest developing country in the world and is facing an aging population before becoming rich. It is a challenge to provide adequate retirement sources for the elderly if we only consider traditional family support as old-age support. Therefore, the pension system in China has developed in recent years to establish a three-pillar framework. The first pillar of the pension system includes the Employee Basic Pension (EBP) and Resident Basic Pension (RBP), which provide the major retirement security for the Chinese population. The second pillar of the pension system includes the enterprise annuity for employees in urban enterprises and the occupational annuity for employees in the government and public institutes. The third pillar of the pension system is personal annuity insurance, which has been developed in recent years and is still in an early stage. Two major problems exist in the current pension system in China. The first problem is the fragmented public pension system, which provides unequal retirement security between employees who are formally employed and other residents. The second problem is the low demand for private pension programs and the less-developed market for the private pension market.

1 Economic and Demographic Backgrounds

Since the founding of the People's Republic of China, the country has achieved great success in economic development as well as reducing poverty. More specifically, as shown in Table 1, from 1952 to 2019, gross domestic product (GDP) increased by 1,459 times, and per capita GDP increased from 119 yuan to 70,890 yuan. Other economic indicators, such as fiscal revenue, foreign direct investment, and exported goods' value, also indicate that the economy in China has improved in the past few decades.

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Table 1 Economic trends in China

Category	1952	2019	Growth
GDP	RMB 67.9 billion	RMB 99.1 trillion	1,459 times
Fiscal revenue	RMB 6.2 billion (in 1950)	RMB 19.0 trillion	12% annually on average
Industrial added value	RMB 12 billion	RMB 31.7 trillion	2,642 times
Per capita GDP	RMB 119	RMB 70,892	595 times
Nonfinancial FDI	US \$ 920 million (in 1983)	US\$ 138 billion	150 times
Exported goods' value	US \$ 1.9 billion	US \$ 5.3 trillion	2,789 times

Source Statistical Communiqué of the People's Republic of China on the National economic and social development, National bureau of statistics

Table 2 presents the improvement of living standards in the People's Republic of China by showing the welfare indicators at different times, including in the early years after its founding, 1980, and 2018. For the poverty status shown in Table 2, the rural poverty incidence decreased from 96.2% in 1980 to 1.7% in 2018, indicating the poverty reduction progress achieved by China. Moreover, the national average education level is increasing; for example, the gross enrollment rate for higher education has increased from 2.22% in 1980 to 48.1% in 2018.

However, as the largest developing country, China is facing the challenge that it is "becoming old before getting rich". The total population in 2019 was 1.40 billion. As shown in Fig. 1, the old population (the population aged 65 and over) is expected to increase from 24.6 million in 1950 to 176.0 million in 2019 and further increase

Table 2 The improvement in living standards in China

Index	Early years after 1949	1980	2018
Rural poverty rate under the current poverty line	Extreme poverty	96.2%	1.7%
Per capita disposable income	RMB 98 (in 1956)	RMB 171 (in 1978)	RMB 28,228
Life expectancy	35	65	77
Infant mortality rate	200‰	48‰	6.1‰
Preschool enrollment rate	20%	95.5% (in 1978)	Completion rate of nine-year compulsory education: 94.2%
Gross enrollment rate for higher education	0.22%	2.22%	48.1%
Average years of schooling for people aged 15 and above	80% illiterate	5.3	9.6

Source National bureau of statistics

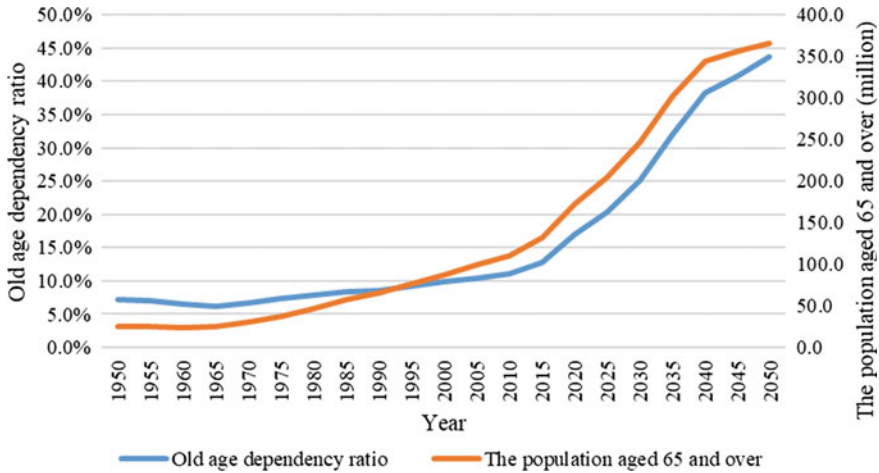


Fig. 1 Old-age population in China, 1950–2050. *Source* United Nations, Department of Economic and Social Affairs, Population Division (2019). World Population Prospects 2019, Online Edition. Rev. 1

to 365.6 million in 2050. The old-age dependency ratio (the ratio of the population aged 65 and over to the population aged between 15 and 64) is expected to increase from 7.2% in 1950 to 43.6% in 2050.

The aging population in China is mainly due to increased life expectancy and a lower fertility rate in recent years, as shown in Fig. 2. Life expectancy¹ increased from 43.7 in 1960 to 76.7 in 2018. The fertility rate² decreased from 5.76 in 1960 to 1.69 in 2018. Given the fast population aging, the pension system in China has to face the challenges of a dwindling labor force and the pressure to provide retirement security.

2 The Overview of the Pension Systems

2.1 Framework of Pension Systems

The Chinese pension system has three pillars: public pension system, employer-sponsored annuity program, and personal annuity insurance (Fang & Feng, 2018).

The first pillar, the public pension system in China, has undergone several reforms since the 1950s and aims to achieve universal coverage in recent years. Until 2020,

¹ Life expectancy at birth indicates the number of years a newborn infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life.

² Total fertility rate represents the number of children that would be born to a woman if she were to live to the end of her childbearing years and bear children in accordance with age-specific fertility rates of the specified year.

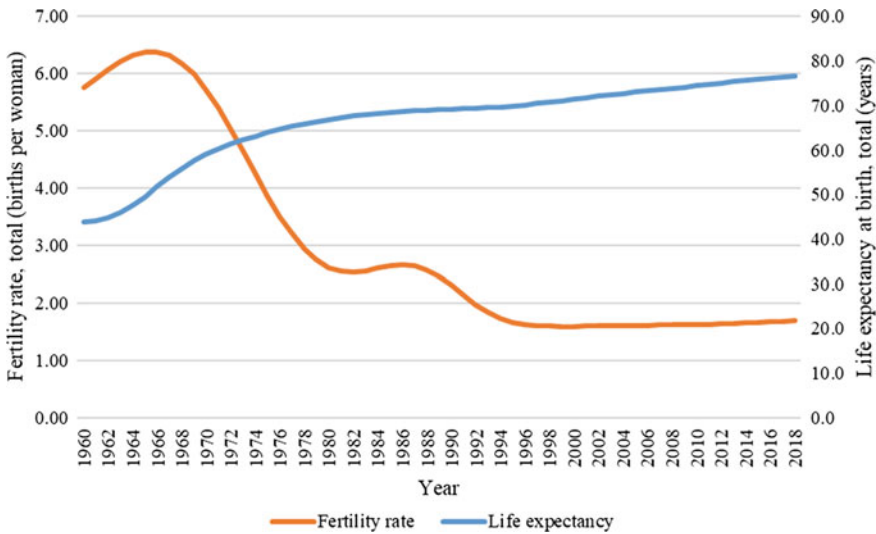


Fig. 2 Fertility rate and life expectancy in China, 1960–2018. *Source* World development indicators, The World Bank, <https://www.data.worldbank.org/indicator/>

the system encompassed two major schemes that are intended to cover all formal employees and other residents. The first major scheme includes the Urban Employee Basic Pension (UEBP) and Public Employee Pension (PEP), which were merged as the Employee Basic Pension (EBP) in 2015 (see Table 3 and Fig. 3). The second major scheme includes the Urban Resident Basic Pension (URBP) and New Rural Resident Basic Pension (NRBP), which were merged into the Resident Basic Pension (RBP) in 2014 (see Fig. 3). EBP participants are employees in urban enterprises, the government, and public institutes. RBP participants are other residents not involved in the EBP.

The second pillar includes the enterprise annuity for employees in urban enterprises and the occupational annuity for employees in the government and public institutes. The Enterprise Annuity was introduced in 1991 and has grown considerably in recent years. The contribution of employers and employees constitutes an individual account, while part of the investment return of the enterprise annuity contributes to the individual account, and the rest of the investment return constitutes an enterprise account. A document released by the Ministry of Human Resources and Social Security (MOHRSS) in 2011 (see Table 3) further made requirements about the fund management of the Enterprise Annuity. As part of the pension system reform for the PEP in 2015, employers such as the government and public institutes are required to provide the Occupational Annuity as a complement to public pension benefits provided by the first pillar. The contribution of employers and employees as well as the investment return of the Occupational Annuity fund contributes to the individual account. A document released by the MOHRSS and Ministry of Finance in 2016 (see Table 3) further made requirements about the fund management of the Occupational

Table 3 Pension law and the administrative authority

Pension programs	Pension laws	Year	Administrative authority	Content
Employee basic pension (EBP)	Decision on reforming the urban employee basic pension for enterprises	1991	The state council	Build a retirement security system supported by individuals, employers, and the government
	Announcement on deepening the reform of the urban employee basic pension for enterprises	1995	The state council	Implement one pay-as-you-go (PAYG) system and one fully funded system
	Decision on establishing a unified urban employee basic pension for enterprises	1997	The state council	Individual contribution rate is 11%; employer contribution rate is 20%; minimum contribution years: 15; annuity factor: 120
	Decision on improving urban employee basic pension for enterprises	2005	The state council	Involve the self-employed; change the individual contribution rate from 11 to 8%; supplement individual account which has been used to support the PAYG pillar
Resident basic pension (RBP)	Decision on reforming the public employee pension for the government and public institutes	2015	The state council	Merge PEP into UEPP; require individual contribution for employees in PEP
	Guidelines on the pilot program of new rural resident basic pension	2009	The state council	Implement one pay-as-you-go (PAYG) system and one fully funded system; Require contribution from central and local government, and local community; individual contribution (RMB 100 - 500)

(continued)

Table 3 (continued)

Pension programs	Pension laws	Year	Administrative authority	Content
Enterprise annuity and occupational annuity	Guidelines on the pilot program of urban resident basic pension	2011	The state council	Implement one pay-as-you-go (PAYG) system and one fully funded system; Require contribution from central and local government, and local community; individual contribution (RMB 100 - 1,000)
	Opinions on establishing a unified resident basic pension for urban and rural residents	2014	The state council	Implement one pay-as-you-go (PAYG) system and one fully funded system; Require contribution from central and local government, and local community; individual contribution (RMB 100 - 2,000)
Personal annuity insurance	Announcement on the fund management of enterprise annuity (amended in 2015)	2011	MOHRSS	Fund investment, information disclosure, supervision, and so on
	announcement on occupational annuity for the government and public institutions	2015	General office of the state council	Fund-raising channels, fund management, payment, and so on
	announcement on the temporary fund management of occupational annuity	2016	MOHRSS and ministry of finance	Fund investment, information disclosure, supervision, and so on
	Enterprise annuity measures	2017	MOHRSS and ministry of finance	Fund-raising channels, fund management, payment, and so on
	Announcement on the pilot program of individual tax deferred commercial pension	2018	Ministry of finance	25% of the commercial pension income is tax exempt

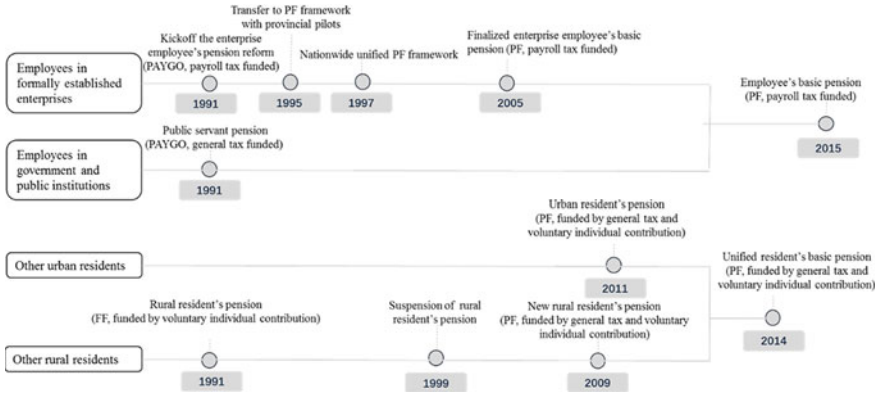


Fig. 3 Chinese public pension system (Zheng et al., 2019). *Notes* PAYG (pay-as-you-go); PF, partially funded; FF, fully funded

Annuity. The contribution of employees is fully funded in the accounts for both the Occupational Annuity and Enterprise Annuity. The Occupational Annuity differs from the Enterprise Annuity in that the employer’s contribution to the Occupational Annuity is notional for those employers fully supported by government finance.

The third pillar is personal annuity insurance, which has been developed in recent years. More specifically, the document released by the Ministry of Finance in 2018 (see Table 3) announced the pilot program of individual income tax deferred annuity insurance products in some cities, including Shanghai, Fujian Province and Suzhou Industrial Park.

2.2 Pension Law and the Administrative Authority

The Social Insurance Law enacted in 2011 and amended in 2018 helps to enforce the regulations that require individual contributions as well as employers’ contributions for their employees. Although the public pension system is established by the State Council (see Table 3), it is regulated by the MOHRSS. Moreover, local governments are responsible for managing these schemes and have the right to decide the basic pension benefit in the Resident Basic Pension. Thus, the serious inequalities in the generosity of public pension schemes across different locations lead to the fragmented nature of the public pension system. This feature also leads to portability challenges when individuals change their employment to a different public pension administrative region (Fang & Feng, 2018).

The second pillar—the Enterprise Annuity and Occupational Annuity—must be established in urban enterprises, the government, and public institutes. The fund management of the Enterprise Annuity is regulated by the MOHRSS as required by the document released in 2011 and amended in 2015 (see Table 3). The fund

management of the Occupational Annuity is regulated by the MOHRSS and Ministry of Finance as required by the document released in 2016 (see Table 3).

The third pillar has been in the pilot program stage since 2018 (see Table 3) and is regulated by the Ministry of Finance, MOHRSS, and the Taxation Administration. Meanwhile, China Banking and Insurance Information Technology Management Co., Ltd. is responsible for regulating the individual account of personal annuity insurance and provides basic services such as individual account management, information inquiry, tax audit, external supervision, and other related services for the government.

3 Public Pension Programs

3.1 *The History of the Public Pension System*

In this section, we introduce the history of the public pension system as well as the current states of the public pension system, including the Urban Employee Basic Pension (UEBP), Public Employee Pension (PEP), Urban Resident Basic Pension (URBP), and New Rural Resident Basic Pension (NRBP).

Urban Employee Basic Pension (UEBP)

The UEBP was announced as labor insurance to cover employees in urban enterprises in 1951, and the government set up a labor insurance fund to pay for retirees. In 1966, the labor insurance was canceled, and the enterprise affords the benefits in the UEBP. After that, the UEBP improved in 1991, 1995, and 1997 regarding contribution requirements and fund-raising channels. The 1997 reform confirmed the finalized system of the UEBP, which combined one pay-as-you-go system and one fully funded system. The eligible retirement age in the UEBP is 50 for female workers, 55 for female cadres, and 60 for males, while individuals can choose to retire early if the contribution history satisfies 15 or more years.

- **Pay-as-you-go system:** The enterprise is required to contribute 20% of the wage paid to the workforce, and this contribution constitutes the social pooling account. The social pooling account is a pay-as-you-go system, and the employee can obtain the basic pension from this account according to the number of contribution years, the indexed individual wage, and the local average wage. To be more specific, the basic pension pays 1% of the average of the indexed individual wage and the local average wage for each year of coverage, subject to a minimum of 15 years of contributions. The pension in payment is indexed to a mix of wages and prices, which has been approximately 10% in recent years.
- **Fully funded system:** The employee is required to contribute 8% of his/her wage, and this contribution constitutes the individual account. The individual account is a fully funded system, and the employee can obtain the pension from this accumulated individual account. The monthly benefits in the individual account

Table 4 Annuity factor at different retirement ages

Age	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55
Annuity factor	233	230	226	223	220	216	212	208	204	199	195	190	185	180	175	170
Age	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	
Annuity factor	164	158	152	145	139	132	125	117	109	101	93	84	75	65	56	

are the accumulated amount divided by the annuity factor (expected number of months in retirement, see Table 4), which is 139 if retired at age 60.

Public Employee Pension (PEP)

The PEP was also announced as labor insurance, the same as the UEBP, to cover employees in the government and public institutes in 1951, and the government set up the labor insurance fund to pay for retirees (Table 5). The PEP is mandatory for all employees in the government and public institutes. In 1978, the PEP was finalized as a pay-as-you-go system, and the workers were not required to contribute since the government tax affords all expenditures in this system. In 2015, the PEP was merged into the UEBP as a uniform system called the EBP. The employees in the government and public institutes need to establish a social pooling account and an individual account as required in the UEBP. In 2019, the government decided to lower the contribution rate in the social pooling account from 20 to 16%. Henceforth, the EBP system is finalized and aims to cover all employees in the formal sector (i.e., enterprises, the government, and public institutes). The EBP is mandatory for all employees in urban enterprises, while the self-employed can choose to voluntarily participate in the UEBP.

Urban Resident Basic Pension (URBP) and New Rural Resident Basic Pension (NRBP)

Retirement security for rural and urban residents has been underdeveloped for a long time. The NRBP and the URBP were established in 2009 and 2011, respectively. The residents can choose to participate in these two systems voluntarily. These two systems were merged into one uniform system as the RBP in 2014. The RBP combines one pay-as-you-go system and one fully funded system.

- **Pay-as-you-go system:** In the pay-as-you-go system, the government contributes to each resident, and the participant can receive 88 yuan per month³ as the minimum basic pension. Local government can increase the minimum basic pension according to its own economic development and local government revenue. The basic pension provided by government finance in the pay-as-you-go system constitutes part of the total benefit of the RBP.

³ The minimum basic pension was 55 yuan when the NRBP and URBP were first established, increased to 70 yuan in 2014 and further increased to 88 yuan in 2018.

Table 5 Public pension system in China

Scheme		Participants	Contribution and benefit
EBP	UEBP (Established in 1951; finalized in 1997)	Employees in urban formal enterprises (mandatory)	Basic pension in the social pooling account (Pay-as-you-go, 16% of payroll) Pension in the individual account (Fully funded, 8% of individual wage)
	PEP (Established in 1953; finalized in 1978, merged with UEBP in 2015)	Employees in the government and public institutes (mandatory)	Average replacement rate 90% (No contribution required before the merger while with the same contribution requirements with the UEBP after the merger)
RBP	URBP (2011)	Urban residents (voluntary)	Basic pension in the social pooling account (Pay-as-you-go, government subsidy) Pension in the individual account (Fully funded, 100 yuan to 2,000 yuan every year)
	NRBP (2009)	Rural residents (voluntary)	

- Fully funded system:** In the fully funded system, the participant can choose to contribute from 100 yuan to 2,000 yuan (100, 200, 300, 400, 500, 600, 700, 800, 900, 1,000, 1,500, 2,000) each year. A participant who is not involved in the EBP with a contribution history of 15 or more years is eligible to receive the basic pension when reaching 60 years old and over. The total benefit of the RBP includes the pension from the individual account. The monthly benefit in the individual account is the accumulated amount divided by the expected number of months in retirement, which is 139 if retired at age 60. However, the elderly, who were already 60 years old when the NRBP and URBP were established, can receive the minimum basic pension for free.

3.2 Basic Statistics of the Public Pension System

Coverage rate

Because of the expansion of the public pension system to rural residents and urban residents in 2009 and 2011, the population involved in the public pension system has increased dramatically since 2010. The coverage rate (i.e., the proportion of the population affected by the EBP and RBP to the population aged 15 and over) increased from 32.2% in 2010 to 81.3% in 2018 (see Fig. 4). The population covered by the RBP increased from 102.8 million in 2010 to 532.7 million in 2018, a five-fold increase.

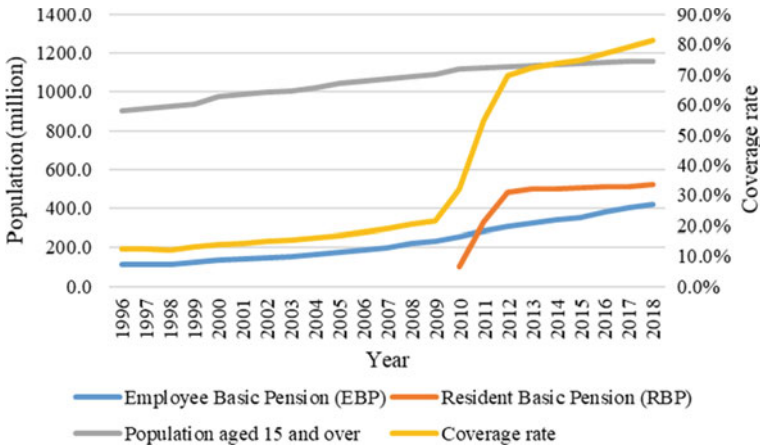


Fig. 4 Coverage rate of the public pension system. *Source* National bureau of statistics and ministry of human resources and social security fund revenue and expenditure

Fund revenue and expenditure

Table 6 presents the revenue, expenditure, and accumulative surplus of the public pension system. It is obvious that the pension fund scale of the UEBP is larger than that of the RBP since the revenue is 5,291.9 billion yuan for the UEBP and 410.7 billion yuan in 2019 for the RBP. The pension fund scale of the RBP has increased rapidly in recent years, from 45.3 billion yuan in 2010 to 410.7 billion yuan in 2018.

Replacement rate

Figure 5 presents the average pension (pension benefits per pensioner in UEBP), the average wage of urban workers, and the average replacement rate (pension benefits per pensioner as a percentage of the average wage of workers). The results show that the replacement rate decreased from 73.2% in 1996 to 44.2% in 2019, reflecting the fact that it is a challenge to provide sustainable and stable retirement security for elderly Chinese people.

3.3 Other Retirement Income Sources Provided by the Government

The Chinese government also provides an Old-Age Pension Allowance to maintain adequate retirement security for people aged 80 and over. In 2019, 31 provinces in China established the Old-Age Pension Allowance system, while the eligible age to receive it and the benefit amount were decided by the local government and even differed by region within one province. Most provinces provide 100 yuan per month for the oldest elderly, while the more developed regions provide higher benefits. For

Table 6 Revenue, expenditure, and accumulative surplus of the public pension system (Billion Yuan)

Year	Employee basic pension (UEBP)			Resident basic pension (RBP)		
	Revenue	Expenditure	Accumulative surplus	Revenue	Expenditure	Accumulative surplus
1995	95.0	84.8	43.0			
1996	117.2	103.2	57.9			
1997	133.8	125.1	68.3			
1998	145.9	151.2	58.8			
1999	196.5	192.5	73.4			
2000	227.8	211.5	94.7			
2001	248.9	232.1	105.4			
2002	317.1	284.3	160.8			
2003	368.0	312.2	220.7			
2004	425.8	350.2	297.5			
2005	509.3	404.0	404.1			
2006	631.0	489.7	548.9			
2007	783.4	596.5	739.1			
2008	974.0	739.0	993.1			
2009	1,149.1	889.4	1,252.6			
2010	1,342.0	1,055.5	1,536.5	45.3	20.0	42.3
2011	1,689.5	1,276.5	1,949.7	107.0	58.8	119.9
2012	2,000.1	1,556.2	2,394.1	182.9	115.0	230.2
2013	2,268.0	1,847.0	2,826.9	205.2	134.8	300.6
2014	2,531.0	2,175.5	3,180.0	231.0	157.1	384.5
2015	2,934.1	2,581.3	3,534.5	285.5	211.7	459.2
2016	3,505.8	3,185.4	3,858.0	293.3	215.0	538.5
2017	4,331.0	3,805.2	4,388.5	330.4	237.2	631.8
2018	5,116.8	4,464.5	5,090.1	383.8	290.6	725.0
2019	5,291.9	4,922.8	5,462.3	410.7	311.4	824.9

Source National bureau of statistics and ministry of human resources and social security. The revenue and expenditure of the Resident basic pension in 2010 and 2011 refer to the revenue and expenditure of the New rural resident basic pension

example, in Beijing, the elderly aged between 80 and 89 can receive 200 yuan per month, the elderly aged between 90 and 99 can receive 500 yuan per month, and those aged 100 and over can receive 800 yuan per month. In Gansu Province, the elderly aged between 80 and 89 can receive 100 yuan per month, those aged between 90 and 99 can receive 200 yuan per month, and the elderly aged 100 and over can receive 300 yuan per month.

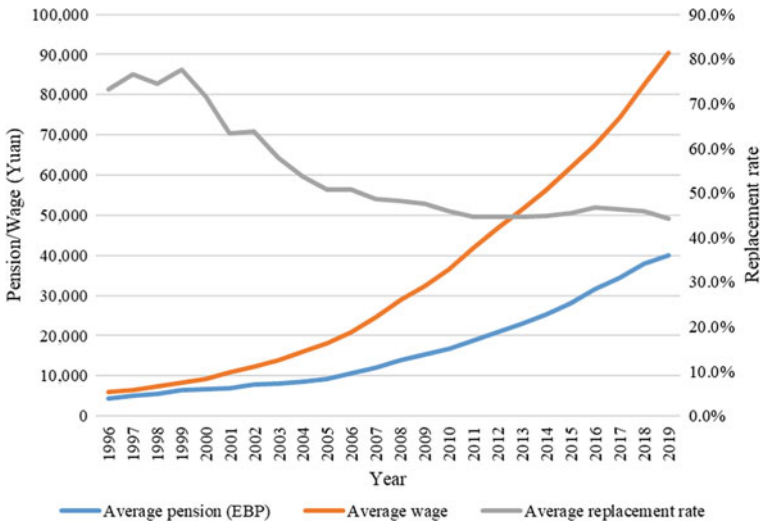


Fig. 5 Average pension, age, and replacement rate. Source National bureau of statistics and ministry of human resources and social security

3.4 International Social Security Agreement

China and Japan signed the China-Japan social security agreement in May 2019, and the Chinese document was released by the General Office of the Ministry of Human Resources and Social Security.⁴ This document aims to effectively solve the problem of the repeated contribution to public pension programs by employees who are working in China and Japan. The Employee Basic Pension (EBP) in China can be transferred to the National Annuity 国民年金 (excluding the National Annuity Fund) and Welfare Annuity 厚生年金 (excluding the Welfare Annuity Fund) in Japan and vice versa.

China and Korea signed the China-Korea social security agreement in January 2013, and the Chinese document was released by the General Office of the Ministry of Human Resources and Social Security.⁵ This document also aims to effectively solve the problem of the repeated contribution to public pension programs by employees who are working in China and Korea. The Employee Basic Pension (EBP), Urban Resident Basic Pension (URBP), New Rural Resident Basic Pension (NRBP), and unemployment insurance in China can be transferred to the National

⁴ See the China-Japan social security agreement released by General Office of the Ministry of Human Resources and Social Security in http://www.mohrss.gov.cn/SYrlzyhshbzb/zhuanti/waiguorencanbao/sbsbhmxd/201908/t20190828_331980.html (in Chinese) and <https://www.jetro.go.jp/biznews/2019/05/811be39a5ce54fd4.html> (in Japanese).

⁵ See the China-Korea social security agreement released by General Office of the Ministry of Human Resources and Social Security in http://www.mohrss.gov.cn/SYrlzyhshbzb/shehuibaozhang/zcwj/SBZzonghe/201301/t20130110_86924.html (in Chinese).

Annuity, Government Civil Servant Annuity, Private School Faculty Annuity, and employment insurance in Korea and vice versa.

China and Germany signed the China-Germany social security agreement in 2002, and the Chinese document was released by the General Office of the Ministry of Labor and Social Security, which merged into the Ministry of Human Resources and Social Security in 2008.⁶ This document also aims to effectively solve the problem of the repeated contribution to public pension programs by employees who are working in China and Germany. The public pension programs and unemployment insurance in China can be transferred to public pension programs and the German Employment Promotion program in Germany and vice versa.

4 Public Pension Programs (Employer-Sponsored Annuity Program)

4.1 The History of Employer-Sponsored Annuity Program

The employer-sponsored annuity program is divided into two separate systems in China: the Enterprise Annuity was developed in 1991 and aims to cover employees in urban enterprises; and the Occupational Annuity was developed in 2015 and aims to cover employees in the government and public institutes. These two programs have different setups regarding fund management, contribution rate, payment, and so on.

In 1991, The State Council released an official document “Decision on reforming the Urban Employee Basic Pension for Enterprises” (see Table 3), which mentioned that the pension system supported only by the government and the employer should be changed and suggested that enterprises can voluntarily provide supplementary pensions to the employees. The fund of the Enterprise Annuity can be withdrawn from enterprise capital, employees’ welfare funds, or other channels. However, this document only provides a general idea of the Enterprise Annuity without detailed information about fund management, contribution rate, payment, and so on.

In 1995, the Ministry of Labor and Social Security (merged with the Ministry of Human Resources in 2008 as the Ministry of Human Resources and Social Security) released the official document “Opinion on establishing the supplementary pension system for enterprises”. This document provides five examples in China and overseas about how to establish the supplementary pension system. This suggests that an individual account can be established. The employer can receive the lump-sum benefit from the Enterprise Annuity or receive it by month or year. The enterprise can decide to use a defined contribution system or defined benefit system as well as the investment return of the individual account. The enterprise should choose a

⁶ See the China-Germany social security agreement released by General Office of the Ministry of Labor and Social Security in http://www.mohrss.gov.cn/SYrlzyhshbzb/zhuanti/waiguorencanbao/sbsbhmxd/201203/t20120313_67199.htm (in Chinese).

qualified supplementary insurance agency or establish a self-owned institute to be responsible for fund management. However, this document still does not provide detailed information about the contribution rate, payment, and so on.

The document released by the Ministry of Human Resources and Social Security (MOHRSS) and Ministry of Finance in 2017 provides a clear structure about how to establish the Enterprise Annuity. It requires that the enterprise's contribution to the Enterprise Annuity shall not exceed 8% of total employees' wages in the enterprise and the total contributions from the enterprise and the employees shall not exceed 12% of employees' wages in the enterprise. The contribution of the individual and part of the contribution of the enterprise constitutes an individual account. All of the investment income of individual contributions belongs to the employer himself/herself, while only part of the investment income of the enterprise's contribution belongs to the employer. The enterprise can make an agreement with the employee that all of the enterprise's contribution and its investment income belong to the employee from the beginning, or the employee can gradually possess the enterprise's contribution and its investment income as the employee's working life in the enterprise increases. This document actually requires that the enterprise use a defined contribution (DC) system in the Enterprise Annuity, which means that an individual account with a certain contribution rate is established while the investment return and payment are uncertain.

For the Occupational Annuity, the General Office of the State Council released a document in 2015 (see Table 3) about the fund-raising channels, fund management, contribution rate, payment, and so on for Occupational Annuity. The document requires that public sector employer contributes 8% of the employee's wages and the employee contributes an additional 4%, with tax preferences applied. The contribution of the employer and the employee as well as the investment return of the Occupational Annuity fund contributes to the individual account. Implementation of the Occupational Annuity is still in the initial stage, with little publicly available information about the extent of coverage.

4.2 Fund Management of Employer-Sponsored Annuity Program

For the fund management of the Enterprise Annuity, in 2011, the MOHRSS released the document "Announcement on the Fund Management of the Enterprise Annuity" (amended in 2015), which made clear requirements about the management of the individual account and the investment restriction of the Enterprise Annuity fund:

- The proportion of liquid assets, such as demand deposits, central bank bills, bond repurchases, and monetary funds, shall not be less than 5% of the net asset value of the Enterprise Annuity investment portfolio; the proportion of bond repurchases shall not be higher than 40% of the net asset value of the Enterprise Annuity investment portfolio;

- The proportion of fixed income products (e.g., fixed deposits, agreement deposits, treasury bonds, financial bonds, corporate bonds, universal insurance products, and other fixed-income products), convertible bonds (including convertible bonds for separate transactions), bond funds, and investment-linked insurance products (the proportion of stock investment is not higher than 30%) shall not be higher than 95% of the net asset value of the Enterprise Annuity investment portfolio.
- The proportion of equity products (e.g., stock), equity funds, hybrid funds, and investment-linked insurance products shall not be higher than 30% of the net asset value of the Enterprise Annuity investment portfolio. Moreover, the Enterprise Annuity fund may not directly invest in warrants, while warrants derived from stocks, convertible bonds, and other investment products should be sold within 10 trading days from the date of listing the warrants on transaction.

For the fund management of Occupational Annuity, in 2016, the MOHRSS released the document “Announcement on the Temporary Fund Management of Occupational Annuity.” The requirements of Occupational Annuity fund management are similar to those of Enterprise Annuity fund management. The difference is that Occupational Annuity funds have different investment restrictions regarding specific investment products: the proportion of fixed deposits over one year, agreement deposits, treasury bonds, financial bonds, corporate bonds, trust products, financial products provided by commercial banks, fixed-income pension products, and mixed pension products shall not be higher than 135% of the net asset value of the enterprise annuity investment portfolio.

4.3 Tax Policy of Employer-Sponsored Annuity Program

In 2014, the State Taxation Administration released the document “Announcement on Personal Income Tax for Enterprise Annuity and Occupational Annuity.” This document provides clear rules about preferential tax policy in employer-sponsored annuity programs. The detailed tax policy is listed below.

- When enterprises, the government and public institutions (hereafter referred to as employers) contribute to the individual account in annuity programs for employees according to the contribution rate required by the government, the employees do not pay personal income tax temporarily for the employers’ contribution.
- The contribution by the employee according to the contribution rate required by the government is tax exempt if the contribution rate does not exceed 4%.
- The contribution by the employee and employer exceeding the standard contribution rate is not tax-exempt and should be taxed by being incorporated into the individual’s current salary.
- The tax base of personal salary for the enterprise annuity is the average monthly salary of the previous year. The portion of the average monthly salary that exceeds the average monthly salary of the employee in the located city by more than 300% shall not be included in the tax base of the personal salary.

When the investment income of the annuity fund is included in the individual account, the individual does not pay personal income tax temporarily. Individuals who have reached the national retirement age and received monthly annuities will be taxed in full at the tax rate applicable to the item “Wages and Salaries.”

4.4 Basic Statistics of the Enterprise Annuity

As shown in Table 7, even though the number of employers involved by the enterprise annuity and the number of providers are increasing by year, the scale of the Enterprise Annuity is still limited as the second pillar in the pension system. In 2019, the scale of the Enterprise Annuity asset was 1,798.5 billion yuan, accounting for 31.5% of the fund revenue of the EBP and RBP (5,291.9 billion yuan and 410.7 billion yuan), indicating that the Enterprise Annuity is still an underdeveloped market. In terms of the number of participants and the number of providers (enterprises) in 2019, the Enterprise Annuity system had 25.5 million participants, representing only approximately 5.9% of the number of UEBP participants (434.9 million). The number of enterprises providing the Enterprise Annuity in 2019 was 96,000, approximately 0.32% of the total enterprises. Total assets stood at approximately 1,798.5 billion yuan at the end of 2019, approximately 1.8% of GDP (99.1 trillion yuan). Enterprises offering pension plans tend to be large state-owned enterprises (SOEs) or monopolistic companies in, for example, the railway, electricity and communication industries (Cai & Cheng, 2014; Impavido, et al., 2009). Employers are increasingly

Table 7 Basic statistics of the enterprise annuity

Year	Employers (thousand)	Employees (million)	Assets (billion yuan)
2007	32.0	9.3	151.9
2008	33.1	10.4	191.1
2009	33.5	11.8	253.3
2010	37.1	13.4	280.9
2011	44.9	15.8	357.0
2012	54.7	18.5	482.1
2013	66.1	20.6	603.5
2014	73.3	22.9	768.9
2015	75.5	23.2	952.6
2016	76.3	23.3	1107.5
2017	80.4	23.3	1288.0
2018	87.4	23.9	1477.0
2019	96.0	25.5	1798.5

Source Summary of national enterprise annuity fund in 2019, Ministry of human resources and social security

offering defined contribution (DC) plans in which they are not responsible for how pension money is invested and do not guarantee a certain benefit. Most employers, however, cannot afford and have little incentive to offer pension plans. Legislation and regulations have played key roles in the development of pension plans.

4.5 Investment Return and Benefits of the Enterprise Annuity

The weighted average investment return rate of the Enterprise Annuity Fund was 8.3% in 2019, while it was once negative in 2008 and 2011. There is no specific trend of the investment return rate, while it has fluctuated around approximately 5% since 2008, as shown in Fig. 6. The investment income of the Enterprise Annuity Fund was 125.8 billion yuan in 2019. The Enterprise Annuity can be invested in both fixed-income assets and equity assets. The number of investment portfolios is increasing by year, and there were 4,327 investment portfolios in 2019. Approximately 72% of investment portfolios have equity assets, while the rest of them only invest in fixed-income assets. The weighted average investment return rate of investment portfolios with only fixed-income assets is 5.67%, while the weighted average investment return rate of investment portfolios with equity assets is 8.89%.

Table 8 presents the number of recipients of the Enterprise Annuity and the benefits received in each year from 2012 to 2019. It shows that the number of recipients is increasing by year. Approximately 1,804,600 people received pension benefits from the Enterprise Annuity in 2019; among them, 144,900 people choose to receive lump-sum benefits, while 1,659,700 people choose to receive benefits in installments. The total benefits received by recipients in 2019 were approximately 49.2 billion yuan; among them, approximately 10.4 billion yuan was received in lump-sum benefits, and approximately 38.9 billion yuan was received in installments. The average benefits received by each recipient in lump-sum benefits were 71,773.6 yuan, and the average benefits received by each recipient in installments were 23,438.0 yuan in 2019.

5 Private Pension Programs

5.1 The History of Personal Annuity Insurance

Regarding personal annuity insurance, in 2017, the State Council released the document “Several Opinions on Accelerating the Development of Commercial Pensions.” This document encourages commercial insurance companies to develop diversified commercial insurance products to meet the demands of individuals and families in terms of protecting them against retirement risk and wealth management. It requires that insurance companies develop commercial pension products such as individual

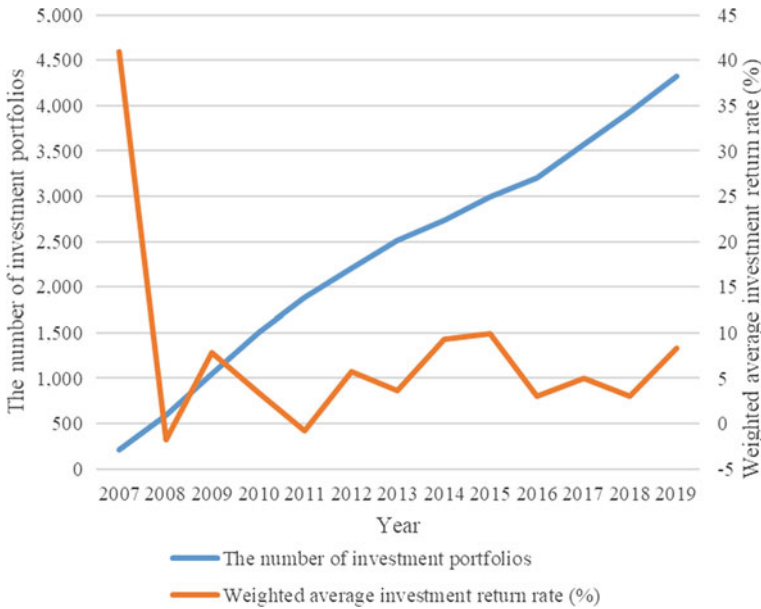


Fig. 6 Investment return and the number of investment portfolios of the enterprise annuity. *Note* The weighted average investment return rate in one year is calculated using the investment portfolios that operate during that year and using the weight of assets scale to average the investment rate. *Source* Summary of national enterprise annuity fund in 2019, Ministry of human resources and social security

Table 8 The number of recipients and benefits of the enterprise annuity

Year	2019	2018	2017	2016	2015	2014	2013	2012
<i>Number of recipients (thousand)</i>								
Total	1,804.6	1,563.5	1,275.1	1,054.8	897.0	476.0	578.3	505.5
Lump-sum	144.9	177.4	171.5	209.3	224.7	202.2	374.1	328.4
Installment	1,659.7	1,386.1	1,103.6	845.5	672.3	273.8	204.2	177.1
<i>Benefits received by recipients (billion yuan)</i>								
Total	49.2	43.9	34.5	29.6	26.1	14.1	19.6	14.8
Lump-sum	10.4	11.7	10.9	10.3	11.1	9.2	16.9	12.8
Installment	38.9	32.2	23.7	19.3	14.9	5.0	2.7	2.1

Source Summary of national enterprise annuity fund in each year, Ministry of human resources and social security

tax deferred commercial pensions and special products targeted at one-child families, families with no children, and “empty nest” families.

Furthermore, in 2018, the Ministry of Finance released the document “Announcement on the Pilot Program of Individual Tax Deferred Commercial Pensions,”

which mentions that 25% of the commercial pension income is tax exempt. Several pilot cities, including Shanghai, Fujian Province and Suzhou Industrial Park, were suggested to provide individual income tax deferred annuity insurance products. The model incorporates income tax deductions for individual premiums and does not tax investment returns, but benefits are subject to income taxation when received by individuals who reach the eligible age. However, the maximum premium that can receive a tax deduction is limited to 6% of one's taxable income or 12,000 yuan, whichever is lower. There are also tax preferences for annuity benefits, with 25% of the annuity free from income taxation.

5.2 Statistics Related to Personal Annuity Insurance

In terms of the third pillar, the supply side and demand side of the commercial pension market are both underdeveloped, mainly reflected in two aspects: first, the proportion of premium income of commercial pension to the residents' savings decreased from 0.15% in 2004 to 0.09% in 2015; second, the structure of commercial pension products fails to meet our expectations since the premium of pure security products accounted for 47.13% of the total premium income in 2004 while it decreased to 7.39% in 2015. Until 2018, there was no tax preference for commercial annuity insurance. However, it should be noted that many of these personal annuity insurance products are sold as wealth management products and are not intended to be kept in force for long durations; such products are thus unlikely to serve the genuine purpose of pension income. This means that most commercial pension products are investment-oriented insurance products instead of providing retirement security. The investment-oriented products ignore the supplementary function of commercial pensions in the multipillar pension system.

Implementation of the personal annuity insurance is still in the initial stage, with little publicly available information about the extent of coverage. Currently, 69 insurers in China are involved in the personal annuity insurance business through a variety of products. Personal annuity insurance has grown rapidly, with an average annual growth rate of 16.9% between 2001 and 2014. In 2014, personal annuity insurance income was 282.2 billion yuan (increasing more than 77.2% year-over-year). There were 69.433 million in-force policies covering 100 million people, providing protection amounting to 1.4 trillion yuan.

6 Alternative Programs (Reverse Mortgage)

Reverse mortgages provide an alternative source of retirement funding by allowing older homeowners to borrow against their home. To explore new ways to fund retirement, the Chinese government initiated a pilot program to facilitate the take-up of reverse mortgage products in urban China. The Chinese reverse mortgage pilot

program was introduced in mid-2014 by the Happy Life Insurance Company in four cities (Beijing, Shanghai, Guangzhou and Wuhan) and was extended to other major cities in 2016 and then nationwide in August 2018.⁷ However, this pilot program of reserve mortgage products in several large Chinese cities saw almost no take-up. By the end of June 2018, only one insurance company of Happy Life Insurance Company had carried out relevant business, and 139 elderly people from 98 families had completed the underwriting procedures of reverse mortgage products.

Previous literature designed, fielded and analyzed two large surveys to ascertain the potential demand for reverse mortgages in China (Hanewald et al., 2020). They developed a flexible product design that overcomes issues raised with an unsuccessful reverse mortgage product currently piloted in China and found high stated demand for this product among educated urban Chinese. They developed a detailed product description that was very well understood by the survey participants. The high level of interest was consistent between older homeowners and adult children (of older homeowners) who were asked whether they would recommend the product to their parents. Eighty-nine percent of the older homeowners were interested in the product, and 84% of the adult children recommended the product to their parents.

7 Public Policy Issues of Importance

7.1 Unique Characteristics: Fragmented System and Unequal Retirement Security

It should be noted that there is an evident retirement security gap between different public pension schemes as well as among different regions caused by disparate economic development. Previous studies document both the absolute benefit gap and replacement rate gap between different pension schemes: the average monthly pension for retirees in the EBP, rural elderly residents, and urban elderly residents was approximately 2,000 yuan, 57.5 yuan, and 78 yuan (Wang et al., 2014); the replacement rate gap was as large as 46.9% in 2013 between the EBP and RBP (Zheng et al., 2019). The public pension fund is managed by the local government so that the contribution rate, actual benefits, and government subsidy are determined by the local government, even though the central government announces the general rule of the system. Workers in municipalities and east coast provinces earn much higher incomes than those in inland provinces; thus, the basic pension is higher in these regions since it is related to the average wage (Fang & Feng, 2018).

Previous studies have already found that biased expectations of future pension benefits, low participation, and low saving rates for residents may be due to a lack

⁷ See Notice No. 43 [2018] of the China Banking and Insurance Regulatory Commission on Expanding the Scope of the Elderly Housing Reverse Mortgage Endowment Insurance, which was released on 8 August 2018.

of understanding of public pension programs. It is necessary to improve the understanding of public pension programs for rural and urban residents and encourage them to contribute more to these programs. It is also important to reduce the regional inequality of the pension benefits in public pension programs by managing the pension funds from the central government level or the provincial government level instead of the county level.

7.2 The Low Demand for Private Pension Programs and Reverse Mortgage

The fact that there is low demand for private pension programs and reverse mortgage products in China is well known by researchers. There are many reasons for this low demand, such as traditional family old-age support, lack of trust for commercial insurance products, low education level leading to lack of risk perception, and low income for most elderly people.

To increase the demand for private pension programs and reverse mortgages, the government and commercial insurance companies could make efforts from different perspectives. First, providers need to describe these products in an easy-to-understand way and should address key consumer concerns directly. Second, private pension programs should be marketed to both older residents and their adult children. In particular, reverse mortgage providers should encourage the broader family unit to discuss the decision to buy private pension products or the use of housing wealth in retirement. Third, narrow framing of the elderly could be an obstacle for the elderly to participate in private pension programs. The government should be devoted to increasing financial literacy and insurance literacy for the nation.

7.3 Evaluating China's Pension System: An International Comparison

Voluntary participation is essential given the nature of income volatility for many rural and urban residents. This is also supported by international experience, which generally has been poor with respect to coverage of rural workers in contributory schemes in low- or middle-income countries. It would be advisable to have flexibility on the periodicity of contributions within a year to allow for the specificities of rural incomes and access. Such an incentive-based approach (rather than mandated participation) has resulted in high coverage in numerous rural pension pilots in China in recent years. Therefore, the government's plan to achieve full pension coverage by 2020 is not ambitious but a real fact in China, which is not the case in other countries.

However, there is a tradeoff between this full coverage and adequate retirement security in public pension systems. Most residents only receive the minimum basic

pension benefits, which is 88 yuan (approximately US\$13.6) per month required by the central government. Therefore, another difference between China and other developed countries in the pension system is that there is a fragmented public pension system in China, and many residents can only participate in low-welfare residents' public pension programs.

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