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**POPULATION AGEING AND CHINA'S ECONOMY**

S.L. Eremina (a)\*, Fu Sun (b), F.G. Babaeva (c)

\*Corresponding author

(a) Siberian State Medical University, Moscow highway,2, Tomsk 634050, Russia; esofia@tpu.ru

(b) National Research Tomsk Polytechnic University, Lenina Ave.,30, Tomsk 634050, Russia; 540438272@qq.com

(c) National Research Tomsk Polytechnic University, Lenina Ave.,30, Tomsk 634050, Russia; kamil\_gunel@mail.ru

*Abstract*

In many countries, the number and proportion of elderly people is growing. Some countries can be called ageing now; others can be attributed to this category later. The relevance of the problem of ageing is indicated by the fact that the activities of almost all international organizations are aimed at researching a particular problem of ageing. When adopting the "Vienna International Plan of Action on Ageing", for the first time, the definition of "ageing" was given by the criterion of the share of 60 and 80-year-olds in the total population of the country. The first should be at least ten percent, the second - at least seven.

The ageing problem of the population is especially acute for China because of the policy of birth control. The problem also lies in the fact that in China the population is aging faster than the gross domestic product is growing. It is noted that, despite the growth of both consumer spending and savings, their share in the country's gross domestic product is declining. For example, the share of final consumption is reduced from 5.9% in 2011 to 3.6 in 2014.

This research assesses the impact of population ageing on a number of macroeconomic parameters, including a decrease in the share of final consumption in the gross domestic product; the instability of domestic demand for durable goods and innovative goods; labor shortage; an increase in the burden for the state budget. The research ends with proposals for improving the country's pension policy.

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**Keywords:** Ageing, China, implications for macroeconomic.



## 1. Introduction

In many other countries of the world, the rapid development of medical science and practice, as well as the level of education, led to a reduction in death rate. In China, the policy of planned reduction in the birth rate has led to a sharp reduction in the ratio of the working population and retirees. Savings and investment have declined with an increase in the proportion of the older population; there is a restriction of domestic consumer demand; the financial burden on the country's budget is increased, etc.

All these macroeconomic changes require ways of adapting the economy to the conditions of a new reality, seeking directions for improving social policy, as well as factors that can stimulate economic growth (Eremina, Sun, Kudelina, Babaeva, 2016).

The population at the age of 65+ is the fastest growing cohort in the world. The number of 80-year-olds and older can reach 392 million by 2050 (The world's demographic situation, 2014), which more than tripled the current situation (Table 01). In China, by 2020, the proportion of older citizens will be 24% (698 million people) (Zhang, 2014).

**Table 01.** Ageing of population. World countries 2012-2050 (Chen, Cheng, & Dai, 2012)

Year	China	Japan	USA	Germany	France	India	Brazil	Russia
2012	13,35	31,61	19,11	26,67	23,69	7,96	10,91	18,57
2015	15,07	32,94	20,27	27,93	24,75	8,65	12,00	19,80
2020	17,37	34,24	22,44	30,23	26,29	9,80	14,09	22,12
2025	20,18	35,51	24,35	33,45	27,82	11,00	16,57	24,05
2030	24,41	37,12	25,27	36,22	29,08	12,32	18,86	24,53
2035	28,01	39,53	25,81	36,73	30,04	13,74	21,14	25,58
2040	29,40	40,84	25,93	37,04	30,17	15,38	23,77	26,88
2045	31,08	41,48	26,36	37,27	30,34	17,17	26,67	29,03
2050	33,90	41,46	26,60	37,49	30,46	19,10	29,03	31,17
Growth (2050-2012), total	20,55	9,85	7,49	10,82	6,77	11,13	18,11	12,61
Growth, (2050-2012), % on tge average	0,53	0,25	0,19	0,28	0,17	0,29	0,46	0,32

For the first time, the concept of "ageing" was defined at the time of the adoption of the "Vienna International Plan of Action on Ageing" (The Vienna International Plan of Action on Ageing, 1982), according to which the country was considered to be ageing if the population aged 60 + was 10% of the population, or 65+ - more than 7% (Chen, 2016). China can be attributed to an ageing country only since 1999, but the growth rate of ageing is much higher than developed countries. If to increase the proportion of the population at the age of 65 + from 7% to 14% of France it will take 115 years, Sweden - 85 years, the USA - 66 years, England - 45 years, China - only about 25 years (Thun, 2006). The problem also lies in the fact that in China the population is ageing faster than GDP is growing.

## 2. Problem Statement

The ageing of the population is closely connected to state policy, economic development, economic growth, labor supply, capital market development and national savings (Eremina, Sun, Kudelina, Velichko, 2016).

It was noted earlier the fact that in the 21st century, the increase in life expectancy led to an increase in the burden on pension systems, and that social security has become the largest item of the state

budget (Eremina et al., 2017), in particular, in Russia. The literature also conducted a comparative study of pension well-being in Russia and China (Eremina et al., 2017).

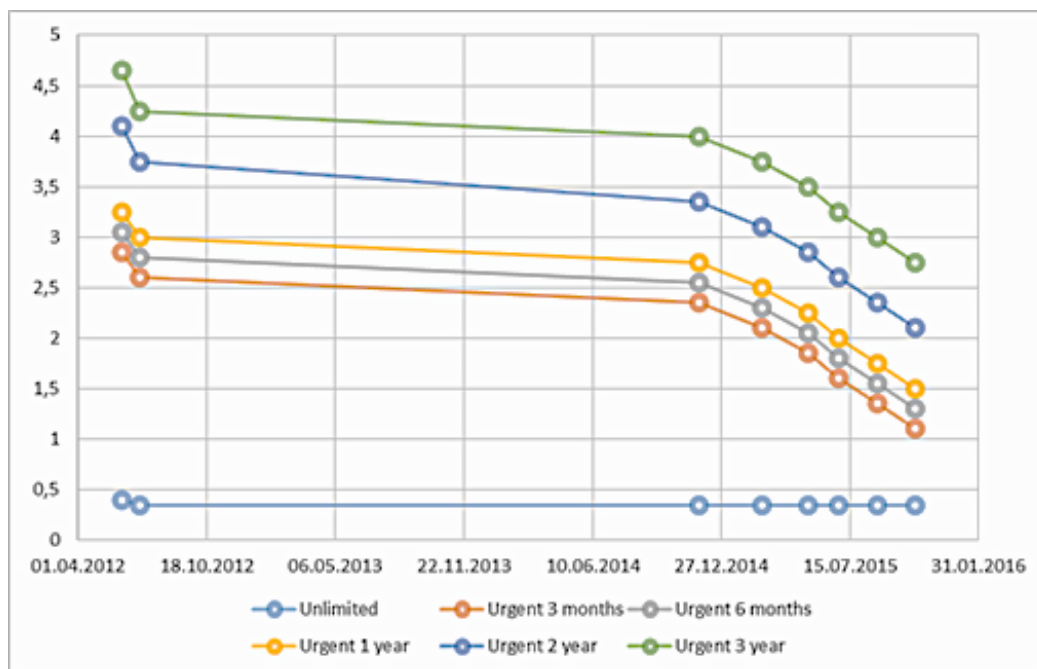
This study evaluates the negative effects of ageing on reducing the share of final consumption in GDP, the instability of domestic demand for durable goods and innovative goods; labor shortage; increase in financial burden, etc.

- *Decrease in the share of final consumption in GDP.* Despite growth, both consumer spending and savings, their share in GDP is declining (Table 02) from 5.9% in 2011 to 3.6% in 2014, i.e. more than 60%.

**Table 02.** Influence of consumer spending on final consumption (The basic rate of Renminbi deposits in financial institutions, 2015)

Year	Consumer spendings, yuan	Saving deposits of urban and rural residents, bln. yuan	Consumer spending in GDP, %
2011	13134	34363.589	5.9
2012	14699	39955.1	4.3
2013	16190	44760.157	3.6
2014	17778	48526.13	3.6

A high level of savings and insufficient consumption can lead to a reduction in the income of companies and impede the development of the economy, i.e. to a serious misbalance between investment and consumption. In China, the direction of investment for the population is limited; since income on bank deposits cannot satisfy the population (Figure 1), their share for the period 2006 - 2016 decreased from 30.32% to 18.00% with an increase in investment in bonds from 18.46 to 33.66% and shares and funds - from 9.26 to 14.42% (Ba & Zhu, 2016).



**Figure 01.** Deposit rate in financial institutions, %% / year (Ba & Zhu, 2016)

- *Instability of domestic demand for durable goods and innovative goods.* The stimulating effect of the electronic products and automotive industries on economic growth is reduced (Table 03). Older age citizens of China, especially in the villages, are employed in small-scale peasant farms, i.e. independently produce and sell their products, without demanding the products of industries.

**Table 03.** Consumer durables on average per 100 families (The basic rate of Renminbi deposits in financial institutions, 2015)

Year	Cities and towns, pcs.				Villages, pcs.				Share of village, %			
	colour television	camera	home telephone	air vent	colour television	camera	home telephone	air vent	colour television	camera	home telephone	air vent
2012	136.07	46.42	68.41	n/a	116.9	5.18	42.24	14.69	86	11	62	n/a
2013	118.6	34.0	48.6	66.1	112.9	4.4	32.6	12.4	95	13	67	19
2014	122.0	35.2	55.5	68.2	115.6	4.5	38.9	13.9	95	13	70	20

- *Labor shortage is provoked.* The ageing of the population leads to a reduction in the supply of labor and even to its shortage, in connection with the advantage of cheap labor and, consequently, the competitiveness of Chinese goods disappears. In 2014 the share of the working-age population in the total population was maximum, amounting to 72.8% (995 million people), after which the decline began. Based on the forecast of the current trend, the working-age population will decline from 940 million (70.1%) in 2010 to 710 million (54.8%) in 2050. (Li, 2015). And by 2100 is stabilizing at the level of 56%.

One of the important options for overcoming the labor shortage may be an increase in the retirement age. Currently, the retirement age in China, established by law (The State Council, 1979) for employees of the administration and salaried workers, is 60 years for men and 55 years for women; but for employees of enterprises it is 60 years for men and 50 years for women (Table 3). In connection with the increase in life expectancy, raising the retirement age will not only reduce the costs of maintaining the pension system, but also partially remove the problem of labor shortages.

- *The financial burden increases.* Since the pension to current pensioners was increased, respectively, the pension system expenses increased. In just 5 years (2010 - 2014), public spending of social and pension insurance funds increased two or more times (Table 4). Moreover, the pension system is one of the main risk factors not only for the state, but also for future pensioners - the risk of retirement with an empty personal account.

**Table 04.** Average life expectancy of the population and retirement age, years (The basic rate of Renminbi deposits in financial institutions, 2015, World Health Statistics, 2016)

Year	Average life expectancy			Retirement age		
	women	men	on average	women – employees of		men
				enterprises	Administration and salaried employee	
2005	75.25	70.83	72.95	50	55	60
2010	77.37	72.38	74.83			
2015	77.6	74.6	76.1			

**Table 05.** Expenditures of social and basic pension insurance funds, billion yuan (The basic rate of Renminbi deposits in financial institutions, 2015)

Insurance Funds expenses	Years					
	2010	2011	2012	2013	2014	2015
Social	1501.89	1865.29	2333.13	2791.63	3300.27	3898.81
Basic pension	1055.49	1276.49	1556.18	1847.04	2175.47	2581.27

### 3. Research Questions

The key question of the study is to determine what is the impact of an increase in the proportion of the older population on China's macroeconomic indicators, taking into account GDP per capita? In particular, in what correlation are the rates of change in the proportion of the older population and the rate of economic development measured by the four macroeconomic indicators?

### 4. Purpose of the Study

On the example of China, to show that a prolonged, rapid ageing of the population is reflected not only on the pension system, but also on the macroeconomic indicators of the national economy. To assess how the increase in the proportion of the older population enhanced the negative impact on a number of macroeconomic parameters of China's economy: the level of savings and investment; domestic consumer demand; financial burden, etc.?

### 5. Research Methods

First, on the basis of the definition of the concept of "ageing" and the data of international and national statistics, we found the dynamics of the proportion of the older population. Next, we selected a number of macroeconomic indicators in China, which have the greatest impact on the country's economic development, in particular: the share of final consumption in GDP, the level and dynamics of domestic demand for durable goods and innovative goods, the state of the labor market and government spending on social support for the population. Then, we compared the dynamics of the proportion of the older population and the selected indicators to assess the presence / absence of communication. It turned out that the connection is obvious: the ageing of the population has a significant negative impact on the

indicators of the country's economic development. Based on these results, recommendations were developed to reduce the negative effects of ageing on each of the selected indicators separately.

## 6. Findings

- Consumer spending in GDP decreased from 5.9% in 2011 to 3.6 in 2014; more than 60%;
- domestic demand for durable goods and innovative goods is unstable, as a large share of the costs of the elderly population comes from medicines and medical services;
- the supply of labor is declining and even a deficit is being formed, the competitiveness of Chinese goods, connected with the cheapness of the labor force, is disappearing;
- from 2010 to 2014 expenditures of state social and pension insurance funds increased two or more times.

## 7. Conclusion

The ageing of the population has become a global and acute problem for many countries. It is closely connected to state policy, economic development, economic growth, labor supply, capital market development and national savings, as well as other macroeconomic indicators. This problem is especially acute for China because of the policy of birth control (i.e., the policy of planned reduction of the birth rate), which has been implemented in the country for several decades.

In China, by 2050, a very high proportion and high growth rates of the population aged 60 and older are projected. In the long term, population ageing will have a systemic impact on the country's economic growth, industrial structure change, the level of national savings, employment and other macroeconomic parameters.

Negative consequences of population aging on a number of macroeconomic parameters require taking appropriate measures. For example, to reduce the financial burden, it is necessary to increase the retirement age, because, according to estimates (Li, 2012), its increase by one year will increase the income of the Single Pension Planning Fund by 4 billion yuan and reduce the expenditure by 16 billion yuan. According to other estimates (Kudelina, 2016), this will lead to a decrease in the Fund's deficit by 1.949%, and for 5 years - by 22.69%. Investments of pensioners can become an additional source of stable incomes, both for pensioners and for the capital market as a whole.

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