

Analysing Problems of Chinese Pension Market and Proposing Solutions through Government Initiatives and Private Sector Strategies

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Abstract:

This study aims to analyse the problems of the Chinese pension market and test whether the current solutions are effective. It combines two ideas of pension reform: privatisation and Richard Thaler's "Save More Tomorrow" (SMT). A questionnaire was distributed to 577 interviewees to test whether these policies could work for them. The results are analysed using the Z-test and ANOVA test to examine the hypotheses. The results show that privatisation will fail at solving the pension crisis because people are insufficiently informed about the conditions in the pension market. Furthermore, they are more willing to invest to other areas other than private pensions. On the other hand, SMT will be effective as the money illusion makes people ignore the increase in pension rate when their wages increase at the same time. It provides a better policy for the Chinese government to solve the pension crisis. Furthermore, it also shows that the non-neoclassical paradigm can be effectively applied to policymaking.

Keywords: Pension, Behavioural Economics, Public Policy, Social Security.

1. Introduction

In 2022, China experienced an unimaginable negative growth in population of 850,000, which was its first decline since 1961 (National Statistics Bureau, 2023). It has been predicted that by 2040, the population over 60 will reach 400 million or 30% of the entire Mainland Chinese population (WHO). Under the pay-as-you-go (PAYG) system, the Chinese National Health Commission expects that the pension depen-

dependency ratio will rise from one retiree to five workers to 4-to-1 in 2030 and 2-to-1 in 2050 (Reuters, 2023). As this tension grows, by the end of the 21st century, the working population will decline by 1.73% each year, with an increase in pension dependency ratio to 10-to-12 as Figure 1 shows (World Economic Forum, 2022). Hence, the Chinese government needs to seek a solution to the current population structure, which is analysed and discussed in this report.

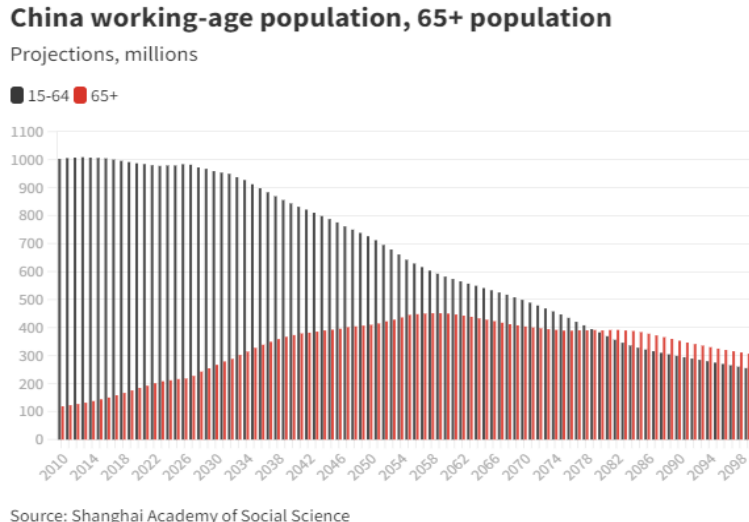


Fig. 1 China working-age population, 65+ population

(Source: World Economic Forum, 2022)

2. Literature Review

2.1 The Changes in Chinese Population Structure

By evaluating the previous data and applying the PDE model with epidemiological calculations, research by

Luo, Su & Zheng (2021) has predicted that by 2030, the population of China will grow to 1.40 - 1.44 billion and decline to 1.29 - 1.40 billion by 2050, as Figure 2 shows. Meanwhile, people aged 65 or more will occupy 20% of the total population by 2030 and the percentage of older disabled people will reach 57% by 2030 and 70% by 2050 if no prevention or supporting policies are introduced which significantly increases the demand for government subsidies.

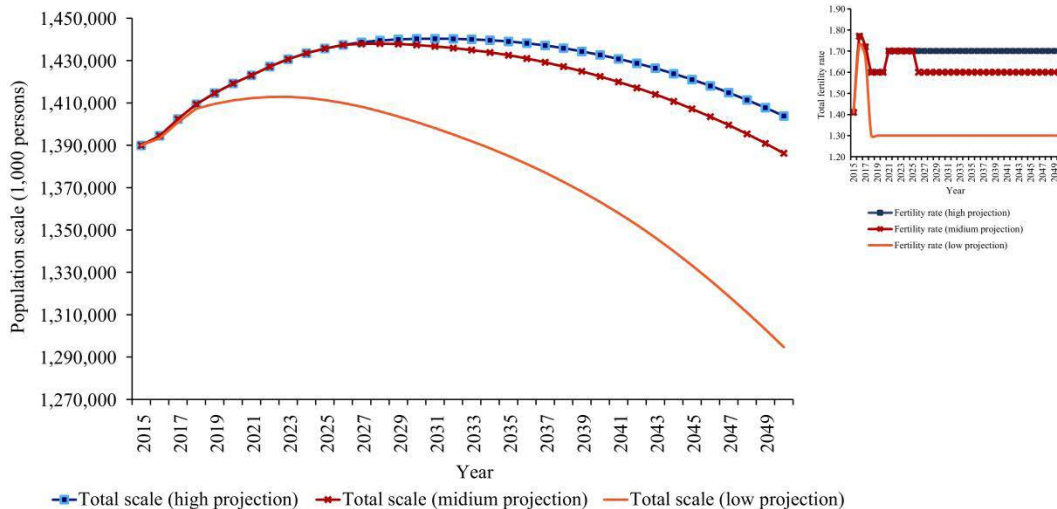


Fig. 2 Population forecast from 2015 to 2050

(Source: Luo, Su & Zheng, 2021)

The geographical mobility of the population has been researched by Liu *et al.* (2022) that the percentage of urban area population will increase, which is supported by Li *et al.* (2013) that vacancies created in the secondary and tertiary sectors will be filled by rural area people who would like to join in off-farm labour markets. Furthermore, the studies on occupational mobility have predicted the de-

cline of the secondary sector in China and hence a transfer to primary and bottom service sector employment structure (Peter & Sarah, 2009). As a consequence, problems such as inequality, the instability of low-income populations and over-specialisation of the job market will occur in the future and such policies as a social “safety net” to promote welfare and encouragement of productivity growth would be more significant and necessary.

2.2 The Current Chinese Pension System

2.2.1 Pension insurance for residents

The Resident Pension Insurance could be defined as a public insurance provided to all individuals which is funded by legally mandated investing. Pozen (2013) has noticed that the reforms and changes in the Chinese pension system have followed the economic reform of China. China's economic reform from a planned economy to a mixed economy has released the work to the insurance market and set up different pension systems for diverse social groups. However, the inefficiency pushed the government to merge the four systems into one, known as the Basic Old Age Insurance (BOAI), which provides services to employees in both the public and private sectors and non-employed individuals (Fang & Feng, 2018).

The BOAI is a redistribution channel from employees today to the working population in the past. Although the central government is responsible for designing the general policies for pensions, that is the local governments that control the pool of money. Except for the private pension system for urban workers, Zhao & Xu (2002) stated the two foundations of social pooling: benefits from redistribution and enforced funding from the salary of employees. While the former relies on taxation and welfare policies, the latter collects funding from public pension schemes, usually a standard ratio cut from the salary paid to workers. Generally, entrepreneurs are required to pay 20% of wages paid to their employees as a contribution to the pooling (Fang & Feng, 2018).

2.2.2 Pension system for urban workers

Pension reform provides an alternative to social pooling -- private pension accounts. In Dong and Wang (2016)'s research, they have pointed out the influences of the invention of enterprise annuity plans. The EA is an account set up by businesses that volunteer to provide alternative pension sources. It was introduced to solve the problem that while SOEs and monopolistic enterprises could provide extra pension insurance to their employees, there is less motivation or ability for small private firms to do so. In 2015, an occupational annuity was also created which can be seen as a more personal version of EA which calculates the money as personal wages rather than total wages from the side of the enterprise. However, it is worthwhile to notice that this market is still underdeveloped. For instance, until 2017, there was only 0.35% of total enterprises that have joined the EA system.

Fang & and Feng (2018) have also highlighted another component of the private pension system: private annuity insurance (PAI) which relies on market forces as they are sold as wealth management products from financial insti-

tutions. From 2001 to 2014 the average year growth rate reached 16.9% which shows the potential of the market. However, it was questioned whether it is effective to provide a reliable long-term pension income. Moreover, an alternative option called the individual tax-deferred pension plan was introduced in Shanghai and other developed urban areas. The money saved by citizens in this account will not be calculated in the social pooling and can be directly paid to them back in the future. According to the State Council (2022), several taxation reduction benefits are provided. However, the tax cut is still very limited to attract people in reality (Dong & Wang, 2016).

2.3 Potential problems with the current system

On the revenue of pension collected, due to the population change and low birth rate, long-term debt will be caused since the growth of participants of the pension system is lower than the increase of retirees, which would put pressure on the PAYG system (Dong & Wang, 2016; Pozen, 2013). Furthermore, the private pension accounts are underdeveloped whose figure shows that their occupation to total pension revenue is less than 10% (Zhang, Chen & Rösner, 2000). It is also difficult for the government to collect money from EA and OA, which shows that people are still going to rely on BOAI. Considering the consistently falling replacement rate, there is a high risk for retired workers (Dong & Wang, 2016). Besides, the lack of motivation for local bureaucrats is also vital. Since local pools are funded by senior governments, they might be less motivated to collect money but more talented in providing exceeding welfare (Chen, 2014).

Institutional problems in the process of managing the pension system exist widely. Firstly, although ideally personal accounts are separated from social pooling, managers are taking money from the former to fill the deficits in public accounts (Dong & Wang, 2016). The "empty accounts" reduced the replacement ratio for its owners and led to the problem that the *de facto* pension system is entirely PAYG, making the reforms meaningless (Li, 1998; Zhang, Chen & Rösner, 2000). Furthermore, due to pension system reforms, several calculating systems are working simultaneously, which creates barriers for the external population from receiving a pension from local social pooling. Hence, labour mobility is reduced in China. Lastly, due to the volatility of the underdeveloped financial market, Chinese pension managers have limited choices for investment which can hardly afford the rising retired population (Pozen, 2013).

Problems also occur in the distribution of pension welfare. Socially speaking, migrants and women get a much lower average pension than other groups. Furthermore,

occupational inequality exists between the public sector and private sector, where civil servants gain a 90% -- 100% replacement and 100% covered, distinct from the replacement of private enterprise employees. The reason for this gap is that most civil servants and employees are still gaining pensions from old systems they joined before which were designed not to be fair (Zhu & Walker, 2018). Similarly, urban employees only occupy 24% of total pension expenditure whilst the percentage of civil servants to the total working population is 5%. Moreover, unemployed and self-employed people are not included in such a system designed for all. Inequality also happens among different regions. Due to systematic differences, the rural pension system is highly underdeveloped compared to what is provided to urban employees (Wu, 2013).

2.4 Potential solutions to the forthcoming problems

2.4.1 Experience from other economies

Historically, there are two trends of introducing solutions, either by policy which corrects faults in the system or systematic changes involved in legislation.

The United States and Canada are examples of the former idea. The U.S. introduced policies such as reductions in retirement age and pension replacement rate, and an increase in income tax to subsidise the system (Béland & Shinkawa, 2007). Furthermore, the Regan administration encouraged a private pension system which reduced reliance on public welfare (Butler & Germanis 1983). Speaking of Canada, since it was facing less pressure on the pension system as its reduction on the working class is less significant, its policies focused more on providing a more diversified financial portfolio to the pension system by, for instance, increasing investment opportunities or allowing investment professionals to manage the pension accounts (Martin, 1997)

The reform of Japan was more radical. Firstly, the private pension system was replaced by a "contract type" pension system, which asked employers to facilitate asset transfer between distinct pension plans known as the Japanese version of 401(k). This introduction is highly active among small businesses (Henshubu, 2003). Furthermore, the year of receiving a pension is increased by 5 years and companies are asked not to sack employees until that age (Okumura & Usui, 2014).

2.4.2 Richard Thaler and "Save More Tomorrow"

It has been outlined that although encouraging people to accept private pension programmes is widely used as a tool for improving the pension system, the common methods, such as education and automatic enrollment,

both have their problems. The former, although tells people how important saving is, may discourage employees as contributing money to the system consistently takes time of people. Besides, automatic enrollment can take the work of contribution, but people lack of motivation to change their saving rate.

As a result, Thaler and Benartzi (2007) designed the so-called "Save More Tomorrow" (SMT) system to achieve both benefits. The contribution rate automatically increases as wages increase at a lower rate, so people's attitude, depending on nominal terms, would always be positive (Kahneman, Knetsch & Thaler, 1986).

The SMT has been proven to have both a high saving rate and participation rate. In their experiment, which started with the same saving rate of 4%, people were separated into the control group, who were advised to increase the rate by 5%, and the experimental group who applied for SMT. After three and half years, the latter received a saving rate of 13.6% and the former remained at 9% since they rarely increased their contribution. Speaking of participation rate, only 6% of employees withdrew from Safelite and the increase of participants in Vanguard reached 55% after one year of introduction (Thaler & Sunstein, 2008).

A piece of advice to the government is to reduce barriers to entrance and encouragement of employers who apply for this programme.

3. Methodology

3.1 Results of Secondary Research

The Chinese pension is a combination of a defined social pension system with several historical reforms and a newly invented private saving system. It is going to face lots of problems, including a lower replacement rate due to the increasing ageing problem, systematic issues such as poor operation, few investment opportunities, "empty accounts" in the personal accounts, and the low participant number of the private pension system. According to worldwide records, the normal practice of countries is promoting the development of private pension saving plans. Richard Thaler and his collaborators have invented the SMT system to encourage employees' savings in companies, in a more psychologically acceptable way which can also increase future saving rates.

3.2 Research Gap

There are some limitations of the secondary research. On the methods by countries, since the finance industry in China is underdeveloped, it should be questioned whether

private investors can manage the accounts more efficiently. On the other hand, SMT also has some limitations. Firstly, the employees of the SMT are educated to understand the importance of private savings. However, there is no evidence that Chinese workers are also aware of the same thing and thus are willing to save private pensions consistently. Furthermore, the SMT relies on frequent pay raises by companies. However, it should be questioned whether the frequency of wage raises for Chinese workers is high. Additionally, Chinese people may behave in a different way than Americans due to cultural gaps. Lastly, there is little identification of the different behaviour of generations. Nonetheless, different ageing groups would have distinct behavioural habits and should be included in the research. On the side of the public sector, Thaler has rarely discussed the government's role in promoting SMT which should be noticed.

3.3 Research Hypothesis

The author hereby states 8 hypotheses:

1. That the understanding of Chinese pension system of Chinese workers is poor.
2. That Chinese workers have little understanding of the percentage of pension they need to save to maintain future living.
3. That Chinese workers are not satisfied with the current pension system.
4. That Chinese workers prefer to save as a pension instead of other investment opportunities such as property

or stocks and shares.

5. That Chinese workers are happy even when their actual received payment is higher than the potential payment after a pay raise.

6. That the youth generations would have the same behavioural habits as the current economically active population.

7. That Chinese companies have frequent or regular pay raises which enables the SMT to work.

Hypotheses 1 to 3 assume that although the employees are widely dissatisfied with the pension system, there is a limited possibility that they would forwardly save private pension owing to a lack of understanding of the system. Hypothesis 4 evaluates their preference towards pensions and hence states whether the reform would be efficient if focusing on pensions. Hypothesis 5 analyses whether the psychological background of SMT would work in Chinese culture, followed by comparing whether this trend would last for generations and hence is continuous in China. Lastly, it is tested whether the business pay raise base is real for Chinese reality or not.

3.4 Research Methods

The hypotheses are examined by a questionnaire shown in Appendix 1.

4. Results

4.1 Sample Matrix

Table 1. Sample Matrix

Age	Male	Female	Others	Total
15-22	9	4	0	13
23-30	28	49	1	78
31-40	67	88	3	158
Above 40	124	199	5	328
Total	228	340	9	577

4.2 Analysis by Question

The following data will be tested at 10% significance level, which means the results are 90% confident

Critical Value: $z = \pm 1.282$

Formulae in the calculation:

$$s^2 = \frac{1}{n-1} \left(\sum x^2 - \frac{(\sum x)^2}{n} \right)$$

$$Z = \frac{\bar{x} - \mu}{\frac{s}{\sqrt{n}}}$$

4.2.1 Statistical Results

Table 2 Results for Questions

Question	H ₀ value	H ₁ value	Sample mean	S ² value	Z value	Conclusion
3	$\mu = 5$	$\mu < 5$	5.12	7.908	1.025	Accept H ₀
4	$\mu = 5$	$\mu < 5$	4.12	8.688	-7.712*	Reject H ₀
5	$\mu = 5$	$\mu < 5$	4.50	8.375	-4.150*	Reject H ₀
6	$\mu = 5$	$\mu < 5$	4.46	7.828	-4.636*	Reject H ₀
7	$\mu = 5$	$\mu < 5$	4.95	8.003	-0.425	Accept H ₀
8	$\mu = 3$	$\mu > 3$	4.47	10.35	10.98*	Reject H ₀
9	$\mu = 5$	$\mu > 5$	5.89	21.92	4.556*	Reject H ₀

* $Z < -1.282$ or $Z > 1.282$

4.2.2 Question 3

The result of primary research shows that there is insufficient evidence to prove hypothesis 1. Although the sample mean is lower than 5, the Z value which is smaller than the critical region proves that there is only 10% certainty that the population mean would be as small as the sample mean. It shows that Chinese workers have some understanding of the pension system according to their evaluation.

4.2.3 Question 4

Hypothesis 2 is proved firmly by the experiment as there is a 90% possibility that the population mean of understanding of pension rate is not what the null hypothesis stated of 5, but lower. The Z value calculated from the sample mean and unbiased estimated population variance states that the null hypothesis is within the rejection region.

4.2.4 Question 5

Hypothesis 3 is proved firmly by the experiment as there is a 90% possibility that the population mean of understanding of pension rate is not what the null hypothesis stated of 5, but lower.

4.2.5 Questions 6 and 7

Hypothesis 4 is partially proved by questions 6 and 7. Question 6 proves that the population mean is 90% possible to be closer to a pension rather than other investments. However, there is insufficient evidence to prove there is any difference between the preference between private pensions and other investments.

4.2.6 Question 8

The results of question 8 show that there is sufficient evidence to prove hypothesis 7. As the test statistic exceeds the critical value, there is a 90% possibility that the population mean is higher than 3.

4.2.7 Question 9

Hypothesis 5 is proved firmly by the experiment as there is a 90% possibility that the population mean of satisfaction with pension rate rises while wage rises is not what the null hypothesis stated of 5, but higher.

4.3 Main Gender Differences

The following data will be tested by Analysis of Variance (ANOVA) with Gender as x input and Questions as y input. If the p-Value is smaller than 0.05, then there is a significant difference within the y input data concerning different ages. F Value as a necessary calculation intermediate parameter will also be shown.

4.3.1 Statistical Results

Table 3 Differences in Genders

Question	Gender (Mean \pm Standard Deviation)			F Value	p Value
	Male	Female	Others		
3	6.11 \pm 2.49	4.98 \pm 2.76	2.00 \pm null	2.871	0.061
4	4.38 \pm 3.02	3.92 \pm 2.83	2.00 \pm null	0.547	0.581
5	5.22 \pm 2.99	4.03 \pm 2.72	7.00 \pm null	2.437	0.093
6	4.78 \pm 2.90	4.47 \pm 2.65	10.00 \pm null	2.077	0.131
7	6.22 \pm 2.89	5.08 \pm 2.91	2.00 \pm null	2.496	0.088

8	4.68±3.25	3.58±3.07	10.00±null	3.226	0.044*
9	5.16±3.19	6.08±3.15	2.00±null	1.663	0.195

* p < 0.05

4.3.2 Analysis

The only significant difference between genders occurs in the frequency of pay raises in their companies. In general, female workers in China are receiving more frequent salary increases than males, whilst other people's frequency is extremely low.

4.4 Main Age Differences

This is a test of hypothesis 6. The following data will also be tested by Analysis of Variance (ANOVA) with Age as x input and Questions as y input. If p Value is smaller than 0.05, then there is a significant difference within the y input data with respect to different ages. F Value will also be shown.

4.4.1 Statistical Results

Table 4. Differences in Age Groups

Question	Age (Mean ± Standard Deviation)			F Value	p Value
	23 - 30	31 - 40	Above 40		
3	4.26±2.94	5.06±2.24	6.00±2.78	3.246	0.043*
4	3.79±2.74	3.56±2.37	4.51±3.22	1.155	0.319
5	4.05±2.76	3.97±2.25	5.02±3.20	1.613	0.205
6	5.63±2.54	4.41±2.66	4.41±2.90	1.512	0.226
7	5.58±2.89	4.56±2.97	6.02±2.86	2.458	0.091
8	4.26±3.45	3.56±3.18	4.29±3.16	0.539	0.585
9	6.00±2.98	5.13±3.16	5.96±3.30	0.762	0.469

* $p < 0.05$

4.4.2 Analysis

It is significant that the older Chinese workers are, the better their understanding of the pension system. This may be caused by their experiences and past education in this area. The younger generations follow the same in the rest questions.

5. Discussion

5.1 The understanding of the Chinese pension system of Chinese workers is not poor

It has been outlined in 2.3 that a variety of problems the current Chinese pension system faces is that the policies introduced cannot be fully executed, like the lack of private pension investment or EA. As proposed by Zhang *et al*, it is believed that a significant reason is the lack of understanding of the system which causes people's inaction to policies introduced.

Nevertheless, the result of primary research in 4.2.2 shows that there is insufficient evidence to prove such an assumption. In the 577 responses from the questionnaire, people's evaluation of their understanding of the Chinese pension system is labelled from 1 to 10. The test statistic calculated by the sample mean and unbiased estimate of population variance is not included in the critical range, which shows that it is 90% confident that the population mean is 5, which is not essential to argue that their understanding is poor. There is also an ageing difference according to 4.4.2 which shows that older people may follow policies' guidance compared to younger workers. The ANOVA test gives a p-value of 0.043, showing that the differences in sample mean between different ageing groups are enough to argue that the population shares the same trend, where the younger people are the poorer their understanding is.

It is indispensable to discuss the distinction between my research and Zhang *et al*'s findings. The greater confi-

dence in understanding of pension system may show that since the potential problems of the system are getting more well-known, people's knowledge of it may be rapidly increasing due to their demand for any solutions. Therefore, it should not be argued without hurry and haste that the ineffectiveness of government reforms on the pension system is caused by the lack of understanding of workers. In addition, the differences among generations may be caused by the level of emergency of pension crises. In general, elder people are more concerned about it since their retirement is coming in a shorter period hence the affordability of pension plays a significant role in their future lives.

This conclusion for policymakers implies that, firstly, it was not the positive interventionism being counterproductive due to a lack of understanding of the pension system according to Zhang *et al*, but the policies introduced did not meet the demands of people. If alternative options could be taken into concern, there is an opportunity that government actions would be effective. Furthermore, what is newly discovered from my research concerning Zhang *et al*'s studies is that more education and training on the system may be required to be put on the younger generation to encourage better understanding and, in turn, to drive the effectiveness of reforms.

5.2 Chinese workers lack understanding of the percentage of pension they need to save to maintain future living

Dong and Wang have mentioned in 2.2.2 that in general, the understanding of the necessary pension rate required to be paid by Chinese employees for supporting future life is insufficient. Although it is distinct from the fallacy denied in 5.1 of poor understanding of the system, their effects are slightly similar. Even if Chinese employees understand the policy tools they can use to increase their pension distribution, they may be inactive as they think there is no need to do so.

The result of primary research in 4.2.3 proved this argument. In the questionnaires sent to interviewers, people's

evaluation of the understanding of the necessary pension rate is adjusted from 1 as the lowest to 10 as the highest. The test statistic of the sample is -7.712, which is lower than the critical value of -1.282. As a result, the occurrence of the sample mean of 4.12 which is lower than 5 does not rely on coincidence. Instead, it is 90% certain that the understanding is indeed insufficient. Furthermore, the p-values of ANOVA tests in 4.3.1 and 4.4.1 are both lower than 0.05, proving that the conclusion is suitable for all genders and age groups. Therefore, the judgment of poor understanding is convincing.

Some researchers as Pozen have provided several alternative explanations for this problem in 2.3. Firstly, as a result of complex pension reforms in before, the simultaneous calculating systems would confuse employees. Unless they have a very deep understanding of the history of such an area, they are likely to have problems with the substitution rate, or how the ratio between current pension contribution and future paid pension. Secondly, “empty accounts” would reduce people’s confidence in the system, as they are not aware whether the money paid to the pension system would be able to be paid back in the future, or will be dragged into the debt hole, based on the studies of Zhang *et al.* Lastly, the unpredictability of the economy may cause wondering of people to whether the government has the essential budget to pay for their pensions. If not, the reduction in pay rate means that their calculation would be pointless.

It can then suggest the government execute some policies. Firstly, Zhou (2023) mentioned the importance of raising crisis awareness of future pension problems. If people know better about the potential problems of the system, they may alter their options accordingly. Alternatively, if an automatic system could do the work for the employees, they could passively accept those proper proportions.

5.3 Chinese workers are not satisfied with the current pension system

It is significant to notice that Thaler’s SMT reform in 2.4.2 relies on people’s dissatisfaction with the pension system which allows them to support the changes. The result of primary research in 4.2.4 shows that Chinese workers are satisfied with this background. While people’s evaluation of satisfaction with the current pension system is graded from 1 as the lowest to 10 as the highest, the test statistic of the sample is -4.150, which proves that it is 90% certain that they are not satisfied. It is a strong result as it is true in all genders and age groups as 4.3.1 and 4.4.1 are shown.

A possible explanation may be the uneven distribution of pensions. Based on Zhu & Walker’s research in 2.3, the

dissatisfaction of female, migrants and private employees who are treated unfairly may lower the average social utility, since they occupy a great proportion of the total working population. As a result, China provides a perfect platform for SMT reform, as it could gain support from a large number of people, which increases its effectiveness significantly.

5.4 Chinese workers prefer pensions provided by companies

The result of primary research in 4.2.5 of question 6 shows that Chinese workers do care on pension highly. While people are asked to evaluate their preference from 1 as totally dependent on a pension provided by employers to 10 as totally dependent on other investments, the test statistic of the sample is -4.636, which proves that it is 90% certain that private pensions are preferred. It is a strong result as it is true in all genders and age groups as 4.3.1 and 4.4.1 are shown.

However, in the category of personal investments, the results of question 7 in 4.2.5 show a test statistic of -0.425 which is lower than the critical value. Hence, there is insufficient evidence to show that private pension investment is more attractive compared to other investment tools.

This conclusion for policymakers implies that the Chinese government cannot introduce privatisation policies of pensions as 2.4.1 is shown. Since people are less interested in buying additional pensions themselves, reforms should be taken at the company level. Comparatively, SMT in 2.4.2 seems more reasonable since compared to investing the money on their own, they prefer to ask to manage the money.

5.5 Chinese workers do not have frequent pay raises

As is mentioned in 2.4.2, Thaler’s SMT raises pension rate as wage increases. Consequently, a frequent pay raise is necessary to enable SMT to work otherwise the pension rate growth would be slow which makes little difference compared to the current system. However, the result from 4.2.6 shows that there is a 90% possibility that the usual pay raise frequency is over three years, due to the test statistic of 10.98 which exceeds the critical value.

As a result, it is not practical to take Thaler’s suggestions directly. Instead, some changes should be made according to the characteristics of the Chinese job market. For instance, the government may set up regulations which enforce or encourage employers to adjust wage rates according to inflation rate which gives a chance of regular wage increase.

5.6 Psychological behaviour of Chinese employees enables SMT to work

The most fundamental support which enables SMT to work in 2.4.2 is the mechanism of people's decision making which focuses more on nominal terms. As a result, it is essential to ensure that Chinese employees are satisfied when the pension rate rises as the wage rate increases which makes them ignore the *de facto* increase of pension contributed to the system.

The results from 4.2.7 prove the hypothesis that Chinese employees follow the same behavioural habits as American workers. Since the test statistic 4.556 exceeds the critical value, it is essential to argue that average satisfaction when pension raises at a smaller rate compared to wage increase is positive. When their satisfaction is from 1 as the lowest to 10 as the highest, there is a 90% possibility that it is greater than 5.

Nobel laureates Robert Shiller and George Akerlof (2009) have provided a possible explanation from the aspect of behavioural economics which mentions the significance of money illusion. Although neoclassical economists assume that people are rational without such influence (Friedman, 1968), the psychological evidence has proved that it does have a significant impact on human decisions. Since people are more reliable on the nominal figure they get, even if the actual payment is lower than they could get if SMT is not applied, their satisfaction will still be positive.

The feasibility of SMT enables policymakers to introduce such a policy to Chinese companies. Based on experience, the general habit of the Chinese government is to set up experimental zones for testing the effectiveness of SMT and investigating problems that may occur in China. This is usually a practical idea as it combines theoretical reform with Chinese realities.

6. Conclusion

As it has been discussed, the Chinese pension market is facing four major problems. Firstly, the change in age structure would lead to long-term debt under the PAYG system and a fixed rate of pension. Moreover, the private pension market, which has been considered to be the solution of shortage of pensions, is highly undeveloped due to little investment. Besides, there are many problems with the management of the pension system as discouragement of collecting pensions actively, lack of openness and complex operations which involve different systems working at the same time. Lastly, the distribution of the pension system is highly uneven.

The current policy of privatising the pension system is not practical as private pension is not the best choice for

people's investments. The primary research shows that an effective solution has to be done through cooperation between the government and companies instead of individuals. Thus, the system of "Save More Tomorrow" which raises pension rate in a smaller proportion than wage increase could perfectly work in China. Psychological research shows that people would be willing to under it even if they contribute more to the pension pool. This would not only increase the scale of pension collected but also solve the problem of underperforming management by replacing it with an automatic investment system. Some other policies could be introduced to strengthen the effectiveness of SMT, such as education on potential risks of the pension market, distributing pensions more evenly and enforcing wages to cope with inflation.

7. Evaluation

This research contains some limitations. Firstly although the size of the sample of 577 has exceeded the requirement of accuracy of 60 (Zhang, 2013), it is still small compared to the total labour force of China of around 780 million (World Bank, n.d.). Thus, the quantity of samples with less representativeness of the population would reduce the liability of results which leads to an inaccurate conclusion. Furthermore, since the questionnaire is spread out via employees of SOEs, outstanding law firms and other high-ranking private companies, there may be a sample bias due to the collection of data, which also results in less representativeness of the sample. If the perspectives of low-waged or low-pensioned employees are better responded to, the conclusion may be reversed which is possible as the structure of the sample is different to the population which consists of more people with less advantageous socio-economic backgrounds.

Besides, through the interviews with some respondents, it was observed that Chinese people have a trend of seeking the "correct" choice in the questionnaire. This may be the result of the education system which values following the views of examiners highly, which results in less personal opinions. Therefore, if this is indeed significant in deciding their answers, then the representativeness of their opinion by the primary research should be questioned. They may have answered as Section 4 shows because they thought it was what the researcher wanted them to do so, which is a serious but extensive misunderstanding.

References

Akerlof, G.A. and Shiller, R.J. (2009) *Animal spirits: How human psychology drives the economy, and why it matters for global capitalism*. Princeton: Princeton University Press.

- Ageing and health in China* (no date) *World Health Organization*. Available at: <https://www.who.int/china/health-topics/ageing> (Accessed: 06 August 2023).
- Béland, D. and Shinkawa, T. (2007) 'Public and Private Policy Change: Pension Reform in Four Countries', *Policy Studies Journal*, 35(3), pp. 349–371. doi:10.1111/j.1541-0072.2007.00228.x.
- Benartzi, S. and Thaler, R.H. (2007) 'Heuristics and biases in retirement savings behavior', *Journal of Economic Perspectives*, 21(3), pp. 81–104. doi:10.1257/jep.21.3.81.
- Butler, S. and Germanis, P. (no date) 'Achieving Social Security Reform: A Leninist Strategy', *Cato Journal*, 3, pp. 547–561.
- Chen, V.Y. (2004) *A Macro Analysis of China Pension Pooling System: Incentive Issues and Financial Problem. China to raise retirement age to deal with aging population - media* (2023) Reuters. Available at: <https://www.reuters.com/world/china/china-raise-retirement-age-deal-with-aging-population-media-2023-03-14/> (Accessed: 06 August 2024).
- Dong, K. and Wang, G. (2014) 'China's Pension Challenge: Adaptive Strategy for Success', *Public Administration and Development*, 34(4), pp. 265–280. doi:10.1002/pad.1688.
- Evans, P. and Staveteig, S. (2009) *The Changing Structure of Employment in Contemporary China*. UC Berkeley: Institute for Research on Labor and Employment. Available at: <https://escholarship.org/uc/item/62c9905n>.
- Fang, H. and Feng, J. (2018) 'The Chinese Pension System', *NBER Working Paper*. doi:10.3386/w25088.
- Farid, M. and Cozzarin, B.P. (2009) 'China's pension reform: Challenges and opportunities', *Pensions: An International Journal*, 14(3), pp. 181–190. doi:10.1057/pm.2009.13.
- Friedman, M. (1968) 'The Role of Monetary Policy', *American Economic Review*, 58(1), pp. 1–17.
- Guo Wu Yuan Ban Gong Ting Guan Yu Tui Dong Ge Ren Yang Lao Jin Fa Zhan De Yi Jian [Opinions of The General Office of the State Council on promoting the development of personal pensions]* (2022) *The State Council*. Available at: https://www.gov.cn/zhengce/content/2022-04/21/content_5686402.htm (Accessed: 10 August 2024).
- Holzmann, R. (1997) 'Pension reform, financial market development, and economic growth: Preliminary evidence from Chile', *Staff Papers – International Monetary Fund*, 44(2), pp. 149–178.
- Jinchang, Z., Jiagui, C. and Rösner, H.J. (2002) 'Current and future problems of capital accumulation in the Chinese Pension System', *International Social Security Review*, 53(4), pp. 37–48. doi:10.1111/1468-246x.00104.
- Kahneman, D., Knetsch, J.L. and Thaler, R.H. (1986) 'Fairness as a Constraint on Profit Seeking', *American Economic Review*, 76(4), pp. 728–741.
- Labor force, total - China* (no date) *World Bank Open Data*. Available at: <https://data.worldbank.org/indicator/SL.TLF.TOTL.IN?locations=CN> (Accessed: 03 February 2024).
- Li, D.D. and Li, L. (2003) 'A Simple Solution to China's Pension Crisis', *Cato Journal*, 23(2).
- Li, Q. *et al.* (2013) 'China's labor transition and the future of China's rural wages and Employment', *China & World Economy*, 21(3), pp. 4–24. doi:10.1111/j.1749-124x.2013.12019.x.
- Li, Z. (1998) *Shehui Baozhang yu Jingji Fazhan [Social Security System and Economic Development]*. Wuhan: Wuhan University Press.
- Liu, S. *et al.* (2021) 'Mechanism study on the impact of China population structure change on the water use of the three main industries', *Sustainability*, 14(1), p. 204. doi:10.3390/su14010204.
- Liu, Y. *et al.* (2018) 'The interaction of population, industry and land in process of urbanization in China: A case study in Jilin province', *Chinese Geographical Science*, 28(3), pp. 529–542. doi:10.1007/s11769-018-0964-4.
- Luo, Y., Su, B. and Zheng, X. (2021) 'Trends and challenges for population and health during population aging — China, 2015–2050', *China CDC Weekly*, 3(28), pp. 593–598. doi:10.46234/ccdcw2021.158.
- Martin, P. (1997) *Tabling Draft Legislation to Amend the Canada Pension Plan*. Ottawa, Canada: Minister of Finance to the House of Common.
- McCarthy, F.D. and Zheng, K. (1999) 'Population aging and pension systems: Reform Options for China', *Policy Research Working Papers*. doi:10.1596/1813-9450-1607.
- Nenkin Joho Henshubu (Pension Information Editorial Office) (2003) *Kigyo Nenkin no Shinjitsu [The Truth of Corporate Pension]*. Tokyo, Japan: Nippon Keizai Shinbunsha.
- Okumura, T. and Usui, E. (2014) 'The effect of pension reform on pension-benefit expectations and savings decisions in Japan', *Applied Economics*, 46(14), pp. 1677–1691. doi:10.1080/00036846.2013.870654.
- Peng, X. (2022) *China's population is about to shrink for the first time since the great famine struck 60 years ago. Here's what that means for the world*, *World Economic Forum*. Available at: <https://www.weforum.org/agenda/2022/07/china-population-shrink-60-years-world/> (Accessed: 03 February 2024).
- Pozen, R.C. (2013) 'Tackling the Chinese Pension System', *Paulson Policy Memorandum*.
- Salditt, F., Whiteford, P. and Adema, W. (no date) 'Pension Reform in China', *International Social Security Review*, 61(3), pp. 47–71.
- Shao, Y. and Xu, J. (2001) 'China's pension system: Achievements, challenges and future developments', *Cato Journal*, 21, p. 395.
- STATISTICAL COMMUNIQUÉ OF THE PEOPLE'S REPUBLIC OF CHINA ON THE 2022 NATIONAL ECONOMIC AND SOCIAL DEVELOPMENT* (2023) *National Bureau of Statistics of China*. Available at: https://www.stats.gov.cn/english/PressRelease/202202/t20220227_1827963.html (Accessed: 03

July 2023).

Teles, S.M. (1998) 'The Dialectics of Trust', *Annual Meeting of the Association for Public Policy Analysis and Management*.

Thaler, R.H. and Substein, C.R. (no date) 'Save More Tomorrow', in *Nudge: Improving Decisions about Health, Wealth, and Happiness*. New Haven & London: Yale University Press.

Uthoff, A. (1998) *Pension funds, the financing of transition costs and financial markets development: lessons from the Chilean privatization reform*.

Wu, L. (2013) 'Inequality of pension arrangements among different segments of the labor force in China', *Journal of Aging & Social Policy*, 25(2), pp. 181–196. doi:10.1080/08959420.201

2.735159.

Zhao, Y. and Xu, J. (no date) 'China's Urban Pension System: Reforms and Problems', *Cato Journal*, 21(3), p. 395.

Zhu, H. and Walker, A. (2018) 'Pension system reform in China: Who gets what pensions?', *Social Policy & Administration*, 52(7), pp. 1410–1424. doi:10.1111/spol.12368.

Zhou, X. (2023) *Ge Ren Yang Lao Jin Zhi Du Ru He You Hua? Zhou Xiao Chuan, Wang Wen Ling, Liang Tao Zui Xin Fa Sheng [How can the personal pension system be optimised? Zhou Xiaochuan, Wang Wenling, Liang Tao latest voice], Zheng Quan Shi Bao Wang [Web of Securities Times]*. Available at: <http://www.stcn.com/article/detail/1079567.html> (Accessed: 03 February 2024).