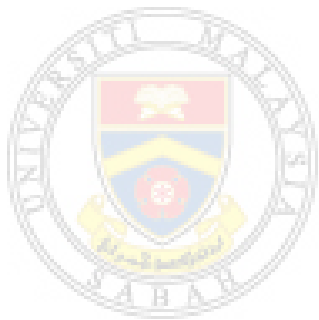


**THE INFLUENCE OF PSYCHOLOGICAL  
FACTORS ON FINANCIAL PLANNING FOR  
RETIREMENT IN CHINA**

**REN HAN**



**UMS**  
UNIVERSITI MALAYSIA SABAH

**FACULTY OF BUSINESS, ECONOMICS AND  
ACCOUNTANCY  
UNIVERSITI MALAYSIA SABAH  
2023**

**THE INFLUENCE OF PSYCHOLOGICAL  
FACTORS ON FINANCIAL PLANNING FOR  
RETIREMENT IN CHINA**

**REN HAN**



**UMS**

**THESIS SUBMITTED IN FULLFILLMENT OF  
THE REQUIREMENTS FOR THE DEGREE OF  
DOCTOR OF PHILOSOPHY**

**FACULTY OF BUSINESS, ECONOMICS AND  
ACCOUNTANCY  
UNIVERSITI MALAYSIA SABAH  
2023**

**UNIVERSITI MALAYSIA SABAH**

**BORANG PENGESAHAN STATUS TESIS**

JUDUL : **THE INFLUENCE OF PSYCHOLOGICAL FACTORS ON FINANCIAL PLANNING FOR RETIREMENT IN CHINA**

IJAZAH : **DOKTOR FALSAFAH EKONOMI**

BIDANG : **EKONOMI KEWANGAN**

Saya **REN HAN**, Sesi **2020-2023**, mengaku membenarkan tesis Doktoral ini disimpan di Perpustakaan Universiti Malaysia Sabah dengan syarat-syarat kegunaan seperti berikut:-

1. Tesis ini adalah hak milik Universiti Malaysia Sabah
2. Perpustakaan Universiti Malaysia Sabah dibenarkan membuat salinan untuk tujuan pengajian sahaja.
3. Perpustakaan dibenarkan membuat salinan tesis ini sebagai bahan pertukaran antara institusi pengajian tinggi.
4. Sila tandakan ( / ):

SULIT

(Mengandungi maklumat yang berdarjah keselamatan atau kepentingan Malaysia seperti yang termaktub di dalam AKTA RAHSIA 1972)

TERHAD

(Mengandungi maklumat TERHAD yang telah ditentukan oleh organisasi/badan di mana penyelidikan dijalankan)

TIDAK TERHAD

*REN HAN*

**REN HAN**  
**DB1911025A**

Disahkan Oleh,  
*ANITA BINTI ARSAD*  
ANITA BINTI ARSAD  
PUSTAKAWAN KANAN  
UNIVERSITI MALAYSIA SABAH  
(Tandatangan Pustakawan)



(Dr. Lim Thien Sang)  
Penyelia

Tarikh : 29 September 2023

## DECLARATION

I hereby declare that the materials in this study are my own except for quotation, equations, summaries and references, which have been duly acknowledged.

17 August 2023

*REN HAN*

---

Ren Han  
DB1911025A



UMS  
UNIVERSITI MALAYSIA SABAH

## CERTIFICATION

NAME : **REN HAN**

MARTRIC NUMBER : **DB1911025A**

TITLE : **THE INFLUENCE OF PSYCHOLOGICAL FACTORS ON FINANCIAL PLANNING FOR RETIREMENT IN CHINA**

DEGREE : **DOCTOR OF PHYLOSOPHY IN ECONOMICS**

FIELD : **FINANCIAL ECONOMICS**

VIVA DATE : **17 AUGUST 2023**

**CERTIFIED BY:**



Signature



UMMS  
UNIVERSITI MALAYSIA SABAH

## ACKNOWLEDGMENT

First of all, I'm thankful to my supervisor Dr Lim. Every time I doubt about my ability to be a researcher, he gives me the support, guidance and motivation. I could never do it without your support. No matter how easy the question is, he always have patience to lead me to the right way. I also learn a lot from his rigorous attitude toward academic research. I wish someday I could be like you sir.

I would like to say thanks to my family members especially my parents for their unconditional support and love. My mother-in-law and my aunts always take care of my little baby in order that I can squeeze time to do my research. My husband Mr Zhang Ruifeng is a source of motivation to me. He took care of everything in my absence and bear my temper when I feel so bad. I love you so much and I wish you can feel this love. My child Miss Zhang Zihan, who is my angle and candy, I love you with all of my heart, I hope one day you can follow your heart to realize your dream with courage.

I am thankful to all my friends especially Mrs. Liu Xin who supported me and gave me lots of advice all the time. Hope we can be happy and move forward together. I am also grateful to Mrs. Chai Tianjiao, Mrs. Chen You, Mr. Cui Bing, Mr. Du Chao, Mr. Li Jingsheng and Mrs. Liu Shuang who helped me in the times of crisis when I needed it the most.

REN HAN

17 August 2023

## ABSTRACT

As China's population ages and the pension system becomes unbalanced, personal savings becomes more important. In this sense, quality financial planning for retirement has been recognized as one of the keys to successful aging in today's society, thus requires further research. The main goal of this research is to examine the psychological factors that influence financial planning for retirement (FPR). These factors include Future Time Perspective (FTP), Subjective Financial Literacy (SFL), Objective Financial Literacy (OFL), Risk Tolerance (RT), and Retirement Goal Clarity (RGC) based on the Capacity-Willing-Opportunity (CWO) model. This study also focuses on how the interplay between psychological factors can affect FPR, including examining the mediating role of SFL and RGC and the moderating role of OFL. Data were collected using a non-probability sampling method with 245 participants. The data were evaluated with the statistics packages of SPSS 24 and SmartPLS 4.0. The results show a positive association between retirement goal clarity and subjective financial literacy with financial planning for retirement. Subjective financial literacy and retirement goal clarity also played a mediating role. Findings from this research enrich knowledge about FPR and will benefit finance professionals, policy makers, and individuals with insights of the psychological factors that drive people to practice financial planning for retirement. The limitation of the study lies in the fact that psychological factors were not tested combined with demographic factors, the use of self-reported data may cause the biases, and that cross-sectional approach may not prove the relationship among psychological factors and financial planning for retirement at different period. Future study could examine the influence of psychological by controlling demographic variables such as age and income, include the advanced level OFL measurement in the questionnaire, provide more empirical evidence for different countries, and identify temporal and causal relationships between the study variables in different time periods.

## **ABSTRAK**

### **PENGARUH FAKTOR-FAKTOR PSIKOLOGI TERHADAP PERANCANGAN KEWANGAN UNTUK PERSARAAN DI CHINA**

*Penuaan dalam kalangan penduduk China dan sistem pencen yang semakin tidak seimbang telah membangkitkan kepentingan mengenai simpanan peribadi. Justeru itu, perancangan kewangan persaraan yang berkualiti telah dikenalpasti sebagai salah satu kunci kejayaan dalam masyarakat kontemporari yang semakin berusia. Matlamat utama kajian ini adalah untuk mengkaji faktor-faktor psikologi yang boleh memberi kesan kepada perancangan kewangan persaraan (FPR). Faktor ini termasuk kecelikan kewangan subjektif (SFL), kecelikan kewangan objektif (OFL), toleransi risiko (RT), dan kejelasan matlamat persaraan (RGC) yang berdasarkan model Capacity-Willingness-Opportunity (CWO). Kajian ini turut menumpu kepada interaksi antara faktor psikologi yang boleh mempengaruhi FPR, termasuk meneliti peranan pengantara SFL dan GRC dan peranan penyederhana OFL. Data telah dikumpul dengan menggunakan kaedah persampelan bukan kebarangkalian dan telah melibatkan 271 peserta. Data telah dianalisa menggunakan pakej statistik SPSS 24 dan SMARTPLS 4.0. Hasil kajian mendapati perkaitan secara positif di antara kejelasan matlamat persaraan dan kecelikan kewangan objektif dengan perancangan kewangan untuk persaraan. Kecelikan kewangan subjektif dan kejelasan matlamat persaraan didapati memainkan peranan sebagai pengantara. Hasil kajian ini memperkayakan ilmu tentang perancangan persaraan dan akan memberikan faedah kepada pengamal kewangan, pengubal dasar serta individu menerusi penerangan tentang faktor psikologi yang mendorong individu dalam mempraktis perancangan kewangan persaraan. Berdasarkan keputusan dan batasannya, kajian masa depan dicadangkan mengkaji pembolehubah psikologi lain yang mungkin mempengaruhi FPR, menambah bukti empirikal berdasarkan negara yang berbeza, dan mengenalpasti hubungan temporal dan kausal antara pembolehubah kajian berdasarkan tempoh masa yang berbeza. Kajian hadapan, kajian akan datang boleh menyelidik pengaruh pembolehubah psikologi dengan kawalan pembolehubah demografi seperti umur dan pendapatan, menerima pakai pengukuran OFL di peringkat lanjutan dalam soal selidik, menyediakan lebih banyak bukti empirik dari negara yang berbeza, dan mengenalpasti hubungan temporal dan kausal di antara pembolehubah kajian pada tempoh yang berbeza.*



# LIST OF CONTENTS

	Page
<b>TITLE</b>	i
<b>DECLARATION</b>	ii
<b>CERTIFICATION</b>	iii
<b>ACKNOWLEDGEMENT</b>	vi
<b>ABSTRACT</b>	v
<b><i>ABSTRAK</i></b>	vi
<b>LIST OF CONTENTS</b>	vii
<b>LIST OF TABLES</b>	xii
<b>LIST OF FIGURES</b>	xiii
<b>LIST OF ABBREVIATIONS</b>	xiv
<b>LIST OF APPENDICES</b>	xv
<b>CHAPTER 1: INTRODUCTION</b>	
1.1 Introduction	1
1.2 Background of the Study	2
1.2.1 Population Aging in China	2
1.2.1 The Stress of Aging to the Pension Fund System	4
1.2.1 Unbalance of Three Pillar Pension System	6
1.2.1 Lack of Individual Savings	8
1.3 Statement of Problems	10
1.4 Research Questions	15
1.5 Research Objectives	15
1.6 Significance of the Research	16
1.6.1 Significance of the Body of Knowledge	16
1.6.2 Significance of the Practical Field	17
1.7 Definition of Items	18
1.7.1 Financial Planning for Retirement	18
1.7.2 Future Time Perspective	18
1.7.3 Retirement Goal Clarity	19
1.7.4 Risk Tolerance	18

1.7.5	Financial Literacy	19
1.7.6	Objective Financial Literacy	19
1.7.7	Subjective Financial Literacy	19
1.8	Structure of the Thesis	20

## **CHAPTER 2: LITERATURE REVIEW**

2.1	Introduction	21
2.2	Overview of Theoretical Background	22
2.2.1	Life-cycle Theory	22
2.2.2	Theory of Planned Behaviour	24
2.2.3	Intentional Change Theory	26
2.3	Overview of the Theoretical Underpinning	28
2.3.1	Hershey Model	28
2.3.2	CWO Model	31
2.3.3	Image Theory	40
2.3.4	3M Model	43
2.3.5	Justification on the Selected Theories	46
2.4	Financial Planning for Retirement	48
2.5	Psychological Factors	51
2.5.1	Future Time Perspective	52
2.5.2	Retirement Goal Clarity	55
2.5.3	Risk Tolerance	57
2.5.4	Financial Literacy	60
2.6	Gaps in the Literature	66
2.7	Chapter Summary	68

## **CHAPTER 3: THEORETICAL FRAMEWORK AND HYPOTHESES**

3.1	Introduction	69
3.2	Theoretical Framework	69
3.3	Hypothesis	73
3.3.1	Future Time Perspective and FPR	73
3.3.2	Subjective Financial Literacy and FPR	75
3.3.3	Risk Tolerance and FPR	76
3.3.4	Retirement Goal Clarity and FPR	77

3.3.5	The Mediating Effect of Subjective Financial Literacy and Retirement Goal Clarity	79
3.3.6	The Moderating Effect of Objective Financial Literacy	81
3.4	Chapter Summary	84

#### **CHAPTER 4: RESEARCH METHODOLOGY**

4.1	Introduction	85
4.2	Research Philosophy	85
4.2.1	Contrasting Positivism and Interpretivism	86
4.2.2	Justification on the Choice of Paradigm	87
4.3	Research Design	89
4.4	Questionnaire Design	91
4.4.1	Endogenous Variable	93
4.4.2	Exogenous Variables	96
4.4.3	Moderating Variable	98
4.4.4	Demographic Variables	99
4.5	Sampling Design	100
4.6	Sections of Questionnaire	104
4.7	Questionnaire Translation	106
4.8	Questionnaire Pre-testing	107
4.9	Pilot Study	108
4.10	Data Collection Method	110
4.10.1	Procedures for Data Collection Methods	111
4.11	Data Analysis	112
4.11.1	Preliminary Data Analysis using SPSS	112
4.11.2	Statistical Analyses using Structural Equation Model	115
4.12	Assessment of Mediation Analysis	117
4.13	Assessment of Moderation Analysis	118
4.14	Chapter Summary	119

#### **CHAPTER 5: DATA ANALYSIS**

5.1	Introduction	120
5.2	Data Preparation	120
5.2.1	Data Coding	121

5.2.2	Data Screening	121
5.3	Normality Test	122
5.4	Common Method Variance	123
5.5	Non-response Bias	123
5.6	Descriptive Analysis of Respondents	124
5.7	Measurement Model	125
5.7.1	Internal Consistency Reliability	126
5.7.2	Convergent Validity	128
5.7.3	Indicator Reliability (Outer Loadings)	128
5.7.4	Discriminant Validity	128
5.8	Structural Model	130
5.8.1	Assessment of the Structural Model for Collinearity Evaluation	130
5.8.2	Assessing the Significance of the Structural Model Relationships	131
5.9	Model Quality Assessment	132
5.9.1	The Coefficient of Determination ( $R^2$ )	132
5.9.2	Assessment of the Effect Size ( $f^2$ )	133
5.9.3	Assessment of the Predictive Relevance ( $Q^2$ )	133
5.10	Assessment of Mediation Analysis	134
5.11	Assessment of Moderation Analysis	135
5.12	PLS Predict	136
5.13	Chapter Summary	138

## **CHAPTER 6: DISCUSSION AND CONCLUSION**

6.1	Introduction	140
6.2	An Overview of the Research	140
6.3	Discussion of the Findings	141
6.3.1	The Direct Effect on Financial Planning for Retirement	142
6.3.2	The Mediation Effect on Financial Planning for Retirement	149
6.3.3	The Moderation Effect on Financial Planning for Retirement	153
6.4	Research Contributions	156

6.4.1	Theoretical Contributions	156
6.4.2	Methodological Contributions	158
6.4.3	Industrial Contributions	158
6.5	Study Limitations	161
6.6	Recommendations for Future Research	163
6.7	Conclusion	164
<b>REFERENCES</b>		166
<b>APPENDICES</b>		194



UMS  
UNIVERSITI MALAYSIA SABAH

## LIST OF TABLES

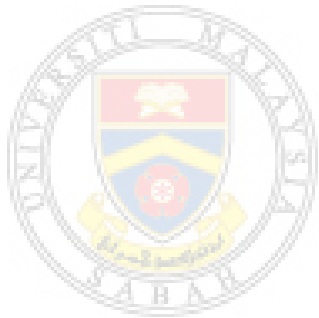
		Page
Table 2.1	: The Literature of FPR Based on Conceptual Models for Hershey	34
Table 4.1	: The Main Features of the Positivism and Interpretivism	86
Table 4.2	: Assumptions of the Qualitative and Quantitative Methodologies	87
Table 4.3	: Review of Past FPR Studies That Used Survey Method	90
Table 4.4	: Measurement Items for Financial Planning for Retirement	93
Table 4.5	: Measurement Items for Retirement Goal Clarity	94
Table 4.6	: Measurement Items for Subjective Financial Literacy	95
Table 4.7	: Measurement Items for Future Time Perspective	96
Table 4.8	: Measurement Items for Risk Tolerance	97
Table 4.9	: Measurement Items for Objective Financial Literacy	98
Table 4.10	: Criteria for GPower Analysis	103
Table 4.11	: Sample Size Guideline	103
Table 4.12	: Rules in Selecting Between CB-SEM and PL-SEM	116
Table 5.1	: Full Collinearity Test	123
Table 5.2	: Respondents' Demographic Profile	124
Table 5.3	: Results Summary for Reflective Measurement Models	126
Table 5.4	: Discriminant Validity of the Measurement Model	129
Table 5.5	: Structural Model Assessment	131
Table 5.6	: Mediation Model Assessment	134
Table 5.7	: Moderation Model Assessment	135
Table 5.8	: PLS-Predict	137
Table 5.9	: Summary of Hypotheses Testing	138
Table 6.1	: Summary of Results for Direct Effect on Financial Planning for Retirement	141
Table 6.2	: Summary of Results for Mediation Effect on Financial Planning for Retirement	149
Table 6.3	: Summary of Results for Moderation Effect on Financial Planning for Retirement	153

## LIST OF FIGURES

	Page
Figure 1.1 : Number and Rate of Population Aged 65 or Over in China	3
Figure 1.2 : Number and Reduced Number of Working Population in China: 2020-2050	5
Figure 1.3 : The Achievement of individuals' Expected FPR in China	9
Figure 1.4 : Comparison of Expectation of Retirement Savings and Current Amount of Retirement Savings in 2022	9
Figure 2.1 : Income, Consumption, Saving and Wealth as a Function of Age	23
Figure 2.2 : Theory of Planned Behaviour	25
Figure 2.3 : Conceptual Model of the Factors that Underlie Investor Behavior	30
Figure 2.4 : Capacity-Willingness-Opportunity Model	32
Figure 2.5 : The Relationship of Psychological Factors Based on Image Theory	42
Figure 2.6 : The Relationship of Psychological Factors Based on 3M Model	45
Figure 2.7 : Research Gaps	66
Figure 3.1 : Theoretical Framework	72
Figure 4.1 : Data Collection Procedures	111
Figure 4.2 : Data Preparation Process	113
Figure 4.3 : Illustration of a Mediation Design, X Affects Y Indirectly Through M	117
Figure 4.4 : Illustration of the Moderator Variable	118
Figure 5.1 : Measurement Model Analysis of the Research Model with Bootstrapping	130
Figure 5.2 : Structural Model Analysis of the Research Model with PLS-SEM Algorithm	133

## LIST OF ABBRAVATION

<b>FPR</b>	-	Financial Planning for Retirement
<b>UN</b>	-	United Nations
<b>GDP</b>	-	Gross Domestic Product
<b>CPI</b>	-	Consumer Price Index
<b>FTP</b>	-	Future Time Perspective
<b>TP</b>	-	Volatility, Uncertainty, Complexity and Ambiguity
<b>RT</b>	-	Risk Tolerance
<b>FL</b>	-	Financial Literacy
<b>SFL</b>	-	Subjective Financial Literacy
<b>OFL</b>	-	Objective Financial Literacy
<b>PLS</b>	-	Partial Least Square
<b>PLS-SEM</b>	-	Partial Least Square-Structural Equation Modeling

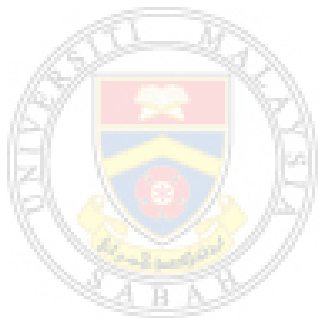


UMS  
UNIVERSITI MALAYSIA SABAH



## LIST OF APPENDICES

	Page
Appendix A : Questionnaire (English Version)	194
Appendix B : List of Experts Involved in the Pretesting Process	204
Appendix C : Final Questionnaire (Chinese Version)	206
Appendix D : Missing Data	215
Appendix E : Mahalanobis Distance	217
Appendix F : Normality Test	218
Appendix G : Independent samples T-test	219



UMS  
UNIVERSITI MALAYSIA SABAH

# CHAPTER 1

## INTRODUCTION

### 1.1 Introduction

In the last century, the decline in the fertility rate and the increase in life expectancy have been seen in the social economies of developing countries (Liu et al., 2021). It may lead to the fact that older population has grown faster than younger working population. These changes have affected individuals' financial well-being (Bacova & Kostovicova 2018; Topa et al., 2018) especially their lives after retirement. Financial Planning for Retirement (FPR) consists of the series of activities involved in the accumulation of wealth to cover needs in the post-retirement stage of life (Topa et al., 2018). In China, with the population continuing to leave the workforce, pension fund system becomes increasingly strained, FPR will take on additional importance. Therefore, FPR has become an important issue for many countries because if not handled properly, it will lead to financial insecurity at the post-retirement lives (Henkens & Kène, 2022; Scharn et al., 2018)

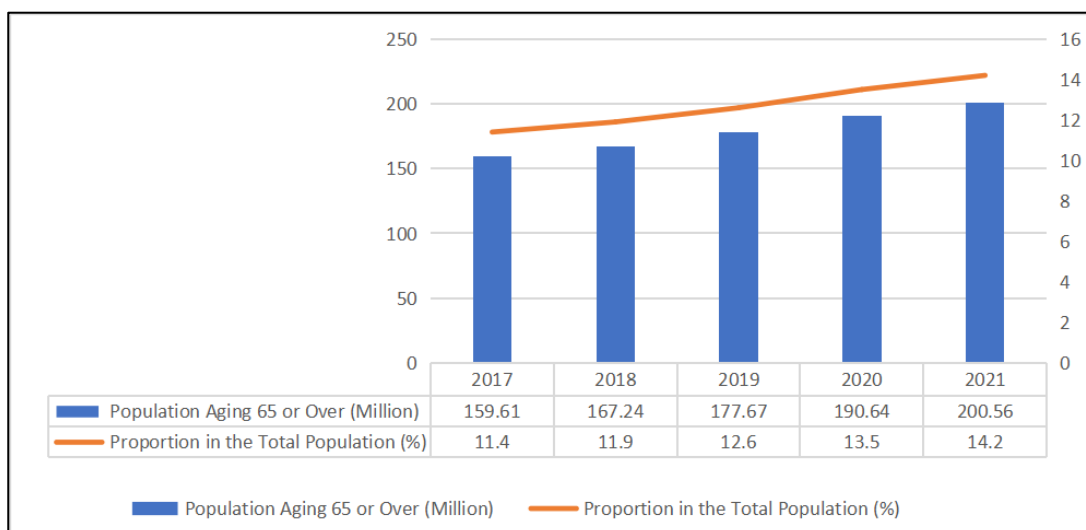
## **1.2 Background of Study**

In China, the population aging is following global trend (Qin, 2021). As the older population has grown faster than the younger population due to the current decline in birth rates and increased life expectancy (Qin, 2021), the pension fund system will be exhausted. Besides, the individuals' saving for retirement compared to the expectation is usually not enough (Mu, 2020). Hence, this echoes the importance of retirement planning. The following subsections set up the background for the study.

### **1.2.1 Population Aging in China**

The world population is expected to exceed 9.7 billion by 2050, adding a total of 2 billion from 2019 (7.7 billion), and may rise to 11 billion at the end of the 21st century. The project for the world's population growth in the 21st century is likely to follow a sustained growth (United Nations, 2019). In the meantime, reduction of fertility combined with improvement of life expectancy are resulting in the raise in elderly population proportion (Qin, 2021).

Based on the United Nations (UN)' definition, a society can be classified as aging either when (1) the proportion of the population over 60 years old reaches 10 percent or (2) the proportion of the population over 65 years old reaches 7 percent. As China is adopting the same definition, China has become an aging country at the end of the 20th century, and the number and proportion of the elderly are rising sharply (Wu, 2017). The latest data issued by the National Bureau of Statistics showed the population aged over 60 is at 264.02 million, accounting for 18.70%, while those aged above 65 is at 200.56 million, accounting for 14.2% (National Bureau of Statistics, 2022). Figure 1.1 provides clear evidence indicating rapid aging rate of China's population from 2017 to 2021.



**Figure 1.1 : Number and Rate of Population Aged 65 or Over in China**

Source : National Bureau of Statistics (2022)

The United Nations Population Division (2021) reported the average percentage of population aging 65 or over for 2021 based on 185 countries was 9.44 percent. The highest value was in Japan at 28.7 percent and the lowest was in the United Arab Emirates, at 1.45 percent. China was ranked as 59 at 14.2 percent and the percentage of population aging 65 or over is far above the average level of 9.44 percent. It proved that the aging population in China has been an issue.

The Research Report on the prediction of the trend of China's population aging (China National Committee on Ageing, 2006) shows that by 2100, China's population aging can be divided into three stages: (1) from 2001 to 2020, China will be in the stage of rapid aging; (2) From 2021 to 2050, China will enter the stage of accelerated aging; and (3) From 2051 to 2100, China will be in the stage of stable and severe aging. In 2051, the scale of China's elderly population will reach a peak of 437 million, and its scale will stabilize at 300-400 million. The data suggests that it is difficult to reverse the trend of population aging. Therefore, issues about population aging in China continues to be significant, and one of the aspects is the

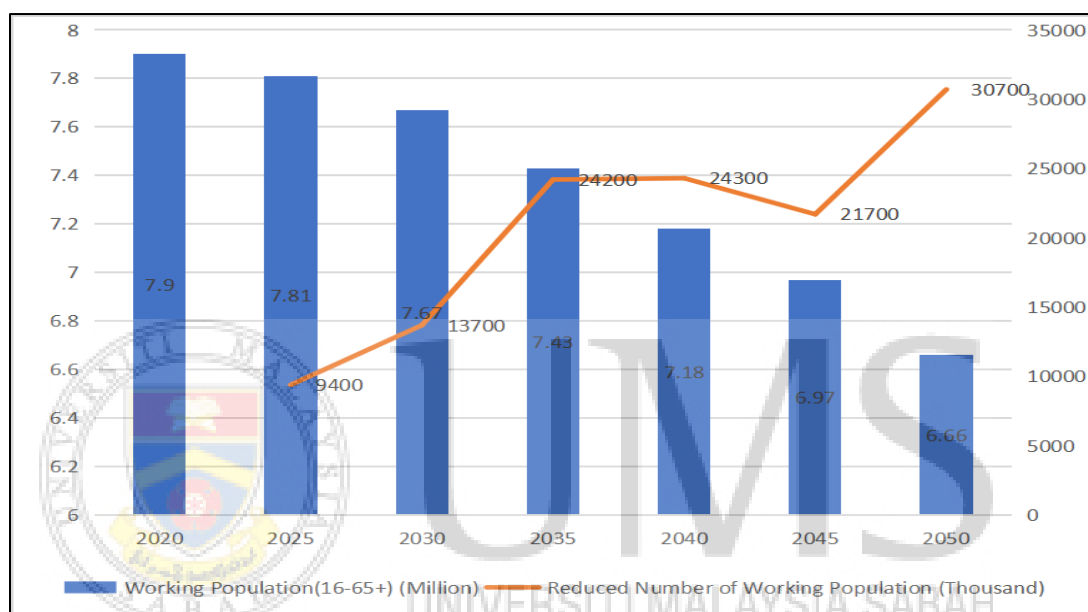
series of impacts to individuals' financial well-being due to the stress to pension fund system (Xiang & Wang, 2021).

### **1.2.2 The Stress of Aging to the Pension Fund System**

The problem link to financial concern on an aging society is not only reflected in the increasing number of aging populations, but further elevated by the shrinking workforce. The increase of aging population and the decline of working population have exerted even more pressure on the payment of public pension funds because the special payment mode is dominated by combination of pay-as-you-go and supplemented by the fund accumulation system (Zhuang & Wang, 2022). According to Zhang (2018), pay-as-you-go system refers to the pension model that pays the pension of the retired people with the contributions of the working population in the same period. It draws a corresponding proportion of pension from the salaries of the working force according to the actual payment needs of pension every year. The characteristic of this system is that the pension is collected from the working population and provides to retired people in the current period. For example, supposing a retired person receives his pension monthly, the large amount of pension is contributed by the provision of current working population, not the accumulation of that retired person. In general, with the pay-as-you-go pension fund supply system, if the public pension demand which is caused by the increase of aging population exceeds the public pension supply which is caused by the decline of working population, some older people may have financial problems if they heavily depend on the public pension supply.

Some scholars have made a more detailed calculation of the future work force. Zhu (2018) studied on the population of each age group and the labor participation rate and expected that China's working population will be 743 million in

2035, a decrease of 47 million over 2020; In 2050, China's working population will be 666 million, 124 million less than that in 2020. The decreasing trend of the working population in each 5 years is shown in the Figure 1.2. The decline of work force will lead to a slow growth in the number of pension contributors, but the number of people reaching retirement age is increasing significantly every year, which brings a very severe challenge to the current pension supply (Zhu, 2018).



**Figure 1.2 : Number and Reduced Number of Working Population in China: 2020-2050**

Source : Zhu (2018)

Due to the decrease in birth rate and increase in life expectancy, the proportional growth of the elderly population was faster than that of the labor force (Qin, 2021), there will be severe pressure on the public support systems. Therefore, this has raised the importance of the personal savings component, which is hereby regarded as the third pillar of retirement income.

### **1.2.3 Unbalance of Three Pillar Pension System**

According to World Bank's "three-pillar" classification (World Bank, 1994), the first pillar is a publicly managed system with mandatory participation and the limited goal of reducing poverty among the old, the second pillar is a privately managed mandatory savings system, and the third pillar is voluntary savings. Similar to the three-pillar model proposed by World Bank, the theoretical framework of China's three pillar pension system was issued in the Decision of the State Council on Reforming the Pension System of Enterprise Employees (State Council, 1991). The first pillar is "Public Pension Fund" mainly provided by the government. The second pillar is "Annuity Fund" initiated by private enterprises and operated by financial institutions. The third pillar is "Personal Retirement Savings" which means the relevant financial products are provided by financial institutions and voluntarily saved or invested by individuals. Liu (2021) argued that the status of three pillar pension system in China may be insufficient because the first pillar, which is dominant until now, cannot sustain forever. In addition, the development of the second pillar (enterprise annuity fund) is significantly insufficient and the coverage is not extensive. At present, the third pillar is still immature and far from perfect.

Some Chinese scholars provided the empirical evidence of the unbalance in three-pillar pension system. In terms of structure, Li (2021) explained that the three-pillar system is extremely uneven at the moment. By the end of 2020, the first pillar of pension system was about 5.8 trillion Chinese Yuan, accounting for 71%, which ranked the leading position. The second pillar of annuity was about 3.6 trillion Chinese Yuan, accounting for 29% with slow development. But the third pillar of individual pension was seriously low, which only accounted for 0.004%. Apart from that, in terms of the number of the elderly, Guo and Liu (2021) have demonstrated that, by the end of 2020, the first pillar covered 999 million people, the second pillar covered about 58 million people, and the third pillar had very limited coverage. Efforts

to boost the third pillar did not yield a desired result. For example, in 2018, the government encouraged people to open an account for retirement savings with the tax incentives in some pilot cities, but there are only 50 thousand participants. In addition, although the government issued the policy of establishing an individual pension system (i.e., the third pillar system) for all residents in April 2022, it remains to be seen that whether the participation of individuals is enough to alleviate the unbalance of three pillar system due to the short period (Gao & Chen, 2022).

It is not difficult to find that the development of three-pillar pension system is extremely uneven (Li, 2021). Relying on the first and even the second pillar is not a long-term tendency for supporting the financial well-being of retirees. When the first pillar and the second pillar cannot meet the needs of retirement income, the issue becomes serious. The coverage of the first pillar of public pension has been wide, and the operation in practice relies heavily on the public pension (Li, 2021). However, the capital inflow of public pension accounts cannot fulfill the expenditure to individuals who have retired, and there is a serious problem of empty account of public pension system which operated by government (Lou, 2021). The study on the Report on China's Regional Financial Development Index (2020) shows that there are only six out of 34 provinces (i.e. Xizang, Beijing, Guangdong, Yunnan, Xinjiang and Shanxi) in China with surplus first pillar pension, and the pension revenue of other provinces can not afford the expenditure. What still needs to be concerned is whether the six provinces with surplus first pillar pension can sustain the status in long periods. Besides, according to the "China Pension Actuarial Report 2019-2050" (2019), released by the Academy of Social Sciences, the public pension fund for urban enterprise employees in China may have a current deficit in 2028 and the balance may be exhausted in 2035. Although the financial subsidy to the first pillar has increased year by year, it may be difficult to sustain in the long run. Not only does the first pillar have the problem of insufficient account balance, but also the second