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Kym Fraser
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Ageing in China

What does it mean for the Job Market?

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ISBN 978-981-19-9680-1 ISBN 978-981-19-9681-8 (eBook)
https://doi.org/10.1007/978-981-19-9681-8

This Springer imprint is published by the registered company Springer Nature Singapore Pte Ltd.
The registered company address is: 152 Beach Road, #21-01/04 Gateway East, Singapore 189721, Singapore

Foreword

As the most populous country in the world, China is undergoing unprecedented demographic transition. China's declining fertility rate, combined with a rapidly ageing population, has important implications for the labour market. Foremost among these is that China's labour supply has been declining since 2010. China's abundance of unskilled cheap labour has traditionally been considered an important driver of China's high growth rate; however, coinciding with the decline in the labour supply, debate has centred on whether China has reached the Lewis turning point (Cai and Yang 2011).

China's demographic transition throws up a host of challenges for its labour market going forward. One is how to address declining fertility. China has removed its One Child Policy, but increasing fertility rates is likely to be a long game. Another is how to address the wage pressures, and associated wage inequality, that is invariably associated with a declining labour supply. A third challenge is how to best manage, and take full advantage of, an ageing workforce. Invariably older workers have a lot of experience and are looking for ways to support themselves. Better understanding the needs and motives of older workers is extremely important for mitigating the effects of demographic transition on the workforce and minimizing the financial burden on the pension system. A fourth challenge is addressing the needs of rural-urban migrants. Rural-urban migrants have made China the world's factory (Duan et al. 2021), but addressing demographic transition among the migrant workforce has its own problems, given that many work in the informal sector.

This volume presents a comprehensive overview of what China's demographic transition means for its labour market and evaluates how China is responding to the challenges that an ageing population present. The contributors discuss the evolution of China's fertility policies and evaluate the implications of the One Child Policy for China's ageing labour market. They also look at other ways to address declining labour supply, including policies to increase the female labour force participation rate. Several chapters address the labour market experience of older Chinese. Special emphasis is placed on the labour market experience of older rural-urban migrants and other vulnerable populations.

China's economic growth rate over a long period was remarkable. With demographic transition and slowing growth in recent times, it is easy to become despondent. And there are no easy answers as China tackles its next stage of its economic transition. But, the overriding message in this volume is one of hope. There is considerable potential for older Chinese to work longer and make meaningful contributions as a new source of economic growth, a phenomenon that Fang Cai (2020) has referred to as "the second demographic dividend". More generally, it is important that we focus more on the contributions that older workers can make, not only in China, but elsewhere (Newman and Hatton-Yeo 2008). This volume will be important in facilitating that discussion in a positive way.

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November 2022

References

Cai F (2020) The second demographic dividend as a driver of China's growth. China World Econ, 28(5):26–44. https://doi.org/10.1111/cwe.12350

Cai F, Yang D (2011) Wage increases, wage convergence, and the Lewis turning point in China. China Econ Rev 22(4):601–610

Duan Y, Dietzenbacher E, Los B, Yang C (2021) How much did China's emergence as "the world's factory" contribute to its national income? China Econ Rev 69:101658

Newman S, Hatton-Yeo A (2008) Intergenerational learning and the contributions of older people. Ageing Horizs 8(10):31–39.

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About the Editors

Xin Deng is a senior lecturer in UniSA Business at the University of South Australia. Her research has encompassed a wide range of areas with workforce diversification being her primary focus. Dr. Deng received her PhD in Economics from Monash University and has published widely in quality international refereed journals including *Human Resource Management*, *Feminist Economics*, *Applied Economics* and *Studies in Higher Education*. She has led and delivered projects for UN Women and the Australian government. Dr Deng is a regular commentator for Special Broadcasting Services (SBS) Radio's Mandarin program and has provided commentary for mainstream media in both Australia and China.

Kym Fraser is an adjunct researcher in the UniSA Business School at the University of South Australia, Adelaide. He retired in March 2022 from the position of Dean of the Kurdistan Business School, University of Kurdistan Hewler, in Erbil, Iraq. He continues to hold adjunct professorships at the University of Brawijaya in Indonesia and Aalborg University in Denmark. In 2002, he became an academic after spending 25 years in industry, holding senior management positions in both government and private enterprises, specialising in service and operations management. Since becoming an academic he has published over 100 research articles in internationally refereed books, journals and conferences, and has taught a wide range of business courses at under- and post-graduate level, with specialisation in strategic management, international business, corporate finance and operations management.

Jie Shen is currently a professor of Management at Shenzhen University in Shenzhen City, China. Previously, he held the positions of professor of HRM at Curtin University and associate professor at Monash University and the University of South Australia in Australia. He has published seven authored research books and has published his work in the *Journal of Management*, *Human Resource Management*, *Journal of Business Ethics*, *Computers in Human Behaviors*, *Journal of*

International Management, *International Business Review*, *The International Journal of Human Resource Management*, *Journal of Business Research*, *Journal of Career Assessment* and the *Human Resource Management Review*. He was on the list of the top 2% of global scientists in 2020, 2021 and 2022 and was a highly cited scholar on Elsevier in 2021.

Chapter 1
Population Ageing in China: A Time Bomb or Opportunity for Prosperity?

Xin Deng and Kym Fraser

Abstract This chapter reflects on the major trends related to China's labour market since the turn of the twenty-first century and introduces the chapters included in this book. In the last two decades, population ageing has been accelerating and China is posited to experience a population decline in 2023. Indeed, the downward trend in labour supply started much earlier. The share of the working aged population started to fall in 2010 and the number of employed people peaked in 2013. Adding to the decrease in labour supply is the fall of the share of private sector employment. Meanwhile, huge pay gaps exist among different segments of the labour market: gender, region and firm's ownership type – largely caused by discrimination and institutional factors. This book aims to understand what the ageing population means to the labour market in China through examining empirical evidence related to labour supply, fertility, female-friendly organisational practices, and working at an older age. This chapter summarises the main insights from each chapter and suggests future reforms to turn challenges brought by population ageing into opportunities for prosperity in China.

Keywords Population ageing · Labour market · Labour force · China

The year of 2022 marks the start of a new era for China's population: for the first time the most populous country and the second largest economy in the world saw its population shrink after more than 60 years of expansion (Ng 2023). The fall in population is likely to continue due to the declining fertility rate, which is currently well below the replacement rate (Liang et al. 2022). Along with the dwindling population is rapid ageing. The proportion of the population aged 65 and above nearly tripled in 30 years, rising from 5.6% in 1990 to 13.5% in 2020 (National Bureau of Statistics of China (NBSC) 2021). The Chinese government has been trying hard to turn the tide in the recent years: the one-child policy mandating one

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X. Deng et al. (eds.), *Ageing in China*, https://doi.org/10.1007/978-981-19-9681-8_1

child per couple was abolished in 2016, and three children were allowed in 2020. Unfortunately, these efforts have had little impact in boosting fertility, which continues its downward trajectory despite a short-lived recovery in 2016 (Liang et al. 2021).

The challenges associated with population ageing in the labour market are profound and complicated, and the declining fertility rate is just one of them. A more significant concern is its implications on the economy and its ability to create jobs and improve living standards. Scholars have long argued that abundance of labour supply, or so-called "demographic dividend", is one of the most important driving forces for China's stunning economic growth in the last four decades (Cai 2020). A shrinking and ageing population, however, is likely to have a negative impact on future economic growth, with the potential for it to become a drag on the economy.

Labour markets are an area that will be profoundly affected by population ageing. Indeed, the size of the working population, or the population aged between 16 and 64, has already shrunk, having peaked at 1.01 billion in 2013, and been in decline since then. An even more worrying trend is the proportion of the working population: it fell from a high point of 74.5% in 2010 to 68.6% in 2020 (NBSC 2021). What does an ageing and smaller population mean to the Chinese labour market? The answers to this question are complicated. Not only because most of the issues related to the labour market are complicated, but also because of the uniqueness of China's labour market.

This book, therefore, can only focus on some of these factors in order to provide insights into answering the question posed above. This remains important as research in this area is still insufficient: the majority of the attention on how to cope with the challenges of an ageing population has been focused on how to increase the fertility rate, which is a crucial issue, by all means. However, as demonstrated by the ineffectiveness of boosting fertility through abandoning the one-child policy, it takes more than lifting birth restrictions to encourage people to have more children. Another strength of this book is that the studies included used the most up to date data, including the newly released seventh census, and the insights are built on solid empirical evidence.

This chapter will provide the context to the question of the impact of an ageing and shrinking labour population on China by reflecting statistical information related to China's labour market and outlining the major changes that took place in the last two decades. This will be followed by a summary of the chapters and a discussion of policy recommendations.

1.1 Trends in China's Labour Market in 10 Figures: From 2000 to 2020

Drawing on data published by the National Bureau of Statistics of China (NBSC) (the government agency responsible for the collection, investigation, research and publication of statistics in China), this section will illustrate the major trends related

to the labour market through a combination of graphs and numbers. We outline five trends that are important for the labour market in China in 10 figures: population ageing, labour supply, private sector employment, pay gaps and human capital.

1.1.1 Trend One: Ageing Population

While there is still speculation on when the population in China will decline, population ageing is a process that started some time ago. The share of population aged 65 and above started its uptrend from the early 1980s, thanks to increasing longevity brought on by improved living conditions and health services. Taking a closer look at the statistics, we can observe a few sub-trends. First, the population ageing process has accelerated in recent years. The proportion of the population aged 65 and above reported by the last five censuses are 4.91% (1982), 5.57% (1990), 6.96% (2000), 8.87% (2010) and 13.5% (2020) (Office of the leading group of seventh census 2021). In other words, the share of older people barely increased by 0.7% in the first decade, but the growth rate for the last decade was 4.6%, showing the accelerating ageing. A direct impact of the ageing population is the rising old age dependency ratio, defined as the proportion of the aged population to working population. As illustrated in Fig. 1.1, the old age dependency ratio was a single digit for all except 1 year before 2000, but has been rising since then, and reached 19.7% in 2020. This ratio is likely to continue to rise, perhaps at accelerated pace. Secondly, there are gender and regional differences in terms of ageing. Figure 1.2 indicates that the ageing population is more of a concern in rural areas, with a much higher proportion of the population aged 65 and above, and the figures are consistently higher for females irrespective of the region. The old age dependency ratio

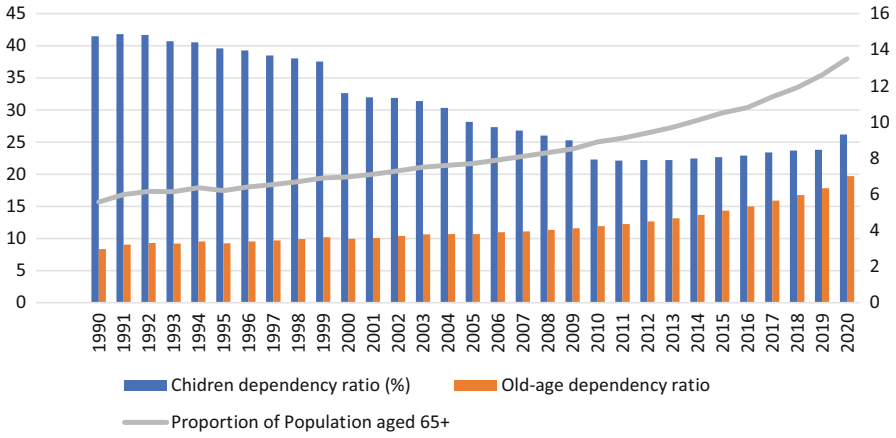

Fig. 1.1 Population Ageing in China. (Source: China's Statistical Yearbook 2020 (NBSC 2021). Same for the rest of Figures unless stated otherwise)

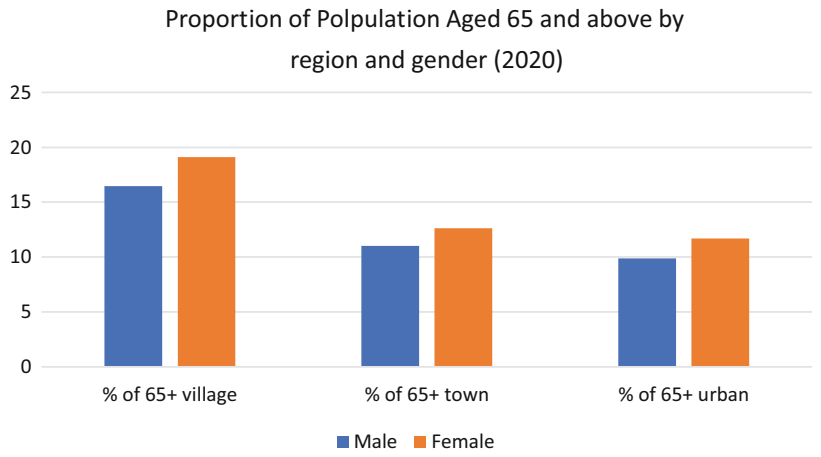

Fig. 1.2 Population Ageing: Regional and Gender Difference

also varies considerably across provinces. The ratio is higher than 20% in 14 provinces or regions, and less than 15% in 6 regions in 2020. Those differences are concerning as aged care provisions are under-developed in the rural areas. Therefore, the majority of the population does not have access to pensions or only has access to the basic pension, which is far below the amount that can provide a decent living. While the higher share of the aged population among females is not unique in China, the traditional caring role of women can pose a challenge.

1.1.2 Trend 2: Dwindling Labour Supply

This trend is perhaps not surprising in the presence of population ageing. However, it is worth pointing out that there are several factors to cause the labour supply to decline: the labour force participation rate, the size of the working age population aged between 16 and 64, the number of employed people and the birth rate. The last three decades have seen China's labour force participation rate drop from nearly 80% in 1990 to under 70% in 2017 (World Bank 2022). While the fall of labour force participation is not usual for a country that has emerged from extreme poverty, as less people have to work to survive, this continuous decline does mean a smaller portion of the work force in the labour market. Other factors add further pressure on labour supply.

As shown in Fig. 1.3, the number of working age people started to decrease as early as 2012. While the rate of decline was minimal in the first few years, the 2% drop from 2019 to 2020 is especially concerning. Combined with the declining birth rate and the shrinking size of the youth population, this flags a steeper fall of the

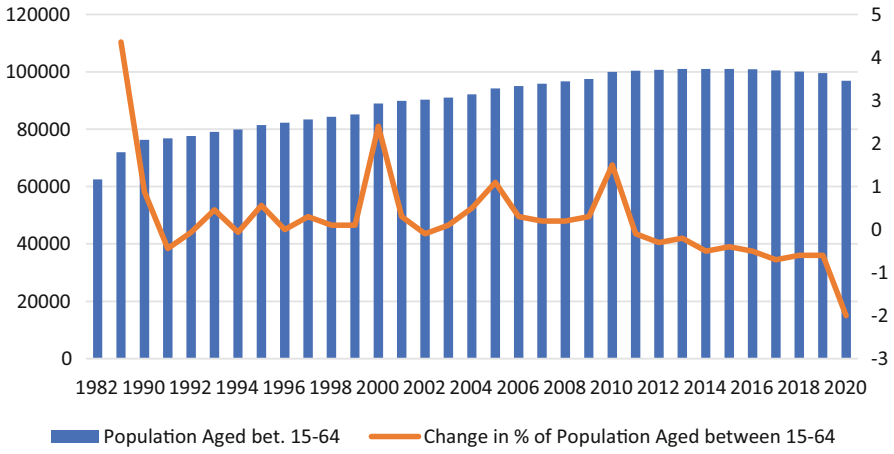

Fig. 1.3 Working Age Population in China

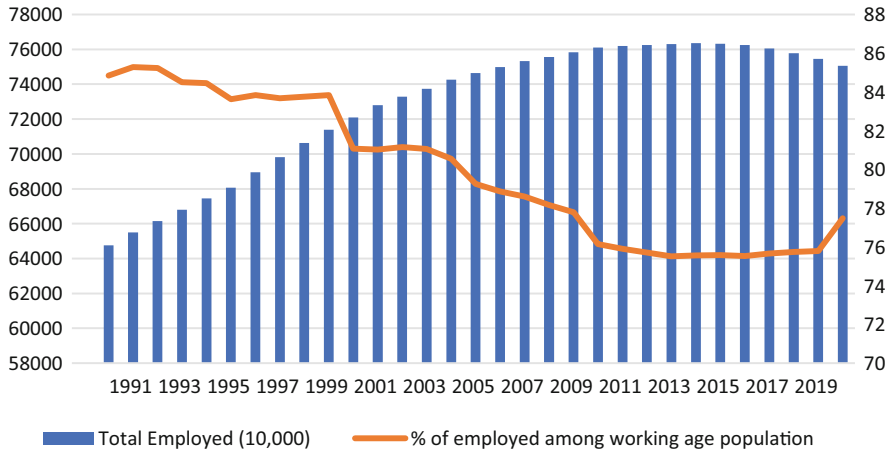

Fig. 1.4 Employed People in China

working population. The number of employed people is also down from the peak of 763.49 million in 2014 to 750.64 million in 2020. However, this is a modest drop compared with a cut of 41.61 million of the working age population in the same year, and as a result, the employed as a proportion of the working age population has been stable or even had a modest uptick in 2020 (Fig. 1.4). Of even more concern is the synchronised movement between the number of births per 1000 and the share of the youth population (aged between 0 and 14) (Fig. 1.5). The downward trend of both indicates a drain in labour supply in the future.

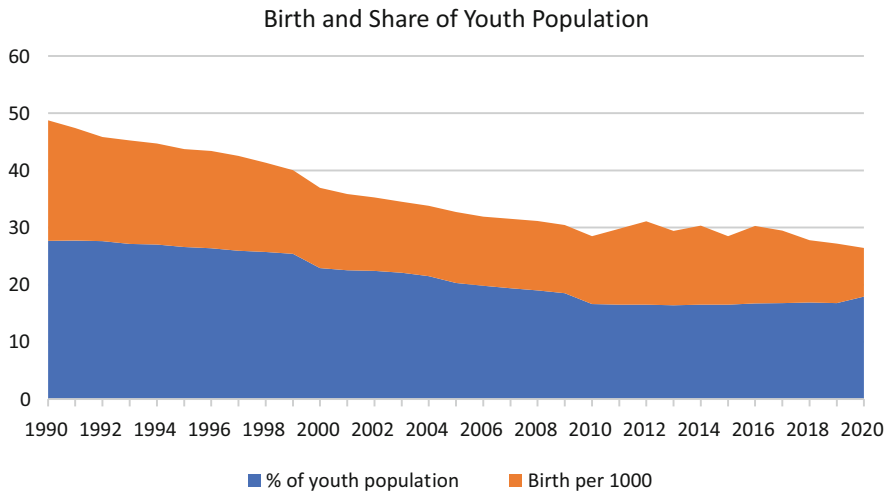

Fig. 1.5 Youth Population in China

1.1.3 Trend 3: Shrinking Private Sector Employment

The private sector emerged from marketisation reforms and flourished with globalisation connecting China to the world market. It is the sector that generates the most jobs, yet it is also a sector where a significant number of businesses do not comply with labour laws and regulations and is a source of informal employment (Song and Li 2014). Due to its informal and under-regulated nature, the data related to this sector can suffer reliability issues. In fact, the NSBC classifies shareholding companies, joint ventures, and foreign-invested companies as part of the "non-private sector", which runs against the common definition of non-private, as the majority of these organisations are owned privately. Despite such classification, the number of people working in the private sector outweighs those in the non-private sector. As shown in Fig. 1.6, the sector accounted for around 85% of total employment in the early 2000s, but its share has been slipping since the late 2000s, along with the absolute number. There could be various reasons behind the decline of the private sector, such as more stringent laws and regulations. However, one factor that cannot be overlooked is the pay gap between the private and non-private sector. In the last two decades, this gap, whether measured in absolute terms, or as a proportion of the average wage in the private sector, has been rising (Fig. 1.7). Adding to the pay gap are the conditions and benefits associated with employment, which many informal employers do not provide, making the private sector even less appealing.

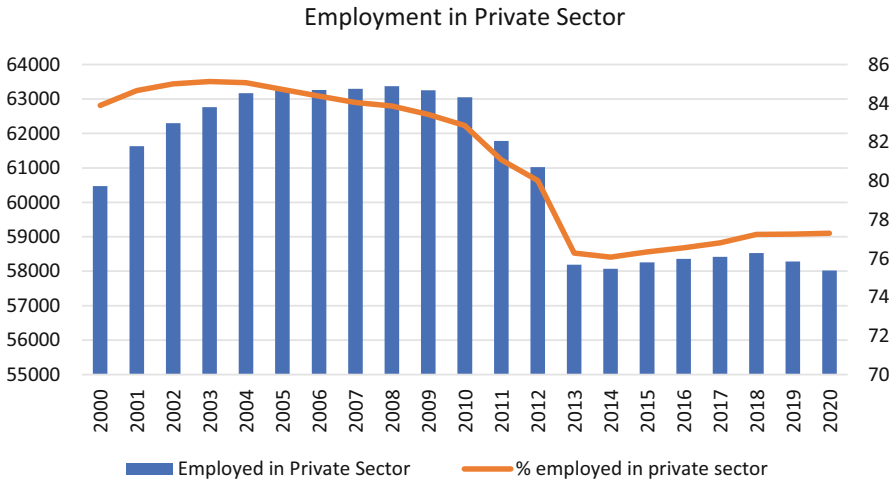

Fig. 1.6 Private Sector Employment

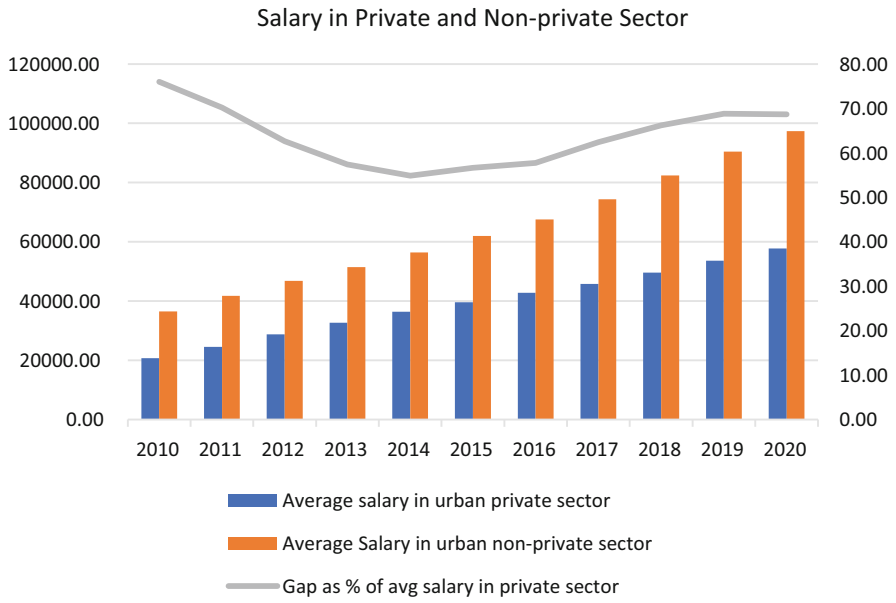

Fig. 1.7 Pay Gaps between Private and Non-Private Sectors

1.1.4 Trend Four: Rising Pay Gaps

The pay gap between the private and non-private sectors is one of many inequalities prevailing in the labour market in China, and there is further evidence of pay gaps within other employment sectors. Within the non-private sector, there exist huge

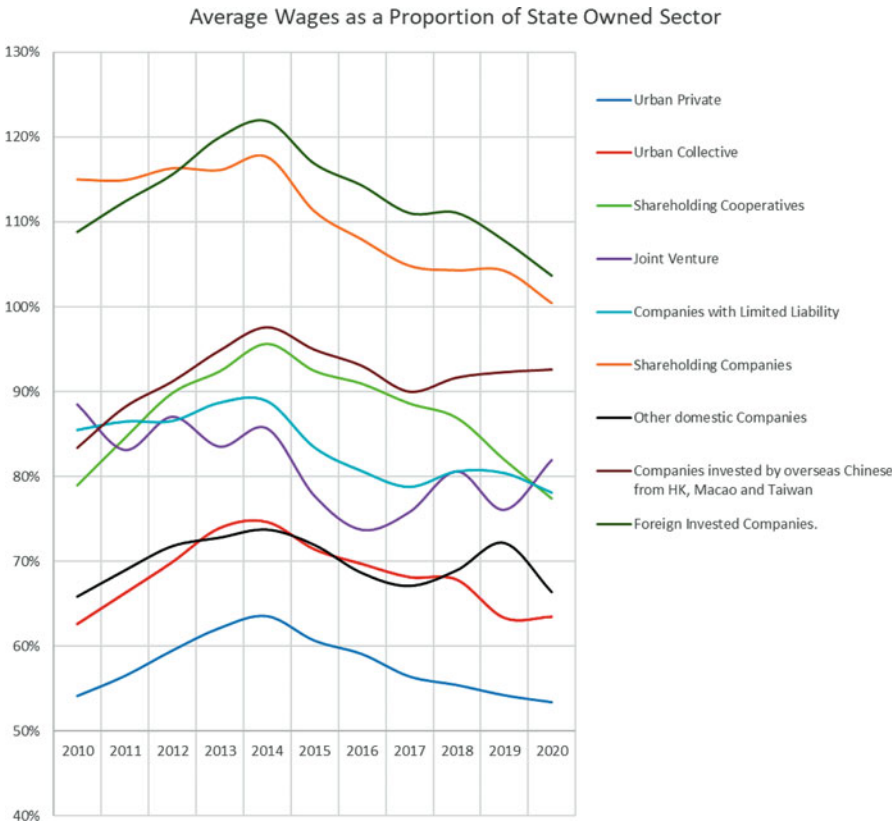

Fig. 1.8 Pay gaps between state owned and other types of ownership

differences in terms of wages. For example, the difference in average annual wages between state-owned units and collectively owned units is as high as RMB39,542 in 2020, with the pay for the latter being only 63% of the former. Using the average wages of the state-owned sector as the reference, Fig. 1.8 illustrates the pay gaps between other types of ownership and the state-owned sector in the last 10 years using their average wages as a proportion of that in the state-owned sector. We can derive at least two pieces of information from this graph. First, relative pay in the state-owned sector has been rising since mid-2010. Almost all curves reach their peak in 2014 suggesting that the lower figures across other ownerships are driven by a disproportional wage growth in the state sector. Indeed, average wages in the state sector have been rising at faster pace than the average pay of the non-private sector since then, and the difference is at its highest in 2020 when the average wages in the state sector jumped by RMB9,233 and the average pay across the sector rose by RMB6,878. Second, regarding labour market segmentation by ownership; pay gaps across the sectors have largely been consistent in the last 10 years, showing persistent segmentation of the labour market. Despite the fluctuations relative to

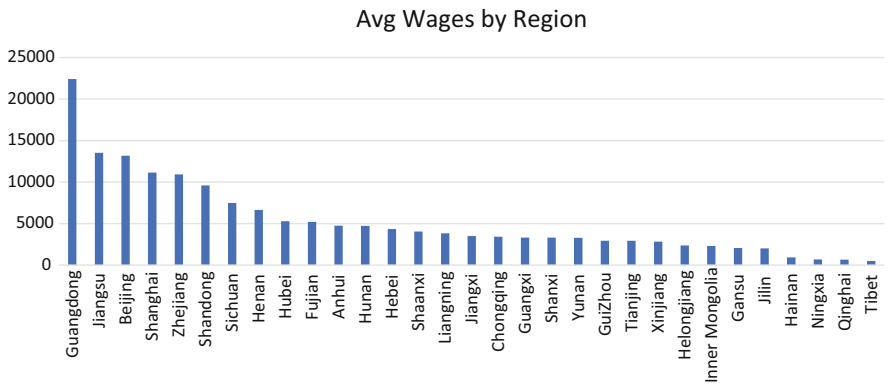

Fig. 1.9 Average Wages (RMB) by Region in 2020

the state-owned sector, each sectors position in terms of average pay relative to the state-owned sector has been largely the same with foreign-invested companies and shareholding companies sitting at the top and the private sector at the bottom. It appears that people working for state-owned units have been better off overall in the past two decades and their pay gap between the foreign invested units has closed gradually in the same period.

Regional inequalities have also been persistent and widening. As illustrated in Fig. 1.9, the gap between the highest and lowest paid between regions is huge, with the average wage in Guangdong (the highest paid region) being 45 times of that in Tibet – the lowest paid region. It is more concerning to see that this outcome is not because those two regions are outliers. In fact, the average wages of the top 3 regions are still 26 times of that of the three regions with the lowest wages. Location apparently plays an important role in this pay gap: 14 out of the 15 regions with lower pay do not have a coastline.

Another widely discussed pay gap is the gender earning gap. This is partially because the NBSC does not publish such data. While it is difficult to gauge the exact size of the gender pay gap, Zhang et al. (2008) suggest that the gender pay gap was 27.2% in 2004, rising from a relatively modest 14.7% in 1988 to 22.6% in 1995. Zhilian Zhaopin (2019), one of the largest recruiting sites in China, surveyed 102,415 individuals in China in 2018, and found that female employees' average monthly income was 22% lower than men. Ma (2022) used data from two household surveys and reported a much smaller gender wage gap in urban China, but still found that the gap rose from 8.6% in 2002 to 14.0% in 2018.

1.1.5 Trend Five: Human Capital

This is a trend that carries hope for China to maintain economic momentum. In addition to rapid economic growth, another area where China has demonstrated outstanding achievement is education. The illiteracy rate has been declining since the

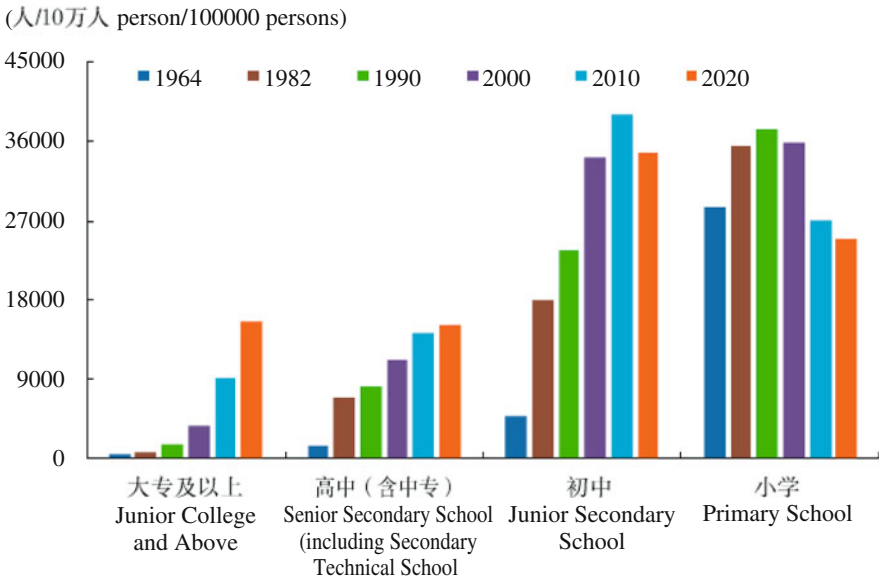

Fig. 1.10 Education Attainment in Six Censuses in China. (Source: Office of the leading group of seventh census (2021))

1960s, with the number of illiterate individuals per 10,000 people declining from 6.72 in 2000 to a merely 2.67 in 2020 (Office of the leading group of seventh census 2021). An even more encouraging fact is the significant expansion in the college educated population. As shown in Fig. 1.10, the number of individuals with college qualification per 10,000 people nearly tripled from 3611 in 2000 to 15,467 in 2020, with the number of people with a lower level of education dropping during the same period (Office of the leading group of seventh census 2021). While there are still regional differences in terms of educational levels, the more educated workforce has the potential to deliver the higher productivity needed to continue economic prosperity.

1.2 Summary of Chapters

The trends mentioned above may paint a gloomy picture about the future of China's labour market. In many ways, they pose serious challenges ahead, but each challenge also presents opportunity for change. As shown in the previous section, many of the issues described have existed for years and have complex factors behind them, with many of them being intertwined; some even share the same roots. For example, in their review, Cooke and Zhao (2021) argue that institutional actors such as the state and privileged social groups play a crucial role in shaping the discourse, policy and reality that leads to entrenched discrimination of disadvantaged groups, such as

women and migrant workers. Despite repeated calls for action to promote more equal workplaces and equal opportunities in labour markets, little action has been taken. It is easy to put off issues like inequalities when the economy is growing at a double-digit rate, and the labour supply seems to be unlimited. It is a much harder to turn a blind eye to an issue when a solution could bring imminent benefits.

Solutions, however, need to be based on evidence. This book, therefore, aims to provide some evidence to contribute to the literature on the intersection of population ageing and the labour market. Through focusing on different aspects of an ageing population on China's labour market, each chapter has endeavoured to explore one aspect of the labour market. Since labour market issues often involve government, organisations and individuals, this book probes into the impact of ageing through both a macro and micro lens.

The next chapter takes a bird's eye view of the workforce with a special focus on those at the entry and exit stage. Utilising the data from two recent censuses, Zhang and Xiang (2023) modelled the size and human capital of the labour force at the entry and exit stage, and predicted China's labour force in 2035. Their results indicate that the tight labour supply is unlikely to improve, but they found a rise in the education gap between the labour force at entry and exit stage. They are optimistic that the enhanced human capital has the potential to significantly promote economic growth. Their modelling indicates that the cumulative effect of the policy to postpone retirement will only add an extra 15 million people by 2035, which falls considerably short to make up for the decrease in labour supply due to extended compulsory education.

Chapter 3 examines an important issue related to population ageing: fertility. Through reviewing the literature published in Chinese journals since 2000, this chapter makes a unique contribution by presenting the empirical evidence in Chinese language to English readers. The chapter starts by reflecting on the evolvement of fertility policies in China since the 1980s and presents three strands of literature related to fertility costs. The literature related to three types of fertility costs are also discussed, along with their labour market consequences. Guo and Ge (2023) found that each of the costs has a significant deterring effect on women's willingness to have more children. They highlight that financial cost mainly affects whether families choose to have more children, and the motherhood penalties predominantly affect women's choice between family and work. While the first type of cost has been largely addressed, the existence of considerable motherhood penalties means that women, especially more educated women, may still be reluctant to have more children.

Many of the tools to address motherhood penalties are held by organisations. Therefore, Chap. 4 investigates whether family friendly human resource management (HRM) policies would benefit organisations through improving employees' attitudes. Using survey data from two organisations in China, Deng and Wu (2023) examine so-called "female-focused" HRM – a set of HRM practices exclusively benefiting female employees – and their impact on job satisfaction and intention to quit, two outcomes that are crucial for the stability of the human resources of an organisation. They found that there is no gender difference in terms of perception of

female-focused HRM. However, female-focused HRM does not affect employees' attitude directly, instead it exerts its impact through perceived organisation support.

The next four chapters (Chaps. 5, 6, 7 and 8) focus on older people's experience in the labour market through various angles. Chapter 5 attempts to answer the question of what drives older people to work, and Chap. 6 focuses on how care responsibilities influence older people's decision to participate in the workforce. Chapters 7 and 8 each probe into a vulnerable group of older workers: migrant workers and those who are employed informally. All four chapters use quantitative survey data, with three chapters using household survey data from the China Health and Retirement Longitudinal Study (CHARLS).

Chapter 5 utilises two waves of CHARLS data to investigate the factors influencing older workers' propensity to work. Deng et al. (2023) find a distinct gender difference in working decisions: men are more likely to work than women, and financial pressure and marriage are correlated with a man's propensity to work, but these factors have very little impact on women. Contrary to findings reported in previous literature, care responsibilities for parents does not have a statistically significant impact on an individual's working decision. While the impact of caring responsibilities for grandchildren is statistically significant, gender difference was not detected.

Chapter 6 attempts to solve the puzzle as to why care responsibility is an insignificant explanatory variable in explaining older people's work decision. Similar to what is reported in Chap. 5, Li and Chen (2023) did not detect a significant link between caring for the elderly and the decision to work, but found the impact was significant after taking into consideration the mediating effects of physical self-maintenance and mental health. This is an encouraging finding considering that life expectancy in China is the highest in its history, meaning that people are living longer and healthier than ever.

Chapter 7 looks into the relationship between access to the pension and migrant labour supply. Tan and Zuo (2023) compare the discrepancies in participation in the rural age-pension program among three groups of rural residents: migrant households living in a large city, and farmer households with or without family members working as a migrant worker. The authors surveyed two groups of rural residents and compared the results with those reported and found that age is the most important factor determining their participation in a pension scheme, irrespective of their location. They further reveal that participation in the rural age-pension program impacts choices of future living destinations.

The last chapter attempts to explain why some older workers are trapped in informal employment, which is precarious, providing little protection and hardly any additional social insurance – even though it is a governmental mandate. The study found that males, individuals with more education, or those with urban residency have a lower chance of being in informal employment at an older age (Yu and He 2023). In other words, those who are disadvantaged in the labour market are more likely to end up in precarious informal employment, which is largely consistent with extant literature. A more interesting finding from this study relates to career path dependency. The authors found that older workers whose first job was

in the state sector were the least likely to work informally at an older age. In contrast, individuals who were self-employed in their first job had a significantly higher chance of being employed informally. This study highlights the segmentation of the labour market in China, and the institutional arrangements that block workers' entry to a better job. Both this segmentation and the institutional arrangements are difficult to break. As a result, disadvantages at an early life stage can be accumulated into setbacks at an older age and may lead to even more severe inequalities at the older age.

1.3 Turning Challenges into Opportunities of Future Prosperity: What Can Be Done?

Chapters in this book highlight different labour market challenges and demonstrate the complexity behind them. They also provide insights for future reform. Each chapter provides policy implications relevant to the topic based on the empirical evidence generated. In addition to these specific recommendations, we can also identify several insights that are shared across different studies.

First, China still has a huge pool of talent that can be tapped into to create momentum for future economic growth despite the ageing population. Health and education have been repeatedly identified as the major factors influencing people's decision to work at an older age. Since Chinese people's health, as indicated by life expectancy, has been steadily improving in the last few decades (World Bank 2021), there is a real possibility that people can work longer. Adding to the health factor is human capital and nature of jobs. As discussed in Sect. 1.1, people in China are better educated than ever before, with the rapid fall in illiteracy and people with a lower level of education (primary education or below). Chapter. 2 also shows that the higher level of education is mainly driven by the younger generation who is at the entry stage of the labour market (Zhang and Xiang 2023). They are well-positioned to take advantage of technological advancement and be more productive in the future, as well as working longer. The changing nature of jobs means there will be fewer and fewer jobs that are physically demanding, thus opening opportunities for women and older people to participate.

However, turning possibility to reality requires fundamental changes to labour market laws and regulation, as well as institutional changes. Household registration, pension and discrimination are areas requiring more attention and actions.

Despite reforms in the last few decades, household registration (*hukou*) remains to be the major source of labour market discrimination and continues to restrict labour force mobility. It is well established that free movement of human capital is a crucial factor for economic growth (Mincer 1984; Whalley and Zhang 2007), and the relaxation of *hukou* system is an essential condition for the rural labour to move to the urban areas. However, more needs to be done to ensure that *hukou* is no longer a tool to segment citizens and to disadvantage a significant proportion of population in

the labour market by denying their access to public services in the urban area. As demonstrated in Chap. 8, people with rural *hukou* are more likely to be trapped in insecure, low paid, informal work with little hope for change over their lifetime (Yu and He 2023). This cannot be justified and can be the source of unwillingness to participate in the labour force. Indeed, researchers have demonstrated that "surplus" labour exists in rural areas and this labour could contribute to labour supply should the system governing migrant workers' social security and labour rights be improved (Kwan et al. 2018; Wang 2014). Abolishing *hukou* will eradicate the roots of the different treatment of migrant workers as they will no longer be "migrants" in their home country.

Pension is another area of differentiated treatment towards citizens. As shown in Chaps. 6 and 7, there are several dozens of pension schemes with different benefits attached – the majority of them do not provide benefits that are sufficient to live a decent life, and there is a significant proportion of the population who do not have access to any pension (Li and Chen 2023; Tan and Zuo 2023). As shown in the two studies in this book (Deng et al. 2023; Tan and Zuo 2023), different pension schemes have different impacts on the propensity to work of older people and affect their choice of working and relocation. The disincentive associated with pension on working is well known, and the locally managed pension schemes add further obstacles for older people considering working. Another area of reform is the retirement age, which was set in the 1950s when life expectancy in China was in the 40s. With the life expectancy almost doubled at 77 in 2020 (The World Bank 2021), it makes sense to raise the retirement age to reflect the fact that people have the ability to work longer, to relieve the pressure on pension funding and to ease the labour shortage. However, such a proposal was met with a strong public resistance. The public backlash associated with extending the retirement age is not unusual but it highlights the importance of providing more incentives and addressing obstacles to allow people to work later in life. Age discrimination is rampant in the labour market and workplaces in China. Many job ads have explicit age requirement, and the cut-off age for many jobs, including public servant, is 35, making it almost impossible for people over 40 to start a new career that is financially or professionally rewarding. Adding to that are unsustainable workplace practices that oblige many employees to work long hours and sacrifice their family life for work – the notorious 996 practice[1] is just one of them. Therefore, increasing the retirement age without addressing ageism and discriminatory workplace practices is bound to cause grief.

Sadly, age discrimination is just one of the many forms of discriminations in the labour market in China. Discrimination against women, people without local *hukou*, people with different sexuality or health issues are still rampant. Discrimination does not only hurt those who are discriminated against, it also hurts the whole economy through lower productivity and less workforce participation. As outlined in Chap. 3, discrimination against women at childbearing age, for example, has forced many to

[1] 996 means an employee starts at 9 am and finishes at 9 pm and works for 6 days a week. This means weekly working hours of 72, even thought the legislated weekly working hours are 40.

drop out of labour force prematurely and discouraged others from having children. Discrimination also hinders the process of converting the gains in human capital into the gains in the labour market. Gender gaps in education have been closed in China with the average years of schooling for females higher than males and there are more females enrolled in tertiary education institutions. While the illiteracy rate is still higher among females, but the rate has levelled up for people who are younger than 35. Gender gaps in the labour market have been persistent. Apart from the pay gaps mentioned in Sect. 1.1, gender difference in terms of workforce participation rate rose sharply, jumping from 12% in 1999 to 14.4% in 2010. The gap has inched lower since then and returned to 12.05% in 2019 before climbing up again in the last 2 years (World Bank 2022). While rising per capita income may be the main driving force for falling participation rates, the widening gender gap may indicate the vulnerability of females in the labour market despite the boost in human capital. Reducing discrimination, therefore, could be another way to boost labour supply by encouraging a more diverse workforce and longer participation in the workforce. It requires concerted efforts by the government and organisations to achieve this. The good news is there are gains for all parties involved. As demonstrated in Chap. 3, human resource policies targeting one group of employees are likely to be perceived favourably by all employees as an organisation's support for employees and lead to positive workplace behaviours and attitudes (Deng and Wu 2023).

Studies in this book have answered some questions related to the implications of ageing on China's labour market. We hope these answers can be part of the solutions to make China's labour market more efficient and more productive, and we are realistic enough to know that there are vast numbers of questions needing further research, and that our joint work also raised further questions. Therefore, we hope this book can also serve as a stepping-stone for more research in the future. We also acknowledge that issues in the labour market are closely related with the economy and politics, thus are subject to the influence of the latter. China's economic growth has slowed down considerably in recent years and China's relationship with the world has changed profoundly – partly due to the pandemic. As a result of the COVID-zero policy and political tensions between China and the United States, China is more isolated from the world than at any time in the last three decades. It is difficult to predict what will happen in the next decade, but we believe population ageing is inevitable and it is time to prepare the labour market.

References

Cai F (2020) The second demographic dividend as a driver of China's growth. Chin World Econ 28(5):26–44. https://doi.org/10.1111/cwe.12350

Cooke F, Zhao C (2021) Towards a broader understanding of workplace inequality and exclusion in China: a review of discrimination based on social class, gender and physical ability. Asia Pac J Hum Resour 59(2):184–203. https://doi.org/10.1111/1744-7941.12276

Deng X, Wu Z (2023) Population ageing in China: a time bomb or opportunity for prosperity? In: Deng X, Fraser K, Shen J (eds) Ageing population in China: what does it mean to labour market. Springer Nature

Deng X, Fraser K, Pau E (2023) Population ageing in China: a time bomb or opportunity for prosperity? In: Deng X, Fraser K, Shen J (eds) Ageing population in China: what does it mean to labour market. Springer Nature

Guo L, Ge Q (2023) Penalties for childbirth in China: a review of empirical evidence. In: Deng X, Fraser K, Shen J (eds) Ageing population in China: what does it mean to labour market. Springer Nature

Kwan F, Wu Y, Zhuo S (2018) Surplus agricultural labour and China's Lewis turning point. China Econ Rev 48:244–257. https://doi.org/10.1016/j.chieco.2017.01.009

Li D, Chen X (2023) Population ageing in China: a time bomb or opportunity for prosperity? In: Deng X, Fraser K, Shen J (eds) Ageing population in China: what does it mean to labour market. Springer Nature

Liang J, Ren Z, Huang W, He Y, Bai X, Xiong C (2021) 2021 report on population forecasting in China (in Chinese). Yuwa Population Institute. https://file.c-ctrip.com/files/6/yuwa/0R7571200096esn24776D.pdf

Liang J, Ren Z, Huang W, He Y (2022) China childbirth cost report 2022 (in Chinese). Yuwa Population Institute. https://file.c-ctrip.com/files/6/yuwa/0R726120009bzjzhb3FD7.pdf

Ma X (2022) Parenthood and the gender wage gap in urban China. J Asian Econ 80:101479. https://doi.org/10.1016/j.asieco.2022.101479

Mincer J (1984) Human capital and economic growth. Econ Educ Rev 3(3):195–205. https://doi.org/10.1016/0272-7757(84)90032-3

National Bureau of Statistics of China (NBSC) (2021) China statistical yearbook 2020. China Statistical Publishing House, Beijing

Ng K (2023) Should China worry about its shrinking population? Retrieved from: https://www.bbc.com/news/world-asia-china-64329890

Office of the Leading Group for the Seventh Census (2021) Major figures on 2020 census of China. China Statistical Publishing House, Beijing

Song J, Li S (2014) Hukou's impact on labor occupation segmentation. China Agric Econ Rev 6(3):506–522. https://doi.org/10.1108/caer-05-2013-0081

Tan Y, Zuo A (2023) Rural age pensions and rural-urban migration in China. In: Deng X, Fraser K, Shen J (eds) Ageing population in China: what does it mean to labour market. Springer Nature

The World Bank (2021) Life expectancy at birth, total (years) – China. Retrieved from: https://data.worldbank.org/indicator/SP.DYN.LE00.IN?locations=CN

The World Bank (2022) Labor force participation rate, female (% of female population ages 15+). Retrieved from: https://data.worldbank.org/indicator/SL.TLF.CACT.FE.ZS?locations=CN

Wang Z (2014) China's "labour shortage" and migrant workers' lack of social security. Int Labour Rev 153(4):649–658. https://doi.org/10.1111/j.1564-913x.2014.00219.x

Whalley J, Zhang S (2007) A numerical simulation analysis of (Hukou) labour mobility restrictions in China. J Dev Econ 83(2):392–410. https://doi.org/10.1016/j.jdeveco.2006.08.003

Yu G, He N (2023) Informal employment at an older age in China: why your first job matters. In: Deng X, Fraser K, Shen J (eds) Ageing population in China: what does it mean to labour market. Springer Nature

Zhang J, Xiang J (2023) Mapping China's labour force in 2035 through the lens of two censuses. In: Deng X, Fraser K, Shen J (eds) Ageing population in China: what does it mean to labour market. Springer Nature

Zhang J, Han J, Liu PW, Zhao Y (2008) Trends in the gender earnings differential in urban China, 1988–2004. ILR Rev 61(2):224–243

Zhilian Zhaopin (2019) 2018 Investigative Report on Females in China's Workplace (*in Chinese*). Retrieved from: https://special.zhaopin.com/2019/bj/tsjt021150

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Chapter 2
Mapping China's Labour Force in 2035 Through the Lens of Two Censuses

Juwei Zhang and Jing Xiang

Abstract This study uses the data from China's sixth and seventh censuses to compare the size and human capital of the labour force at the entry and exit stage in the last decade and predict the two cohorts in 2035. We find that China's labour market will continue to face the challenge of the declining labour supply which started in 2016. However, the level of education of the current workforce is significantly higher than 2010, and the education gap between the labour force at entry and exit stage has widened considerably, suggesting that the enhanced human capital has the potential to significantly promote the economic growth. We then model the impact of two policies on the labour force in 2035. Our modelling indicates that the cumulative effect of the policy to postpone retirement is only an extra 15 million people by 2035, or merely 3 million each year. On the other hand, if compulsory education is extended to 12 years, the number of 15 to 25-year-olds entering the labour market will shrink by a cumulative 27 to 30 million people between 2021–2035. Therefore, raising the retirement age is unlikely to create enough supply to make up the loss caused by the longer years of education. Our study concludes with policy recommendations on how to leverage the enhanced human capital for future workforces to deal with dwindling labour supply as a result of an ageing population.

Keywords Population ageing · Labour force · Labour market entry and exit · China

Human capital is an important factor for economic growth and an important indicator considered by countries around the world. According to endogenous growth theory, human capital can generate incremental returns through specialised knowledge and the accumulation of human capital, and increase the returns of other input factors, thus breaking through the constraint of diminishing or constant return assumed in classical economics theory and becoming a driving force for sustained economic

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X. Deng et al. (eds.), *Ageing in China*, https://doi.org/10.1007/978-981-19-9681-8_2

growth (Romer 1989, 1994; Lucas 1988). China, the most populous country in the world, is the living example of this theory. Population factors, or the so-called "demographic dividend", have been cited as the major driver of China's unprecedented economic growth between 1980 and 2010 (Cai and Zhao 2012; Zhu 2012). However, the change in the age structure of the population since the early 2010s means such dividend is bound to disappear (Cai 2020).

The release of China's seventh national census communique raised concerns on the implications of the ageing population on China's labour market (NBSC 2021a). On the one hand, China is predicted to reach a peak of retirement before 2025 and the number of retirees is expected to exceed 40 million (Li 2022). On the other hand, the labour supply will continue to decrease, and the net reduction of the working-age population is expected to be 35 million between 2021 to 2025 (Li 2022).

Although the decline in labour supply is inevitable in light of the trajectory of China's demographic structure, the extension of the length of compulsory education, and the expansion of higher education enrolments have led to a substantial increase in the human capital of the current and future labour force. As a result, China's population has never been as educated and as healthy as now. The average years of schooling has steadily increased from 9.56 years in 2000 to nearly 14 years in 2020 (NBSC 2021b), and life expectancy has almost doubled from the 1960s and reached 77 in 2020 (The World Bank 2022). How China can leverage the enhanced quality of human capital to deal with the dwindling quantity in order to maintain economic momentum has drawn considerable attention from researchers and policy makers.

Therefore, this study aims to contribute to this conversation by mapping the size and human capital level of the entry and imminent exit labour force from 2021 to 2035. Utilising data from the 2010 and 2020 censuses, this study makes the following contributions: (1) Provides a clear picture of the human capital stock of the labour force in the next decade by projecting the size and education level of the working population at the entry and exit stage. We find that the new generation[1] of workers has 11.98 years of schooling per capita, 2.97 years higher than the generation to leave the labour market.[2] The education gap between workers entering and exiting the market is on the rise, which can potentially compensate for the shrinking labour force and be an important driver for China's economic growth in the future. (2) Models the impact of two important policies on labour supply in China. One of the policies to be introduced by the Chinese government to deal with the ageing population is to raise the retirement age. Our modelling shows that such policy has limited impact adding merely 3 million to the workforce each year until 2035. On the other hand, the policy to extend the length of compulsory education may reduce labour supply by 30 million by 2035. The combined effect of the two policies is a net decline in the workforce as high as 15 million. Both findings are vital information for researchers and policy makers considering labour market reform and development in the context of the ageing population in China.

[1] The new generation means young people aged 16–25 years.

[2] People aged 50–60 years.

The rest of the chapter is organised as follows: the next section outlines the methodology used for this study, and Sect. 2.2 reviews the human capital of the workforce in 2010 and 2020 and predicts the education gap of the workforce at the entry and exit stage in 2035. Section 2.3 models the impact of the two policies – raising retirement age and extending the length of compulsory education –on labour supply in 2035, and the chapter concludes with several policy recommendations.

2.1 Estimate 'Entry' and 'Exit' Human Capital

Human capital is an important factor of production, and both the quantity and quality of the labour force has a significant impact on economic growth. In the context of reduced labour supply, the role of the quality of human capital in driving economic growth is more prominent. The most commonly used indicator for human capital stock is years of education (Mankiw et al. 1992; Hall and Jones 1999). Therefore, this study intends to analyse the scale of labour "entry and exit" and the level of human capital so as to map the evolvement China's labour market in the next 15 years.

2.1.1 Method of Labour Supply and Human Capital Stock Estimation

This paper uses the following assumption: If HCI_t represents the human capital stock in year t; ϑ_i represents the conversion coefficient at the education level i; $L_{i,\ t}$ represents labour supply at the education level i in year t, then human capital stock is calculated as Eq. (2.1). In order to compare different levels of education, this study converts the relevant degrees into number of years of education. For example, 6 years of schooling was allocated to people whose highest qualification is primary school and below, 9 years for junior high school, 12 years for senior high, 15 years for college, 16 years for undergraduate, 18 years for master's degree, and 22 years for doctoral students.

$$HCI_t = \sum_{i=1}^{k} \vartheta_i * L_{i,t} \ (\mathrm{i}= 1, 2, 3) \tag{2.1}$$

2.1.2 Definition of the 'Entry' and 'Exit' Labour

Understanding who "enters" and "exits" the labour market is an essential step to understanding the development of the labour market. The new labour force entering

the labour market originates from a population that has reached the legal working age and are out of the education system. The withdrawal of labour from the labour market stems from groups that have reached the statutory retirement age and are gradually withdrawing from the labour market. The age of new labour market groups can range from 16 to the late 20s. People who fall into this age range but are not in the education system are considered to be the new workforce entering the labour market.[3]The statutory retirement age is 50 for women and 60 for men. This age group, the working-age population, which is no longer engaged in socio-economic activities, is marked as the "exit" workforce.

$$L_t^{\text{Entry}} = \sum\nolimits_{\text{i}=16}^{25} l_t * \gamma_{\text{i}} \tag{2.2}$$

The γ_{age} is the proportion of people who withdraw the education system at age i.

$$L_t^{\text{Exit}} = \sum\nolimits_{\text{i}=50}^{60} l_t * (1 - \varphi_{\text{i}}) \tag{2.3}$$

The φ_{age} is the labour force participation at age i.

$$\Delta L_t = L_t^{\text{Entry}} - L_t^{\text{Exit}} \tag{2.4}$$

So, ΔL_t implies the net increase in the labour scale in t year. When the ΔL_t is negative, it means that the labour supply is shrinking. When the ΔL_t is positive, the labour market is expanding. If the ΔL_t equals 0, then the labour market is balancing. In order to analyse the change of the labour market from the human capital perspective, the human capital of the entering workforce is calculated using the Eqs. (2.2), (2.3) and (2.4), according to the conversion formula in Eq. (2.1),

$$HCI_t^{\text{Entry}} = \sum\nolimits_{\text{i}=16}^{25} \vartheta_i * L_{i,t}^{\text{Entry}} \tag{2.5}$$

Then 'Exit' human capital would be shown as:

$$HCI_t^{\text{Exit}} = \sum\nolimits_{\text{i}=50}^{60} \vartheta_i * L_{i,t}^{\text{Exit}} \tag{2.6}$$

The net change of human capital would be shown as:

$$\Delta HCI_t = HCI_t^{\text{Entry}} - HCI_t^{\text{Exit}} \tag{2.7}$$

[3] We did not include those who are not in the labour force due to other reasons such as disability or home making duties. To calculate the entry population we multiply the population by the labour force participation rate for relevant age group.

2.2 China's Labour Force: From 2010 to 2035

Since the reform in the late 1970s, China's labour market has undergone three major changes. First is the large-scale internal migration that started in the mid-1980s, featuring the rise of township and village enterprises in rural areas and the mass migration of rural labour to the urban area (Yao 2022). The second change started in 2003 with coastal areas such as Guangdong experiencing migrant worker shortage, and subsequently the wages of migrant workers grew rapidly (Cai 2022). The third change took place in 2015 when China's economically active population reached its peak and began to decline continuously, as showed at Fig. 2.1. As a result, China's labour market has gradually shifted from oversupply to tight balance. In 2020, the size of China's labour force stood at 783.92 million, 16.99 million less than the peak in 2015 (Zhang 2020). It is worth noting that the accumulation of human capital through the new Chinese generation also grow at faster rate, despite the declining labour supply. In order to analyse the changes in the human capital of the labour force, this section uses the data of the sixth and seventh national censuses to compare the human capital of the labour force entering and exiting the market. The first two parts provide a snapshot of labour force evolvement between 2010 and 2020, and the third part of this section predicts the size and human capital of the labour force in 2035.

2.2.1 Age and Qualification Distribution

The average age of China's labour force is rising, the scale of the new youth labour force has shrunk significantly, and the level of human capital of the labour force has been rapidly improved.

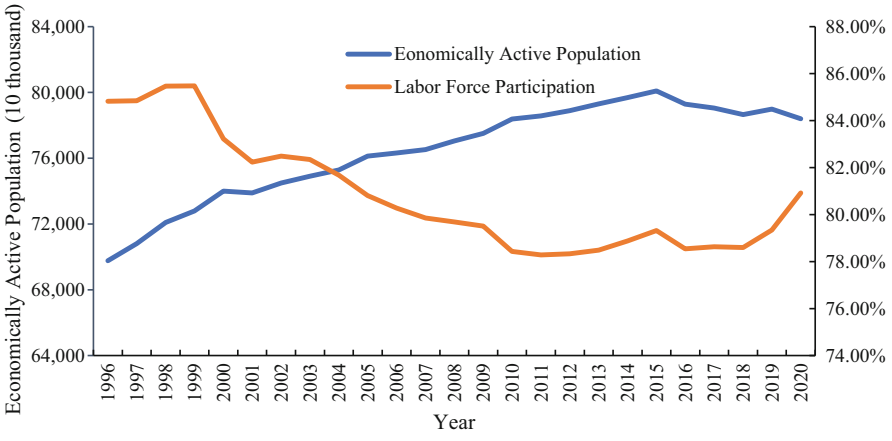

Fig. 2.1 Trend of economically active population and labour force participation in China from 1996 to 2020. (Source: National Bureau of Statistics of China (2021a, b) and The World Bank (2022) for labour force participation rate)

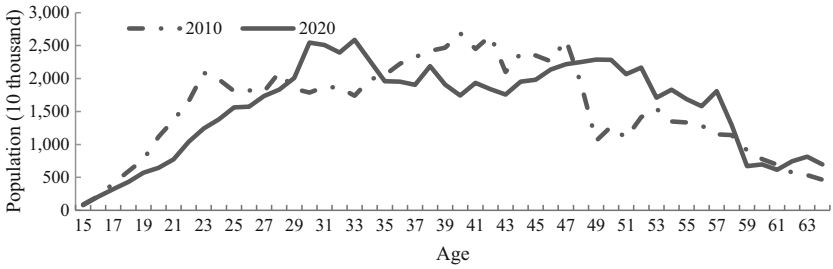

Fig. 2.2 China's economically active population structure in 2010 and 2020. Note: ① The excess of the bar graph represents the difference in the number of people in this age group between different years. ② The economically active population is the production of the number of population at 16–64 and the labour participation rate by age and sex. (Source: Calculated by the Aggregate Data from the Sixth and Seventh National Census)

The size of the current labour force in China is roughly the same as that of the sixth census, but labour supply has entered a period of decline. Statistics show that the total labour force in 2020 is 783.92 million – almost the same as the 783.88 million reported in 2010 (NBSC 2022). However, the total labour force began to decline during the 2016–2020 period (NBSC 2022; Xiang and Cai 2020).

The average age of China's labour force is increasing. The average age of the labour force reported in the seventh census is 1.63 years higher than that of the sixth census. As shown in Fig. 2.2, the number of workers under the age of 29 is significantly smaller compared with the previous census. Meanwhile, the number of people from 35 to 47 years of age in 2020 is also significantly lower than that in 2010. The changes in the composition of the population at the working age stage show that the ageing characteristics in the new era are also prominent. The average age of labour was 40.57 years according to the newest data from the seventh census, which was 1.63 years higher than the 38.94 years of age of the sixth census.

The human capital stock has increased significantly. The proportion of the labour force with a high school or college degree or above was 18.14% and 21.9% in 2020, respectively, which is 3.09 and 11.34 percentage points higher than 2010. Among them, the scale of the labour force with college degree or above reached 171.67 million in 2020, which is 2.07 times that of 2010; the scale of high school education reached 142.20 million, which was 1.21 times that of 2020. Correspondingly, there were 113.08 million fewer people with a qualification from junior high school and below in 2020 than that in 2010 (see Figs. 2.3, 2.4 and 2.5 for details).

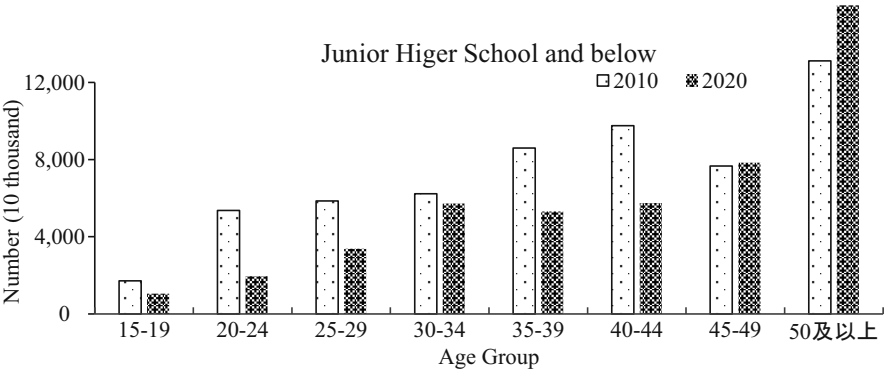

Fig. 2.3 The number of people with junior high school education and below in 2010 and 2020. (Source: Calculated by the Aggregate Data from the Sixth and Seventh National Census)

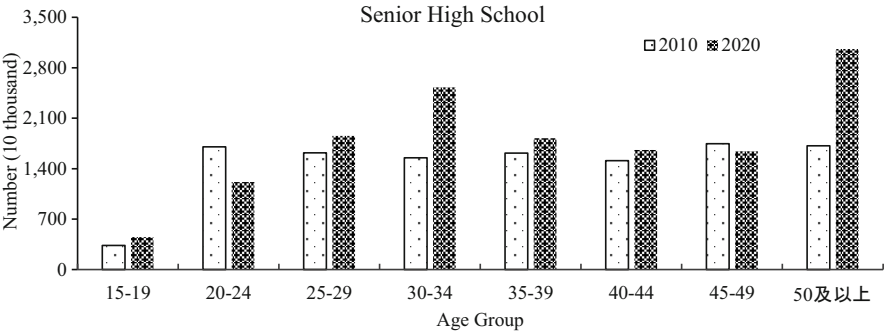

Fig. 2.4 The number of people with senior high school education in 2010 and 2020. (Source: Calculated by the Aggregate Data from the Sixth and Seventh National Censuses)

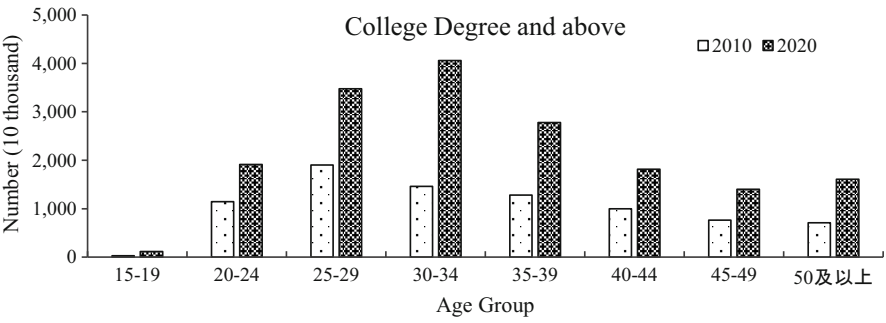

Fig. 2.5 The number of people with college degree education and above in 2010 and 2020

2.2.2 *Labour Force at the Entry and Exit Stage*

The scale of the labour force at the entry stage is declining sharply, and the scale at the exit stage is rising, and is likely to catch up or even exceed the former. As a result, the net supply of labour is expected to continue to decrease. However, the human capital of the labour force entering the market is significantly higher than that of exiting members of the labour force, and the widening human capital gap between the two cohorts may hold the key to maintaining the momentum of economic growth.

The size of the labour force at the entry stage has fallen sharply, while the size of the population that has exited the labour market is expanding. The scale of the labour force at exit stage is about to overtake that at the entry stage, resulting a net reduction in labour supply, and the rate of such reduction is expected to accelerate in the near future. The younger generation stay in the education system for longer and join the labour market at a much older age, which has led to a reduction of the size of labour force at the entry stage. Statistics show that the number of people who entered the labour market in 2020 was 81.761 million, down 38.342 million from 120.103 million in 2010. On the other end, the total size of the population that withdraw from the labour market in 2020 was 58.018 million, a 11.477 million jump from the 46.541 million reported in 2010 (see Figs. 2.6 and 2.7 for details). The difference between the labour force at the entry and exit stage was 23.742 million people in 2020, while the same figure was 73.562 million – more than three times of the 2020 figure. In a decade, the net flow of China's labour market has shrunk by 49.82

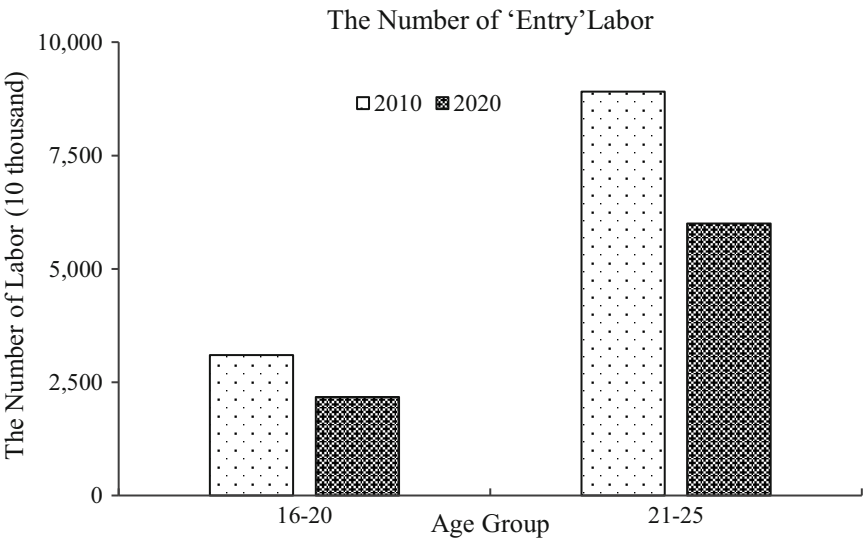

Fig. 2.6 The number of people entering the labour market in 2010 and 2020. (Source: Calculated by the Aggregate Data from the Sixth and Seventh National Censu)

Fig. 2.7 The number of people exiting the labour market in 2010 and 2020. (Source: Calculated by the Aggregate Data from the Sixth and Seventh National Censu)

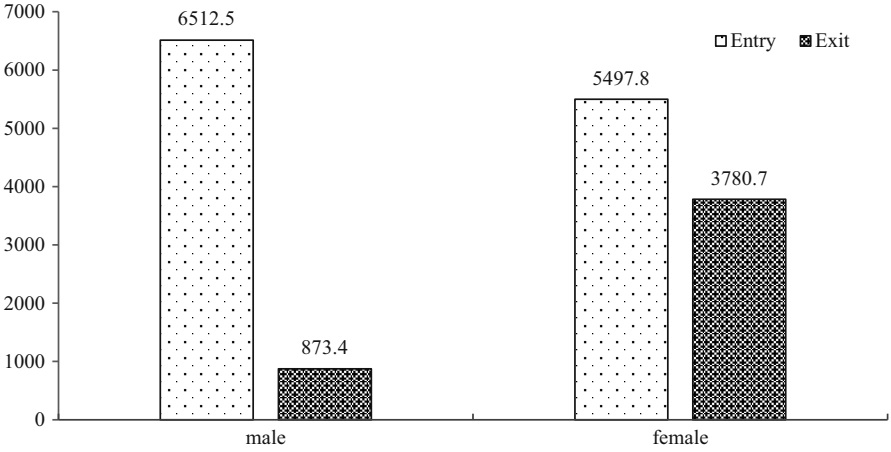

Fig. 2.8 The Number of "Entry" and "Exit" labour by sex in 2010. (Source: Calculated by the Aggregate Data from the Sixth and Seventh National Censu)

million. The size of the labour force entering China's labour market will struggle to match the scale of withdrawal, and the structural deficiencies of the young generation in the labour supply will become increasingly serious.

.

There are significant gender differences between the labour force at the entry and exit stage. The number of women in the labour force at the entry stage was generally lower than that of men, and the scale of women's withdrawal from the labour market was higher than that of men, and the gender gap is widening. Figures 2.8 and 2.9

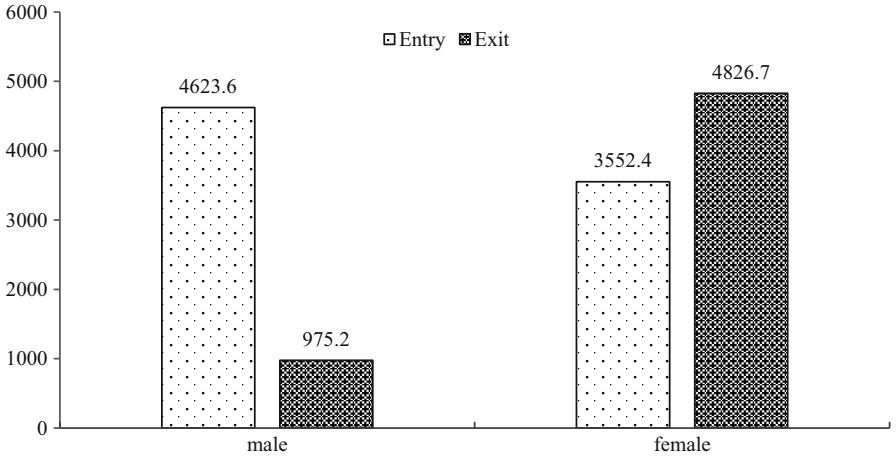

Fig. 2.9 The Number of "Entry" and "Exit" labour by sex in 2020. (Source: Calculated by the Aggregate Data from the Sixth and Seventh National Censu)

show that there were fewer women than men in workforce at the entry stage in both 2010 and 2020, but the number of women entering the market declined more than men. In 2020, the number of women entering the labour market was 35.52 million, or 19.45 million fewer (or 35.4% less) than in 2010, and the number for men was 46.24 million, 18.89 million fewer (or 29% less) than in 2010. On the "exit" end, the number of women leaving the labour market was far more than men. In 2020, the number of women withdrawing from the labour market reached 48.267 million, while the number of men at the same age was only 9.752 million. The scale of women's withdrawal from the labour market also expanded at faster rate than men. Compared with 2010, the number of men withdrawing from the labour market increased by only 1.018 million, but the number for women jumped 10.46 million.

The level of human capital of China's labour force is constantly improving, and the level of human capital of the labour force at entry stage is significantly higher than that of the withdrawing labour force. Figure 2.10 shows that there has been a general increase in the average years of education of both the entry and exit workforce. In 2020, the average years of education of the labour force at entry stage was 11.98 years, an increase of 1.87 years over 2010; at the same time, the average years of schooling of the labour force at exit stage in 2020 was 9.01 years, which was 1.02 years higher than in 2010. The education level of the workforce at entry stage is generally higher than that at the exit stage, reflecting continuous improvement in education in China in the last few decades. The average educational gap between people entering and exiting the workforce has widened over time. In 2010, people entering the workforce had 2.12 years more education than those exiting the workforce. In 2020 this gap rose to 2.97 years.

While women have less education than men among the workforce at exit stage, it is the opposite for the workforce at entry stage. Figure 2.10 shows that the average

Fig. 2.10 The average education years of 'Entry' and 'Exit' labour in 2010 and 2020. (Source: Calculated by the Aggregate Data from the Sixth and Seventh National Censu)

level of education for the labour force exiting the labour market in 2020 was 9.01 years, and the average for men was 9.4 years, which was slightly higher than the average of 8.75 years for women, with a small gender gap of 0.65 years. However, Fig. 2.11 shows the average years of schooling for women at entry stage was 12.48 in 2020, which is up 2.38 years from 10.1 years in 2010. The average education level of men entering the labour market was 11.77 years in 2020, an increase of 1.64 years compared with 10.13 years in 2010. A faster increase in women's educational level means that there is a reverse gender gap in education where men are trailing behind women. If the existing retirement system remains the same, after 25 years, the number of women withdrawing from the labour market will be 4–5 times of men, and their level of human capital will exceed that of men of the same age group who remain in the labour market. This loss of human capital is likely to have a detrimental impact on economic and social development.

2.2.3 Projecting China's Labour Market in 2035

From 2020 to 2035, China's potential labour supply will continue to decline, and it is expected that the total labour force will be about 710.236 million by 2035. The labour supply structure will also undergo significant changes, and the continuous decline in the labour force in the prime age of 26–49 will be an important cause of the decline in the labour force.

China's labour supply will continue to decline. It is estimated that the total labour force in China will continue to decline from 783.92 million in 2020 to 710.236 million in 2035, with an average annual decline rate of 0.64% (see Fig. 2.12).

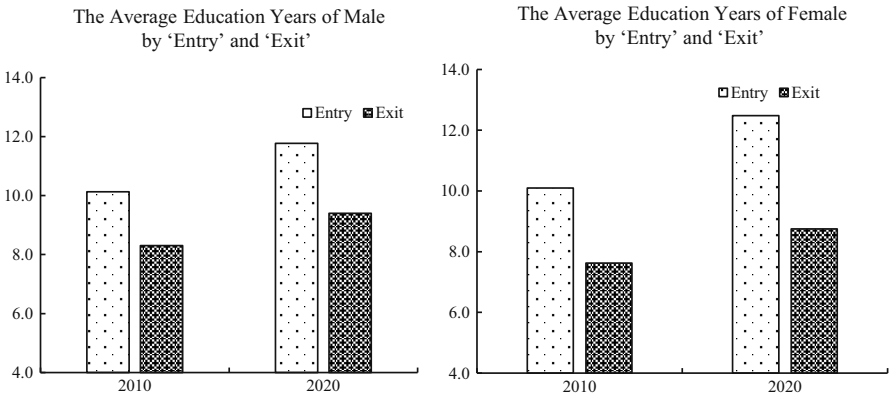

Fig. 2.11 Labour market 'Entry & Exit' human capital comparison of 2010 and 2020 by gender. (Source: Calculated by the Aggregate Data from the Sixth and Seventh National Censu)

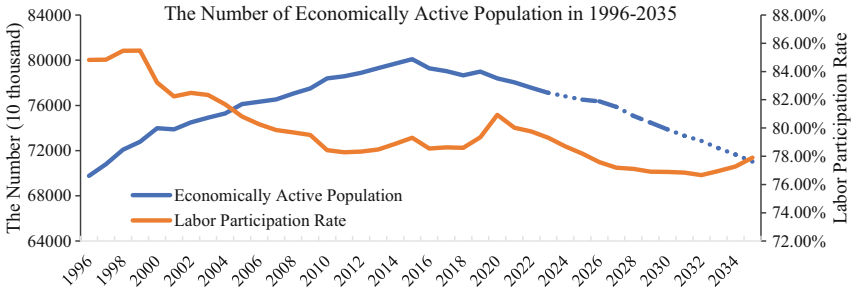

Fig. 2.12 The number of economically active people in 1996–2035. (Note: The labour force in 2021–2035 is the product of the working-age population aged 15–64 and the labour force participation rate in the corresponding year. It is assumed that the pattern and level of labour force participation in 2021–2035 will remain the same as in 2020. The 2021–2035 population projection is based on the 2020 national population by age and sex, assuming a national total fertility rate of 1.3. The ratio of male to female was 104.5. Age-sex mortality rates were also derived from census data for 2020 and were iterated sequenced to obtain age-sex population data for the predicted year. Source: Calculated based on the aggregated data of the sixth and seventh censuses of the National Bureau of Statistics)

Although there has been an upward tick in the labour force participation rate in the last few years, the level of labour participation in China is predicted to show a downward trend.

As new blood in the labour market, the growth of the labour force aged 15–25 cannot reverse the decline of China's labour force. China's total labour force hardly changed between 2010 and 2020. However, the age structure of labour in the periods is quite different: the labour force aged 15–25 and 26–49 years declined 4.9 and 1.62 percentage points respectively, while the age cohort of 50–60 and 61–64 years old

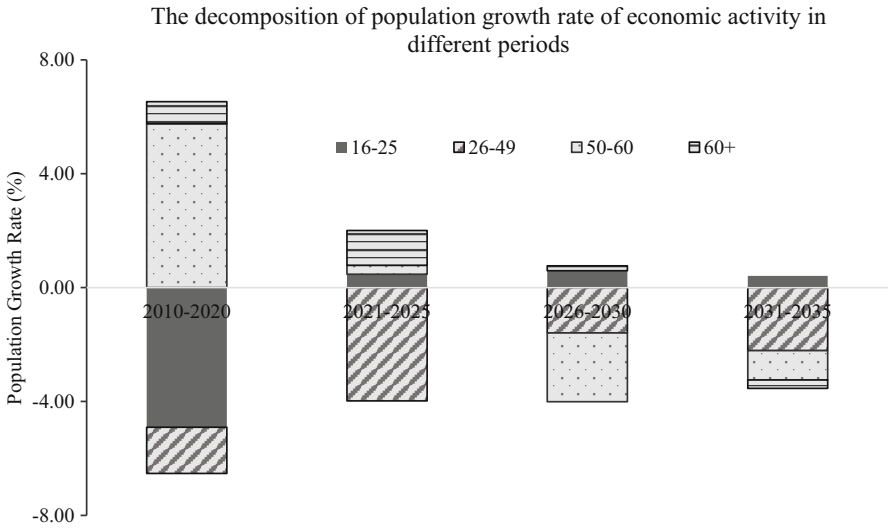

Fig. 2.13 The decomposition of population growth rate of economic activity in 2021–2035. (Source: Calculated based on the aggregated data of the sixth and seventh census of the National. Bureau of Statistics)

rose 5.76 and 0.78 percentage points respectively during the same period. It appears that the decline in labour supply will stem from the rapid reduction of the labour force in the prime age of 26–49 years old as well as the accelerated withdrawal of 50 to 60-year-olds from the labour market in the future. It is estimated that China's labour force will decrease by nearly 2 percentage points by 2025; the reduction of the labour force aged 26–49 offsets the weak increase in labour supply at other age groups. In the following 10 years, in addition to the reduction of the 26–49-year-old prime age labour force, the increase in the withdrawal rate of the workforce aged 50–60 will likely be the important factor in the reduction of the total labour force. The reduction of these two age groups with 26 to 49-year-olds and 50 to 60-year-olds will contribute 74% and 33% to the labour force reduction, respectively (see Fig. 2.13).

2.3 Balancing Supply and Demand of Human Capital: Different Policy Scenarios

The impact of the labour force on economic growth is complex and both the quantity and quality of the labour force matter. Although it is inevitable that China's labour supply will decrease in the future, the expansion of compulsory education and university enrollments are enhancing the human capital of the new generation. From the perspective of economic growth, the contribution of the labour force to

economic growth is not only the scale effect, but also the improvement of labour productivity brought by the improvement in human capital, which plays a positive role in economic growth. Another policy that may affect the size of the labour force is delaying retirement, which is at the early stage of implementation. Evaluating China's labour and human capital supply under different policies is of great significance to further study China's potential economic growth. This study evaluates the labour supply under two policies: implementing 12-year compulsory education and raising the retirement age.

2.3.1 Extending the Compulsory Education Years

The extension of the compulsory education period mainly has an impact on the size of the labour force entering the labour market and the level of human capital. If compulsory education is extended to 12 years (Fig. 2.14), then the number of people entering the labour market will continue to decrease. It is estimated that between 2021 and 2035, the size of this group will be reduced by between 27 and 30 million people. On the other hand, the average number of years of schooling in the 15–25-year-old labour force would increase significantly: it is expected to increase from 11.95 years in 2020 to 12.51 years in 2035.

2.3.2 Delaying Retirement

The 14th Five-Year Plan proposes to gradually raise the statutory retirement age. Assuming that the policy to postpone retirement will be gradually introduced from 2021 on different age and gender cohorts, and the statutory retirement age is expected to be 65 years for men and 63 for women. Our model predicts a limited

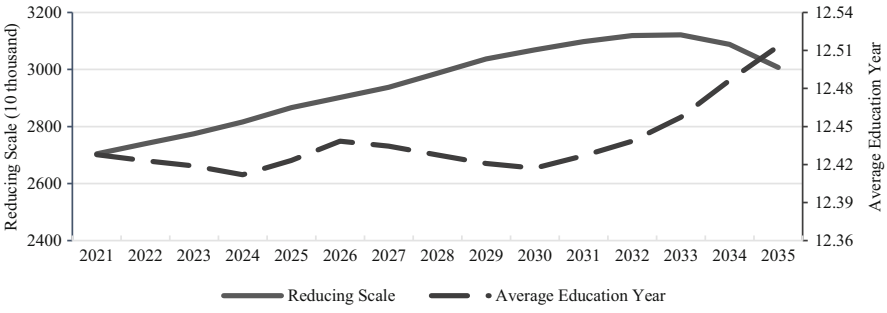

Fig. 2.14 The average years of education and reducing scale of "Entry" labour in 2021–2035. (Source: Calculated based on the aggregated data of the sixth and seventh censuses of the National Bureau of Statistics China)

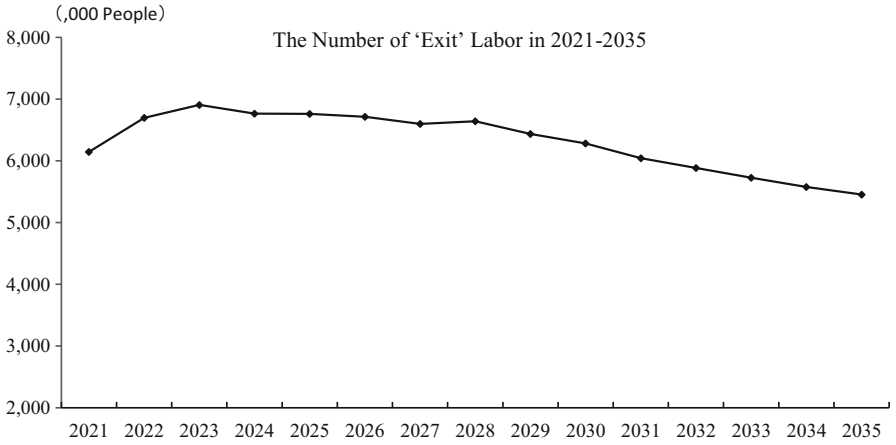

Fig. 2.15 The number of people exiting labour force between 2021–2035. (Source: Calculated based on the aggregated data of the sixth and seventh census of the National Bureau of Statistics)

increase in the size of the labour force as a result of this policy. Figure 2.14 shows the trend of the size of the workforce aged between 50 and 60 with the staged late retirement policy. Overall, while delaying retirement can increase the supply of 50 to 60-year-olds, it does not have much impact on the overall size of the 50–60-year-old retirement population. The number of people in the 50–60 age cohort withdrawing from the labour market will peak at about 70 million in 2023, and then begin to decline steadily. It is expected that the size of the workforce at the exiting stage will be about 55 million (Fig. 2.15). This means that the cumulative effect of the 50–60-year-old labour force increase brought about by the delayed retirement policy is only 15 million people, or an increase of 3 million per year for this age group in the next 15 years.

2.3.3 The Combined Effect of Policy Adjustments

The effect on the labour market of delaying retirement and extending the compulsory education stage is very limited. In fact, the extension of educational years has led to a reduction in labour supply of as much as nearly 30 million, the increase in the supply of 50 to 60-year-old labour brought on by the delayed retirement is less than 15 million in the same period. Even if we add the extra supply from the 61 to 64-year-olds, the addition to the labour force is barely 18 million per year. Therefore, the reduction of the labour force will be irreversible. In essence, the policy of delaying retirement will not lead to a net increase in labour supply but is likely to alleviate the labour shortage for a short term, and the hope for future economic and social development rests on the high-quality human capital brought by the new generation of the workforce.

2.4 Policy Recommendations

The decrease in labour supply will be a normality in China's labour market in the next 15 years, and economic growth needs to tap into enhanced human capital instead of the size of the workforce. From the above analysis, we can see an improvement in human capital when the "new" labour force replaces the "withdrawal" labour force. The rate of female human capital improvement is significantly faster than that of male. Combining with the national statutory retirement policy and the differences between men and women, the main policy recommendations are as follows.

Closing the gender gap in the mandatory retirement age. In light of the enhanced education and longevity among females, the current policy to set a lower retirement age for women is no longer justified. Women's premature withdrawal from the labor market leads to excessive depreciation of investments in women's education and widens the gender gap in the income of older people. The difference of legal retirement age between men and women will inevitably lead to gender differences in the economic level of the elderly. Therefore, gender-specific policy is becoming an important cause of the widening economic gap between men and women at older age. Under the goal of promoting common prosperity in China, narrowing the gender gap of the legal retirement age can have the potential to alleviate gender inequalities among older people and keep females in the labour force for a longer period, making better use of their human capital.

It is important to explore the mechanism of labour market structure balance. The ageing is an irreversible development trend. The speed at which older people are leaving the workforce and younger people are joining the labour market is different, causing a continuing decline in labour supply. How to maintain the balance and meet the demands of the labour market is another challenge we need to tackle in the future. For example, what can be done to deal with the coexistence of "difficult to find employment" and "difficult to find suitable employees" in the job market. More investment and effort are required to bridge the supply and demand information flow in the labour market, monitor the balanced development of the national and local labour market, guide the regional vocational training development plan, and promote the matching of the labour force and market development.

References

Cai F (2020) The second demographic dividend as a driver of China's growth. Chin World Econ 28: 26–44. https://doi.org/10.1111/cwe.12350

Cai F (2022) Lewis' turning point: the symbolic change of China's economic development stage. Econ Res J 57(01):16–22

Cai F, Zhao W (2012) When demographic dividend disappears: growth sustainability of China. In: Aoki M, Wu J (eds) The Chinese Economy: a new transition. Palgrave Macmillan, Basingstoke, pp 13–17

Hall RE, Jones CI (1999) Why do some countries produce so much more output per worker than others? Q J Econ 114(1):83–116. https://doi.org/10.1162/003355399555954
Li J (2022) China's society is ageing and the scale of the retirement population is large? People's daily, Aug 24. https://politics.gmw.cn/2022-08/24/content_35973708.htm
Lucas RE (1988) On the mechanics of economic development. J Monet Econ 22(1):3–42
Mankiw NG, Romer D, Weil DN (1992) A contribution to the empirics of economic growth. Q J Econ 107(2):407–437. https://doi.org/10.2307/2118477
National Bureau of Statistics of China (NBSC) (2021a) China statistical yearbook 2021. China Statistical Publishing House, Beijing
National Bureau of Statistics of China (NBSC) (2021b) Communique of seventh national population census. Retrieved from: http://www.stats.gov.cn/tjsj/tjgb/rkpcgb/qgrkpcgb/
National Bureau of Statistics of China (NBSC) (2022) China population census yearbook 2020. China Statistical Publishing House, Beijing
Romer PM (1989) Capital accumulation in the theory of long-run growth. In: Barro RJ (ed) Modern business cycle theory. Harvard University Press, Cambridge
Romer PM (1994) The origins of endogenous growth. J Econ Perspect 8(1):3–22
The World Bank (2022) Labour force participation rate, female (% of female population ages 15+). https://data.worldbank.org/indicator/SL.TLF.CACT.FE.ZS?locations=CN
Xiang J, Cai YF (2020) 14th five-year plan and future medium- and long-term Chinese labour supply and demand trend and countermeasure analysis. J Chongqing Univ Technol (Social Sciences) 34(2):32–44
Yao W (2022) Rural labour transfer under the background of rural revitalization strategy: summary, comparison and enlightenment of domestic and foreign experience. J Agric Econ 8:72–74
Zhang JW (2020) New changes and opportunities of employment in China during the 14th five-year plan. New Econ Guid 3:45–49
Zhu XD (2012) Understanding China's growth: past, present, and future. J Econ Perspect 26(4): 103–124

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Chapter 3
Penalties for Childbirth in China: A Review of Empirical Evidence

Lihua Guo and Qianqian Ge

Abstract This chapter reviews the literature published in Chinese on birth penalties over a period when China's fertility policy evolved from the one-child policy to the selective two-children policy and birth rewarding era. By analysing the empirical evidence of nearly 100 publications since 2000, this chapter shows that the penalties associated with one-child policy are severe and effective in discouraging families from having more than one child and consequently suppressing the total fertility rate through the procreation costs. In addition, career interruptions and wage penalties act as further deterrent for women to have children. Based on the findings in this chapter, we suggest that it is not enough to lift the restrictions on the number of children a family can have to boost the fertility rate. Removing motherhood penalties and building family friendly workplace are necessary to encourage women to have more children and mitigate the negative impact of population aging.

Keywords Motherhood penalty · Literature review · Fertility policy · China

3.1 Introduction

Population ageing is a serious challenge in China. The National Development and Reform Committee (NDRC) – the agency in charge of China's macroeconomic management and policy development – predicted that China will enter a stage of moderate population ageing[1] before 2022 and will enter a stage of severe population ageing[2] around 2035 (NDRC 2019). The falling fertility rate is one of the main

[1] According to the classification criteria of the United Nations on ageing, moderate ageing refers to a country's population over the age of 60 accounting for between 20% and 30% of the total population.

[2] According to the classification criteria of the United Nations on ageing, a country whose population over the age of 60 accounts for more than 30% of the total population is severe population ageing.

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X. Deng et al. (eds.), *Ageing in China*, https://doi.org/10.1007/978-981-19-9681-8_3

driving forces behind population ageing. This rate has been on the decline since 2017 and reached 1.3 children per couple in 2020 – one of the lowest in the world - and the trend is likely to continue (Liang et al. 2021). This decline took place despite the government's effort to boost fertility since the turn of the century by relaxing and subsequently abolishing the "one-child policy", which mandated one child per couple. While the one-child policy has been cited as effective in reducing the fertility rate since the 1980s, the more recent effort to boost the fertility rate seems to have failed to materialize. That suggests that there are factors other than the government's policy influencing the fertility decision. Housing prices, child-rearing costs, lack of childcare facilities and women's maternal rights have been cited as the reasons for low propensity to have children (Liang et al. 2022). However, it is unclear whether those claims are backed by empirical evidence.

Studies on the impact of China's fertility policy has been scant. Moreover, the majority of the publications are in Chinese, and cannot be accessed by people outside China. Those studies provide valuable empirical evidence to demonstrate when and how the government's fertility policies work in conjunction with other factors in influencing fertility decisions and subsequently the fertility rate. Current literature is not complete without those works.

This study aims to fill this gap by systematically reviewing empirical evidence published in Chinese since 2000, covering nearly 100 journal papers. We provide an overview of China's fertility policies since the introduction of the one-child policy and gather the empirical evidence on how penalties associated childbirth and caring affect individual's and families' decisions to have children and participate the labour market. This study contributes to the literature on the determinants of fertility decisions through the following channels. First, it provides a comprehensive list of penalties related to having a child in China covering a wide range of financial costs and motherhood penalties, as well as how those penalties affect fertility decisions. Such a review is necessary to understand what needs to be done to boost fertility, and timely with China switching from penalising childbirth to encouraging childbirth. Second, it is the first review in English that exclusively focuses on empirical evidence published in Chinese. Findings from this study can supplement the existing literature in English, and enrich our understanding on determinants of the fertility rate in China. Such understanding is vital for future policy development aiming to boost the fertility rate.

The rest of the chapter is organised as follows: Sect. 3.2 reviews the evolution of fertility policies in China, Sect. 3.3 presents empirical evidence gathered from the review of 96 journal papers, and the chapter concludes with discussion and policy recommendations.

3.2 Background: Evolution of Fertility Policies in China

Fertility policy plays a pivotal role in determining population growth, and the last four decades witnessed considerable changes in fertility policies in China. The evolution of the policies can largely be divided into three periods by the dominant policy: one-child policy period, selective two-child policy period, and birth reward period.

One-Child Policy Era (1982–2012) The year 1982 marked the formal establishment of the one-child policy with the endorsement of the Congress of China. Citing the need to slow down the rapid population growth, the 12th National People's Congress passed legislation stating the one-child policy as a basic state policy (State Council of China 1982). Under this policy, each couple were only allowed to have one child. The implementation of the one-child policy was accompanied with a nation-wide propaganda campaign. The slogan of "late marriage, late childbearing, fewer births and healthy births" could be spotted everywhere in China, from the walls of buildings to posters in newsstands. Article 42 of the Family Planning Law (State Council of China 2001) stipulated penalties for families which violated the one-child policy those who were public servants could lose their jobs in addition to paying penalties in the name of social support fees. Others were subject to disciplinary actions by the organisation they worked for and paid hefty penalties.

The introduction of the one-child policy was a result of an extended period of population growth and concern about food security. The first was a result of the sustained high fertility rate and declining mortality rate after the great famine between 1959 and 1961. As shown in Fig. 3.1, China experienced two birth peaks. The first birth peak occurred in 1949, with an average annual net population growth of 12.21 million and an average annual birth rate of 35.05‰. The second birth peak occurred in 1962, with an average annual net population growth of 19.47 million and an average annual birth rate of 33.42‰. In 1963, the birth rate peaked at 43.60‰, and saw China's total population rise steadily and surpass 1 billion in 1981 for the first time in history (National Bureau of Statistics of China 1981).

Rising population stirred concerns about food security. From 1952 to 1981, China's total annual output of grain tripled. But annual food production per person has only increased by 13.88% (National Bureau of Statistics of China 1981). The rise in food production was quickly offset by the increase in population. What is more concerning is that the fertility rate in poorer rural areas was higher than that in cities and towns (Li et al. 2018), which made it difficult to improve the economic conditions of families in rural areas. Facing the pressure of rapid population growth on economic and social development, the Chinese government gradually changed attitudes towards population growth. The once heavily criticised Malthusian Theory of Population regained popularity. The "New Theory of Population" by Yinchu Ma (1957, as cited in Ding 2012) cited the Malthusian Theory of Population and argued that the population could grow at an exponential rate but the food supply could only grow at a linear rate. In other words, the growth of the food supply cannot catch up

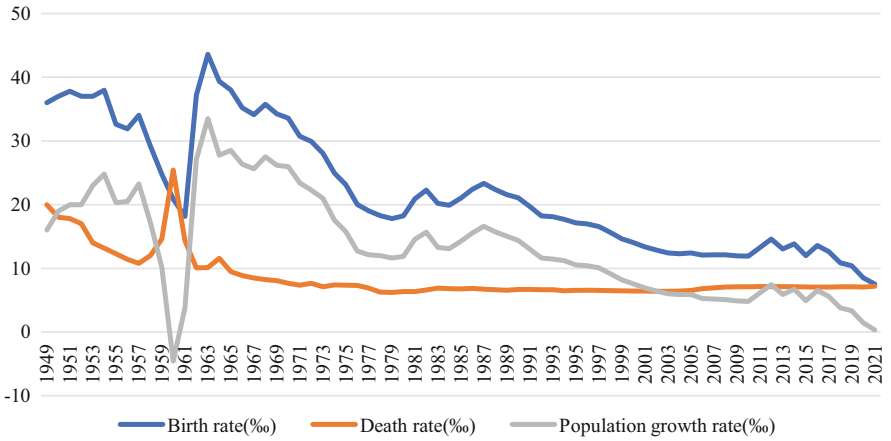

Fig. 3.1 China's Birth rate, Death rate and Natural Growth Rate (1949–2021). (Source: Birth rate is the number of births per 1000 population. Death rate is the number of deaths per 1000 population. Natural population growth is the population increase determined by births and deaths. The birth rate, death rate and population growth rate data are from the National Bureau of Statistics of China (2022). The blue line represents the birth rate; the yellow line represents the death rate; and the grey one represents the natural growth rate)

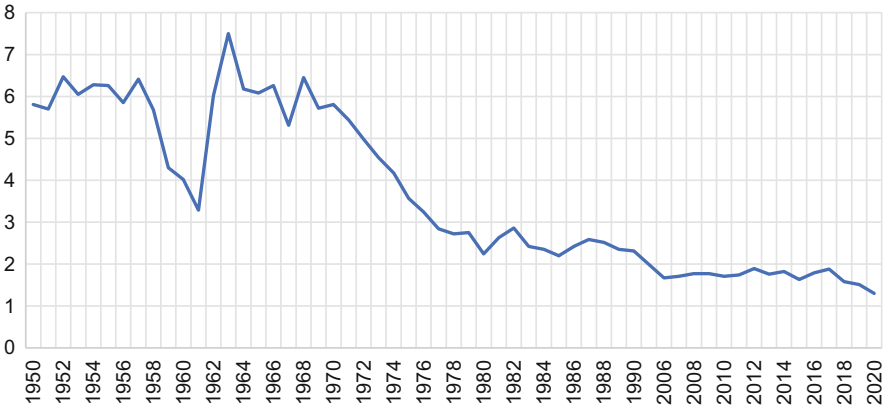

Fig. 3.2 Total Fertility Rate for China (1980–2020). (Source: Total fertility rate represents the number of children that would be born to a woman if she were to live to the end of her childbearing years and bear children in accordance with age-specific fertility rates of the specified year. The total fertility rate data is from the National Bureau of Statistics of China (2021). From 1982 to 2013, China implemented the one-child policy. The selective two-children policy was implemented in 2013)

with the population growth, thus, it is necessary for a country to control the fertility rate in order to become prosperous.

With more than 30 years in operation, the one-child policy had remarkable results. As shown in Fig. 3.2, the fertility rate fell sharply from the peak of 2.67

children per woman in 1987 to 1.6 in 1997, and has never gone above 1.7 children per couple since then.

Selective Two-Children Policy Era (2013–2020) The heavy-handed one-child policy was formally abolished in 2013, when the "selective two-children policy" took effect. Under the new policy, if one partner in a married couple was the only child of his or her parents, they were allowed to have two children. That policy was further relaxed in 2015 when the condition of the parent being the only child was removed, and all couples were allowed to have two children. The shift of the policy agenda was an outcome of recognising the challenges associated with population ageing in China. Qi and Liu (2019) considered that one of the main purposes of the two-child policy was to align China's continued economic growth with population development and to make up for the severe labour shortage that China was facing.

Statistics suggest that the policy failed to boost the fertility rate, which slipped further to 1.3 children per woman in 2020 (National Bureau of Statistics of China 2022). The high birth cost was cited as the core reason deterring families from having more children (Jia et al. 2021). Economic uncertainties and changing attitudes cause more people to delay marriage and childbirth (Lesthaeghe 2014). The outbreak of COVID-19 and uncertainties in the global economy have also affected China significantly and saw employment opportunities decline, adding further financial strain on people who planned to have children. Meanwhile, with the awakening of female self-awareness, Chinese women have become more resistant to the idea of having children as their moral obligation. Childbirth was seen as an option (Sear et al. 2016).

Birth Rewarding Era (2021 Onwards) In 2021, the three-children policy was implemented, partially because the selective two-children policy did not work as expected. The average number of children per woman is still way below 2. Only 1 in 5 families were willing to have a second child within 2 years (Li and Zhao 2019). The ideal family size has been reduced (Wang et al. 2018). In addition to allowing each couple to have one more child, a range of incentives have been rolled out by governments at different levels. Tax relief was introduced to alleviate the burden of children's education: taxpayers can claim a deduction of RMB1000 per month per child in their tax return as long as the taxpayer's children are in full-time education. Local governments have introduced various maternity support policies, including cash subsidies, preferential loan interest rates, and lower education costs. Panzhihua municipal government in Sichuan Province became the first government to introduce a cash reward for having a child: families who had more than one child were paid RMB500 per month to help alleviate the financial burden of raising extra children (Panzhihua Municipal Government 2021). In December 2021, Jilin Province supported banks to provide up to RMB200,000 in loans to married couples who met relevant conditions, and offered different interest rate discounts according to the number of children (Government of Jilin Province 2021). In Zhejiang Province,

couples with more than one child can get a higher loan amount for home purchase (Government of Zhejiang Province 2022). It is likely that similar policies will be rolled out in other parts of China.

3.3 Research Method

This paper uses the literature review method to systematically review relevant journal articles published in Chinese since 2000. We used the term "fertility" to search the China National Knowledge Infrastructure (CNKI) – the most comprehensive database for academic publications in Chinese. Our initial search returned over 5000 papers. After going through the abstracts of those papers, we found that studies on penalty policies dominated the collection. Indeed, studies published before 2010 are exclusively on the penalty policies, which is consistent with the prevailing policies then. The literature on fertility incentives started in 2018, researching how the fertility decision changed with the implementation of the two-child policy, including whether incentive policies in housing (Tang and He 2018), education (Zhang 2021), etc. can improve fertility rates. Research during this time also considered relevant international experience (e.g. Zhou and Li 2018). Considering the imbalance of studies of incentive and penalty policy, the research team decided to focus on the penalty side and selected 96 papers. Table 3.1 summarises the publications reviewed in this study.

3.4 Findings

Penalties for having a child may take many forms. The publications in this review mainly covered three forms of penalties: financial costs directly associated with giving birth and raising a child, costs imposed on parents in the form of career interruption, and wage loss.

Table 3.1 Summary of the papers covered in this review

Themes	No. of publications	Publishing year
Penalty policies	7	Before 1999
	16	Between 2000 and 2010
	31	Between 2010 and 2016
	49	2017 and onwards
Total	96	

3.4.1 The Procreation Cost

The cost of having and raising children is a major deterrent for people to have more children. Several studies investigated the impact of direct costs associated with childbirth on fertility rate (Jia et al. 2021; Wang and Long 2018) and examined two major costs related to childbirth in China: penalties for violating one-child policies and the financial costs of raising a child.

As far as the penalties for violating the one-child policy are concerned, they were usually well above what was proposed in the legislation and were prohibitively high for ordinary households. Under the one-child policy, families that violated the policy had to pay a hefty penalty under the name of a "social support fee" in order to obtain household registration for their second child. According to the legislation (State Council of China 2002), the collection of social support fees is based on the local annual per capita disposable income. However, this figure varies considerably and there was no consistency across different regions. Wang (2020), for example, found that the penalty in Shanghai was set at three times the household's disposable income, while households in Jiangsu were required to pay four times the household's disposable income. Given the amount of the penalty, its sizeable impact on fertility rate is hardly a surprise. Yang and Marjorie (2000) studied the sample data of 5532 rural households in China's Family Economics and Fertility Sample Survey (1992) and found that in areas with large fines for over-birth, the number of family children was significantly smaller. A 1% increase in the amount of the over-birth fine reduced the total fertility rate by 33%.

The cost of childbirth is significant even in the absence of the penalties. Liang et al. (2022) estimated that families in China would need to spend an average of 485,000 yuan raising a child up to the age of 18, which is 6.90 times China's per capita GDP in 2021, and is considerably higher than other countries. According to Liang et al. (2022), the corresponding figures for Australia and the US are 2.08 and 4.11 in the same year. They cited a survey by the National Health and Family Planning Commission of China listing "heavy financial burden" as the core reason given by 77.4% of women for not having more children. Social development has externalised some costs that were previously internalised by families, such as teaching fertility knowledge, maternity care and childcare. Through empirical analysis of the national survey data of 12,136 households covered by the China Health and Retirement Longitudinal Survey (CHARLS) in 2015, it was found that for every 1% increase in child related costs, the fertility rate decreased by about 2.80% (Yu and Gong 2021).

3.4.2 Career Disruption

The detrimental effect of motherhood on women's career progression is well documented (McIntosh et al. 2012). The motherhood penalty seems to be more

severe in China, and such penalty increases disproportionally with the number of children. Regarding career disruption, in comparison with fathers with one-child, the probability of occupational interruption for one-child mothers and two-child mothers was 161% and 134% higher respectively (Yang and Zhang 2019). Motherhood sometimes causes women to drop out of the workforce for an extended period due to the difficulties in balancing work and caring responsibilities. A survey on people who recently resigned in Zhejiang province in 2019 found that pregnancy and childcare were cited as a reason to resign by more than a quarter of women (Zhang 2020). The discrimination from employers exacerbated the vulnerability of women at childbearing age. Zhang and Zhang (2018) reported that employers perceived women as less stable and less engaged at work due to childbirth, and at high risk of job turnover. Such a negative perception causes many companies to exclude women at childbearing age from recruitment, or forces them to promise not to get pregnant for an extended period (Zhang 2022; Zhu 2020). More children were found to be associated with lower occupational status for women. Using the International Socio-Economic Index of occupational status (ISEI) as the indicator to measure occupational status, Wang (2021) found that married working women's socioeconomic status (ISEI score) decreased by 1.47 for every extra young child aged 0–6 under their care.

The possibility of career disruptions related to motherhood discourage women from having children in several ways. Some may delay marriage and childbirth, others may choose to have fewer children. The negative impacts are more evident among women who are more educated. Hong and Zhu (2017), for example, found that there is a huge gap between the desire for children and the reality of childbirth for women with higher education levels. The desire to have children has not transformed into the action of childbearing. This is echoed by Zhang and Cui (2020) who reported the negative correlation between education and childbearing: for every additional year of education for women, the probability of having children will decrease by 18.6%. Career disruption makes women more cautious about having children, especially those with higher education. Zhu and Zhao (2022) used a sample of 43,000 people in China in 2015 to test the relationship between education and fertility decision, and found that women with one or more years of college have sharply lower lifetime fertility than less educated women, regardless of race.

3.4.3 Wage Penalties

Income penalties are an important factor affecting fertility. From the perspective of gender differences in wages, Wang and Wang (2020) found that men without children earn 26.3% more than women, and men earn 33.8% more than women when they have at least one child. Fertility increases men's wages but reduces women's wages, widening the gender wage gap. Furthermore, Chen et al. (2022) found that motherhood has a significant negative effect on women's wages based on

the China Health and Nutrition Survey (CHNS) data from 1991 to 2015 in China. The higher the number of children, the lower the average salary for women. Women's wages fell by an average of 10.0%, 18.9% and 27% respectively after having one, two and three or more children. Moreover, having more children also has a negative effect on growth rate of wages with age. For every extra child, women's wage growth rate fell by 0.7% (Chen et al. 2022). This means that childbearing can have a long-lasting negative impact on women's lifetime earnings, potentially through reducing their career advancement opportunities.

Such penalties are much higher for women with more human capital, as they normally earn more. Therefore, women's intention to have more children is lower with more education. While this is confirmed by existing literature using Chinese data, the extent of such impact varies considerably across studies. One study estimated that tertiary qualification lowers women's chances of having a second child or more by 23% (Zhu and Zhao 2022). Other scholars found a threshold effect regarding the impact of years of education on the total fertility rate (Yang 2021). Using data from the World Bank, Yang (2021) reported that when the average years of education for women is less than 6.22 years, the total fertility rate will drop by 17.64% for each additional year of education. When the average years of education is greater than 6.22 years, this negative effect will weaken to 10.16%. Considering the number of years for primary school is 6 years in China, this study seems to suggest that the negative impact on childbearing of education is more evident among women with primary education.

3.5 Discussion and Conclusions

Our review demonstrates the significant costs related to childbirth and childrearing in China, which may explain the dwindling fertility rate. While it is encouraging to see the termination of the one child policy and associated penalties on childbirth, such action alone is not enough to boost the fertility rate. Other penalties may still have a detrimental impact on families' fertility intentions.

Penalties, including the motherhood penalty, are not unique to China, however, the size and progressive nature of the motherhood penalty are profound. Budig and England (2001), for example, used data from the 1982–1993 National Longitudinal Survey of Youth from the United States, and reported a wage penalty of 7% per child, which is significantly lower than the 10%, 18.9% and 27% reported by Chen et al. (2022) for the first, second and more children for women in China. A motherhood penalty as severe as this means women need to choose between career and children. Choosing a career will add further pressure to the fertility rate, and choosing to have children means the downward trend of female workforce participation is likely to continue, which poses extra challenges for a shrinking labour force due to the ageing population.

Addressing the motherhood penalty is, therefore, beneficial for families and the country, and there are plenty of examples from other countries that China can follow.

In light of the findings from this review, we recommend future policy development aiming to boost the fertility rate in China focuses on the following two areas: fertility support and promoting work-life balance practices in the workplace.

Fertility support was cited as one of the reasons for Europe's fertility recovery (Chi and Xie 2022). Many European countries have set a great example offering generous leave and financial support. Sweden, for example, offers each family an allowance of 1050 kroner per child per month, in addition to generous maternity and paternity leave (Kan et al. 2018). To ensure fathers' participation in childbirth and rearing, they also set a minimum period of paternity leave which is not transferable (Chen et al. 2021). Sweden's model has the added benefit of promoting gender equality in childcare and household chores. Paternity leave is still in its infancy in China. While the regulations on family planning in several provinces allow for paternity leave ranging from 7 days to 30 days, there has been limited uptake. According to the Special Rules on the Labour Protection of Female Employees (State Council of China 2012), women are entitled up to 98 days of maternity leave, including 15 days of prenatal leave. However, in practice, many women are unable to take their entitled leave due to gender discrimination in the labour market. This raises the need for coordinated actions at the organisational level to promote a more family-friendly workplace.

Better work-life balance can be achieved through the implementation of family-friendly workplace practices. Family-friendly human resources practices such as flexible hours, family leave and company subsidised childcare have long been proven as effective ways to reduce employee turnover and improve job satisfaction (Butts et al. 2013; Chen et al. 2018). More importantly, these policies do not only benefit women, they also benefit the employers and help them to attract and retain talent. The competition for talent is likely to become fiercer with the shrinking workforce due to population ageing. With China officially entering the stage of moderate population ageing (NDRC 2019), caring responsibilities will be part of life for many people, and organisations which support their employees can gain a competitive edge that can sustain long term growth. They also have the added benefits of boosting the fertility rate and promoting a more inclusive workplace and society.

The good news is that central and some provincial governments in China have introduced incentives to relieve the financial burdens associated with childbearing and rearing. As discussed earlier in this chapter, cash subsidies, tax deductions, affordable and high-quality childcare services, low-cost health insurance for children, and the extension of free compulsory education are a few measures introduced in recent years. We expect that the rollout of these policies will boost the fertility rate in China in the future. However, the effectiveness of various policies remains to be discussed. Whether the new incentive measures have really reduced the birth cost and prevented career interruption remains to be verified. Future studies can examine whether and how these initiatives can mitigate the negative impact of the motherhood penalty on the fertility rate.

References

Budig MJ, England P (2001) The wage penalty for motherhood. Am Sociol Rev 66(2):204–225. https://doi.org/10.2307/2657415

Butts M, Casper WJ, Yang TS (2013) How important are work–family support policies? A meta-analytic investigation of their effects on employee outcomes. J Appl Psychol 98(1):1–25. https://doi.org/10.1037/a0030389

Chen W, Zhang Y, Sanders K, Xu S (2018) Family-friendly work practices and their outcomes in China: the mediating role of work-to-family enrichment and the moderating role of gender (in Chinese). Int J Hum Resour Manag 29(7):1307–1329. https://doi.org/10.1080/09585192.2016.1195424

Chen M, Zhang M, Shi Z (2021) Research progress on the theory and practice of fertility support abroad (in Chinese). J Popul 06:54–67. https://doi.org/10.16405/j.cnki.1004-129X.2021.06.005

Chen W, Dong H, Liu J (2022) The impact of childbirth on the wage rate of Chinese women: an analysis based on a cohort perspective (in Chinese). Stat Res 05:119–133. https://doi.org/10.19343/j.cnki.11-1302/c.2022.05.009

Chi M, Xie S (2022) Analysis of the causes of the European fertility rebound since the 21st century and its enlightenment to China (in Chinese). J Popul 04:80–90. https://doi.org/10.16405/j.cnki.1004-129X.2022.04.007

Ding L (2012) A wrong criticism with far-reaching influence——a trial explanation of the criticism of Ma Yinchu's "New Population Theory" (in Chinese). J Shijiazhuang Univ Econ 02:41–45. https://doi.org/10.13937/j.cnki.sjzjjxyxb.2012.02.010

Government of Jilin Province (2021) Implementation plan for optimizing fertility policy to promote long-term balanced population development (in Chinese). December 23. http://www.jl.gov.cn/zw/yw/jlyw/202112/t20211223_8331736.html

Government of Zhejiang Province (2022) Zhejiang Province population and family planning regulations (in Chinese). June 23. http://wjw.jinhua.gov.cn/art/2022/6/23/art_1229558996_1778853.html

Hong X, Zhu W (2017) The ideal and reality of highly educated young women having a second child: based on the investigation and analysis of Beijing (in Chinese). China Youth Soc Sci 06:37–44. https://doi.org/10.16034/j.cnki.10-1318/c.2017.06.006

Jia Z, Luo Z, Zhang X (2021) Research review and prospects of family upbringing costs in China (in Chinese). Northwest Popul 05:115–126. https://doi.org/10.15884/j.cnki.issn.1007-0672.2021.05.010

Kan W, Liang Y, Li C (2018) Inspirations from the practice of international fertility encouragement policy to China (in Chinese). Northwest Popul 05:47–56. https://doi.org/10.15884/j.cnki.issn.1007-0672.2018.05.006

Lesthaeghe R (2014) The second demographic transition: a concise overview of its development: table 1. Proc Natl Acad Sci 111(51):18112–18115. https://doi.org/10.1073/pnas.1420441111

Li X, Zhao X (2019) Is the effect of the comprehensive two-child policy significant? ——a survey based on the willingness to have two children in Fujian (in Chinese). Southeast Acad 04:118–129. https://doi.org/10.13658/j.cnki.sar.2019.04.013

Li H, Wang R, Ren Y (2018) Analysis of the number of only children and family structure since the one-child policy (in Chinese). Stat Decis 13:99–104. https://doi.org/10.13546/j.cnki.tjyjc.2018.13.022

Liang J, Ren Z, Huang W, He Y, Bai X, Xiong C (2021) 2021 report on population forecasting in China (in Chinese). YuWa Population Institute. https://file.c-ctrip.com/files/6/yuwa/0R7571200096esn24776D.pdf

Liang J, Ren Z, Huang W, He Y (2022) China childbirth cost report 2022 (in Chinese). YuWa Population Institute. https://file.c-ctrip.com/files/6/yuwa/0R726120009bzjzhb3FD7.pdf

McIntosh B, McQuaid R, Munro A, Dabir-Alai P (2012) Motherhood and its impact on career progression. Gend Manag 27(5):346–364. https://doi.org/10.1108/17542411211252651

National Bureau of Statistics of China (1981) Production data of major crops in China (in Chinese). https://data.stats.gov.cn/easyquery.htm?cn=C01

National Bureau of Statistics of China (2021) Total fertility rate of China (in Chinese). https://data.stats.gov.cn/easyquery.htm?cn=C01

National Bureau of Statistics of China (2022) The number of births (in Chinese). https://data.stats.gov.cn/search.htm?s=%E5%87%BA%E7%94%9F%E6%95%B0

National Development and Reform Commission (NDRC) (2019) Medium- and long-term planning for active response to population ageing (in Chinese). http://www.gov.cn/xinwen/2019-11/21/content_5454347.htm

Panzhihua Municipal Government (2021) Sixteen policy measures for promoting human resources aggregation (in Chinese). July 29. www.panzhihua.gov.cn/zwgk/fggw/zfbwj/1940680.shtml

Qi H, Liu Y (2019) The periodic impact of the universal two-child policy on China's economic growth (in Chinese). Statistics and Decision 09:90–94. https://doi.org/10.13546/j.cnki.tjyjc.2019.09.021

Sear R., Lawson D. W., Kaplan H., Shenk M. K. (2016). Understanding variation in human fertility: what can we learn from evolutionary demography? Philos Trans R Soc Lond Ser B Biol Sci (1692). https://doi.org/10.1098/rstb.2015.0144, 20150144

State Council of China (1982) Instructions on further doing a good job in family planning (in Chinese). February 9. http://www.people.com.cn/item/flfgk/gwyfg/1982/112709198201.html

State Council of China (2001) Population and family planning law of the People's Republic of China (in Chinese). September 1. http://www.gov.cn/banshi/2005-08/21/content_25059.htm

State Council of China (2002) Administrative measures for the collection of social support fees (in Chinese). August 2. http://www.gov.cn/banshi/2005-09/07/content_29815.htm

State Council of China (2012) The special rules on the labor protection of female employees (in Chinese). April 18. http://www.gov.cn/zhengce/2012-05/07/content_2602602.htm

Tang C, He Y (2018) Housing burden and fertility willingness: positive incentives or resource squeeze (in Chinese). J Guangxi Norm Univ (Philosophy and Social Sciences Edition) 04:61–67. https://doi.org/10.16088/j.issn.1001-6597.2018.04.010

Wang X (2020, January 6) Many provinces cancel the "expulsion after birth" clause, and the willingness to have children is expected to be further released (in Chinese). China Times. https://www.chinatimes.net.cn/article/93313.html

Wang Y (2021) Research on the impact of fertility on social mobility of married women (in Chinese). J Cap Univ Econ Bus 06:71–82. https://doi.org/10.13504/j.cnki.issn1008-2700.2021.06.006

Wang Y, Long Y (2018) Reduction of fertility costs and fertility rate: a study based on multi-country experience and data (in Chinese). Theory Mon 12:177–182. https://doi.org/10.14180/j.cnki.1004-0544.2018.12.026

Wang Z, Wang W (2020) Research on the influence of marriage and childbirth on wages: based on the gender wage gap (in Chinese). J Demogr 01:99–112. https://doi.org/10.16405/j.cnki.1004-129X.2020.01.008

Wang G, Zhou Y, Zhang N (2018) Low birth trap: China's current low birth risk and future population situation judgment (in Chinese). Youth Explor 05:15–27. https://doi.org/10.13583/j.cnki.issn1004-3780.2018.05.002

Yang H (2021) Theoretical interpretation and empirical research on influencing factors of low population fertility rate——also analysis of the population proportion of women of childbearing age in China and the prediction of the "window period" of childbearing (in Chinese). Price Theory and Practice 09:106–110+202. https://doi.org/10.19851/j.cnki.CN11-1010/F.2021.09.351

Yang T, Marjorie M (2000) The impact of China's population policy on fertility rates (in Chinese). Chinese Popul Sci 03. https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFD2000&filename=ZKRK200003002&uniplatform=NZKPT&v=QjfqJh-YW4Vdx04Xb2Lhe1u7zDr3ESeUWt4KiQVIyPurza-dtgUgwr3xrqjHhCyt

Yang H, Zhang W (2019) Fertility dividend, fertility intention and fertility support (in Chinese). Shanghai Econ Res 07:57–69. https://doi.org/10.19626/j.cnki.cn31-1163/f.2019.07.006
Yu Y, Gong L (2021) Fertility policy, fertility rate and family pension. China Ind Econ 05:38–56. https://doi.org/10.19581/j.cnki.ciejournal.2021.05.002
Zhang Y (2020) The overall governance of the occupational dilemma of women of childbearing age under the "universal two-child" policy: based on a survey in Zhejiang Province (in Chinese). Gov Res 03:100–107. https://doi.org/10.15944/j.cnki.33-1010/d.2020.03.013
Zhang J (2021) Research on the fiscal and taxation policy to promote long-term balanced development of the population under the background of the "three-child policy"——based on the perspective of fertility (in Chinese), parenting and education. Tax Economic Research 05:89–94. https://doi.org/10.16340/j.cnki.ssjjyj.2021.05.012
Zhang H (2022) The impact of fertility policy adjustment on female labour supply: vidence based on DID-PSM method (in Chinese). *Northwest*. Population 03:13–27. https://doi.org/10.15884/j.cnki.issn.1007-0672.2022.03.002
Zhang X, Cui Y (2020) Are women with high human capital more willing to have a second child? A study on the transformation of childbearing willingness based on human capital (in Chinese). J Tsinghua Univ (Philosophy and Social Sciences) 02:182–193. https://doi.org/10.13613/j.cnki.qhdz.002936
Zhang X, Zhang Y (2018) In the age of two children, are employers still willing to hire women? (in Chinese). Dongyue Lun Cong 07:132–141+192. https://doi.org/10.15981/j.cnki.dongyueluncong.2018.07.016
Zhou H, Li F (2018) Foreign population incentive policies and their experiences: a comparative analysis based on three types of countries (regions) (in Chinese). J Hunan Agric Univ (Social Science Edition) 06:79–83. https://doi.org/10.13331/j.cnki.jhau(ss).2018.06.013
Zhu L (2020) Fertility policy, opportunity cost and fertility demand: micro evidence from China's comprehensive social survey (in Chinese). Northwest Popul 02:90–101. https://doi.org/10.15884/j.cnki.issn.1007-0672.2020.02.008
Zhu Z, Zhao G (2022) Higher education and the number of female births in China (in Chinese). Demogr J 01:16–31. https://doi.org/10.16405/j.cnki.1004-129X.2022.01.002

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Chapter 4
Impact of Female-Focused HRM Practices on Workplace Outcomes in China

Xin Deng and Zhifang Wu

Abstract Based on a survey of 227 employees in two organisations in China, this study examines the links between the female-focused human resource management (female-focused HRM) practices and workplace outcomes (job satisfaction and turnover intention). We found that female-focused HRM does not directly influence job satisfaction or turnover intention; instead, the impact is exerted through perceived organisation support. Interestingly, the women and men we surveyed both responded similarly when questioned on the importance of female-focused HRM. Findings from this study suggest that female-focused HRM is unlikely to be perceived as preferential treatment for female employees; instead, it is they are interpreted as an organisation's support for employees who will likely reciprocate with a positive workplace attitude. This research advances our knowledge about the relationship between female-focused HRM and workplace outcomes in the East Asia context and disperses the myth of a negative perception of HRM policies by the non-users.

Keywords Female-focused HRM policies · Diversity and inclusion · Gender · China · Workplace outcomes · East Asia

4.1 Introduction

Economic reforms in China since the late 1980s have boosted women's opportunities in many areas such as health and education but resulted in many setbacks for them in the labour market: the gender wage gap has widened, employment opportunities for women have diminished, and there is a resurgence of traditional stereotypes about women's role at work and home (Catalyst 2020). It is not surprising that women's labour force participation rate in China has fallen from 73% in 1990 to 62% in 2021 (The World Bank 2022). Policies to promote diversity and inclusion,

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X. Deng et al. (eds.), *Ageing in China*, https://doi.org/10.1007/978-981-19-9681-8_4

such as family-friendly human resource management (HRM) practices, have been proven to be effective in boosting women's workforce participation (Winkler 2022), with the potential additional benefits of boosting the fertility rate – another challenge faced by the fast-ageing China. Policies to encourage women to have more children are unlikely to boost the fertility level without institutional measures to address the motherhood penalty, or labour market disadvantages due to childbirth; instead, they could exacerbate the existing gender inequity in China's labour market (Zhou 2019; Shen and Jiang 2020; Ma 2022).

Despite being an integral part of organisations' HRM practices in developed countries, diversity and inclusion (D&I) practices remain to be a rarity among Chinese firms (Cooke and Zhao 2021; Thompson et al. 2020). That provides a stark contrast with their embracement of other western management practices such as quality control, standardisation, and performance appraisal. The culture, history, and institutionalised discrimination and social exclusion that are embedded in the society have been cited as the reasons (Cooke and Zhao 2021). Another potential reason could be the lack of clear evidence. While there is a substantial literature to demonstrate that those policies can be effective in attracting and retaining employees, enhancing their organisational commitment (Grover and Crooker 1995) and improving their job satisfaction and performance (Kossek and Friede 2006), few studies were undertaken in an East Asian context (Cooke and Zhou 2021). Besides, there is a wide range of D&I policies, and it could be problematic to treat them as a generic group that work in the same way. Taking family-friendly HRM policies as an example, the findings in the extant literature are not always consistent, and there are several reasons: the policies examined by different studies can vary considerably, and some studies may focus on the availability of those policies, others may focus on the implementation side (Butts et al. 2013). Adding to the complexity is that different family-friendly HRM policies may influence different workplace outcomes through different social and psychological processes, which can vary in different contexts.

The purpose of this study is to examine how female-focused HRM policies, a sub-set of family-friendly HRM practices that exclusively target female employees, influence two inter-related workplace outcomes: job satisfaction and intention to quit. In doing so, we aim to make three key contributions to the literature. First, this study has answered recent calls for more studies on gender equality and diversity in workplaces in East Asia (Colella et al. 2017; Zhu et al. 2022), and contributes to filling this research gap. By exploring how female-focused HRM practices influence workplace attitudes and behaviours in a Chinese context, this study tests a relationship which is largely unknown. More importantly, we found female-focused HRM policies do not affect workplace attitudes directly; instead, their relationship is mediated through perceived organisational support (POS). This has provided new insights into the social and psychological process of diversity policies exerting influence on workplace outcomes. Second, we combined both availability and utilisation of those policies to develop a construct on the perceived importance of female-focused HRM. While the availability of those policies may be interpreted as a positive signal that the organisations care for their employees, the combined

availability and perceived usefulness has more power to induce the desired workplace outcomes. Third, we coined the term "female-focused HRM" to test the impact of a subset HRM policies exclusively benefit female employees. Such a focus is necessary to avoid potential confusion and inconsistency caused by the large number of HRM practices targeting different cohorts of employees. Butts et al. (2013) suggest that the inconsistency of results may lie in how those policies are studied and point out that qualitative differences between policies are often ignored, despite the fact that there are distinct types of work–family policies. Similarly, Kelly et al. (2008) categorised work-family initiatives into three levels, arguing that the impact of those policies can vary. Findings from our study can disperse the myth that policies that exclusively target female employees may only have positive impacts on female employees.

The rest of the chapter is organised as follows: the next section presents the conceptual framework of our study. Section 4.3 outlines the research method, which is followed by the findings. The chapter concludes with the discussions on policy implications and future research directions.

4.2 Conceptual Framework

4.2.1 Female-Focused HRM Practices

Female-focused HRM are organisational policies specially designed to benefit female employees. We use this term to differentiate it from female- or women-friendly HRM policies, as the latter are often used interchangeably with family-friendly HRM practices – a set of HRM policies aiming to provide support for employees to balance the needs of work and family. A distinction between these two terms is necessary due to two reasons. First is to avoid reinforcement of the stereotype of females. The interchangeable use of family and female-friendly policies is based on the assumption that females are the second income earner of the household and primary carer for the family, a stereotype that may no longer be a correct reflection of the real world. More importantly, mixing these two may cause inconsistency in findings. As discussed earlier, there is a wide range of policies falling into this category, and not all of them target female employees. Chiu and Ng (1999), for example, labelled 20 HRM policies as "women-friendly", but many of them are not exclusively targeting women (for example, policies around mentoring), or anyone with family responsibilities (such as written job descriptions). Focusing on a set of HRM policies which are targeted at women helps to establish a clear pathway to demonstrate how these policies influence workplace outcomes.

Another benefit of focusing on policies which exclusively benefit females is to allow us to test two theories that predict the opposite attitude towards them. On the one hand, Conservation of Resource Theory (COR) posits that individuals strive to protect and acquire valuable resources and minimise any threat of resource loss (Hobfoll 1989; Vander Elst et al. 2013). Resources are "objects, personal

characteristics, conditions, or energies that are valued by the individual or that serve as a means for attainment of these objects, personal characteristics, conditions, or energies" (Hobfoll 1989, p. 516). Following COR, HRM practices that exclusively benefit one group of employees could be perceived negatively by the other employees who consider those policies consume organisational resources, and consequently reduce resources available to them.

On the other hand, signalling theory postulates that people interpret an organisation's observable actions as signals of less observable characteristics, thereby forming impressions about the organisation's intention motives (Spence 1973). Signalling theory describes the behaviours and reactions of two parties who have access to different information (Connelly et al. 2011). Developing strong and credible signals is essential for efficient and effective communication between parties possessing different information (Taj 2016). In the context of individuals and organisations, signalling theory asserts that the organisation is privy to more information than the employees, especially information on the organisation's intention and strategy, thus the organisation needs to send signals through organisational policies and communications. Signals given by the organisation are interpreted by the employee as indicators of the organisation's intentions (Spence 1973). HRM policies are a good example of signals as they demonstrate the organisation's intention towards its employees.

Applying signalling theory to explain an employee's perception of family-friendly HRM policies, Butts et al. (2013) argue that employees who know that a family support policy is available might still develop more positive work attitudes in response to its symbolic value even if they have little or no experience of using it. This is because policy availability may be perceived as a symbol of corporate concern for employees' well-being (Grover and Crooker 1995). Following such premise, we propose that there is no gender difference in terms of perception of female-focused HRM practices. A significant number of HRM practices, especially D&I policies, are only applicable for certain groups, and employees are likely to perceive them as an organisation's attempt to support employees' needs, instead of the preferential allocation of an organisation's resources. Therefore, we have the first hypothesis.

Hypothesis 1: There is no gender difference in terms of the perceived importance of female-focused HRM practices.

4.2.2 Perceived Organisational Support (POS)

Perceived organisational support (POS) is "an experience-based attribution concerning the benevolent or malevolent intent of the organization's policies, norms, procedures and actions as they affect employees" (Eisenberger et al. 2001, p. 42). The positive link between HRM policies and POS is underpinned by several theories.

Signalling theory contends that signalling effectiveness is partly determined by the characteristics of the receiver, especially how the receiver interprets the signal (Connelly et al. 2011). Different receivers may attend to different signals or interpret the same signal differently, they may apply different weights to signals according to preconceived notions about importance, or they may even cognitively distort the signal (Branzei et al. 2004; Rynes et al. 1991). While the majority of employees do not have access to information outlining organisation's human resource strategy, they can interpret HRM policies as the organisation's intended way of treating employees (Benkoff 1997). By implementing female-focused HRM, an organisation sends a clear message to employees that it cares for employees' wellbeing and is committed to support those need. The positive link between female-focused HRM and POS is further supported by the organisational support theory (Eisenberger et al. 2001). The tenet of this theory is the idea that "POS initiates a social exchange process wherein employees feel obligated to help the organisation achieve its goals and objectives and expect that increased efforts on the organisation's behalf will lead to greater rewards" (Kurtessis et al. 2017, p. 1855).

While female-focused HRM is mainly designed to support female employees, its impact is not limit to female employees for the following reasons. First, those policies may be positively interpreted by both male and female employees beyond the utilitarian perspectives. Instead of focusing on the potential utilisation of those policies, employees are more likely to interpret those policies as part of the organisation's concerns for employees, thus improving their perception of organisational support. Second, those policies may attract employees whose values are more in line with the organisation's. Job seekers prefer organisations that have a close fit between their and the organisation's values, and because of incomplete information in the recruitment process, candidates use organisational attributes, such as HR policies and reputation, to find clues about the firms' future intentions and actions. Given that family-friendly HRM practices are not wide-spread in China, the availability of female- focused HRM policies will make an organisation stand out as a pioneer in caring for employees' wellbeing and attract those who consider these aspects as important in their career. Therefore, we have:

Hypothesis 2. Female-focused HRM is positively related to POS.

4.2.3 Workplace Outcomes

HRM behavioural literature suggests that HRM influences organisational performance through its effect on employee work attitudes and behaviours (Becker and Huselid 2006; Wright et al. 2001). Therefore, the focal outcomes we investigate in this study are employee work attitudes, and two outcomes are examined: turnover intention and job satisfaction. Job satisfaction refers to 'a positive (or negative) evaluation or judgment one makes about one's job or job situation' (Weiss 2002, p. 175). Turnover intention refers to 'a conscious and deliberate willfulness to leave the organisation' (Tett and Meyer 1993, p. 262). Both outcomes are highly important

for an organisation. Employees who are more satisfied with their job will perform better and contribute more to the organisation. Turnover, on the other hand, is costly for organisations and has the potential to reduce the organisation's performance (Miller et al. 2001). Turnover intention and job satisfaction are also commonly examined in the literature on family-friendly policies, along with other outcomes such as organisational commitment and work-family conflict (Butts et al. 2013).

Despite the increased popularity of family-friendly HRM practices among organisations, existing literature on their impact on workplace outcomes has been inconclusive (Kelly et al. 2008, Butts et al. 2013). Some have found that family-friendly policies are positively related organisational commitment and turnover intention (Grover and Crooker 1995; Thompson and Prottas 2006) and lower work–family conflict (Thompson et al. 1999). Others failed to detect a significant relationship with job satisfaction or intent to stay (Thomas and Ganster 1995; Glass and Riley 1998). Studies examining practices on organisations in East Asia do not provide clear outcomes either. Chen et al. (2018) found that flexible working arrangements improved job satisfaction and reduced turnover intention through work-family enrichment. Using a survey of 300 respondents in Hong Kong, Chiu and Ng (1999) reported that the positive impact of women-friendly HRM on organisational commitment was limited to females and only applicable on affective commitment.

HRM behavioural literature posits that HRM policies may result in an improvement in workplace attitudes and behaviours of employees through enhancing their skills, motivations and opportunities (Ability-Motivation-Opportunity (AMO) model) (Appelbaum et al. 2000). According to AMO, HRM practices increase employees' ability through attracting and developing high-performing employees, enhance their motivation through offering incentives necessary to motivate them to deliver high levels of performance, while the opportunity-enhancing HRM practices aim to delegate decision-making authority and responsibility down (Demortier et al. 2014). More importantly, HRM behavioural literature suggests that HRM practices may influence employee workplace attitudes and behaviours through different social and psychological processes, that is, the influences of HRM may not be direct; rather, its influences may be indirect and are transmitted through various underlying mechanisms (Jiang et al. 2012).

Invoking social exchange theory, we postulate that female-focused HRM influences positive workplace outcomes through perceived organisational support. Researchers have argued POS is likely to induce an obligation-driven reciprocal response by employees who have received supportive exchanges and other benefits from their organisation (Rhoades and Eisenberger 2002). This is also consistent with Beauregard and Henry (2009) who suggested that the availability of family-friendly HR policies relates to work attitudes through perceptions of support. The main premise is that employees interpret the HRM policies as a signal of the organisation's concern for the employee, which induces a higher level of POS, and they reciprocate with positive behaviours and attitudes when they are treated positively by their organisation (Butts et al. 2013). The positive link between HRM practices and POS, as well as POS with various workplace outcomes such as organisational

commitment, job satisfaction, and job performance, is well established in the literature (Kurtessis et al. 2017). The only remaining doubt is whether male employees would also react the same since they are generally not targeted when designing female-focused HRM policies.

We argue that there is no gender difference in terms of the reactions towards female-focused HRM, as the majority of female employees are also unlikely to use those policies. For example, maternity leave can only be utilised by women before and after childbirth, and sexual harassment policies are more a preventive instead of reactive measure. Therefore, the impacts of those policies are likely to occur through a motivational process: a high level of POS induced by female-focused HRM indicates that employees interpret these practices as an organisation's recognition of the needs of the employees who will subsequently reciprocate with a positive workplace attitude. In other words, the positive effect of female-focus HRM on employee job satisfaction and lower turnover intention will take effect through the mediation of POS. Figure 4.1 outlines the conceptual framework summarizing the hypothesis 2 and 3.

Hypothesis 3a: Female-focused HRM is positively related to job satisfaction through the mediation of perceived organisational support.

Hypothesis 3b: Female-focused HRM is negatively related to intention to quit through the mediation of perceived organisational support.

4.3 Method

4.3.1 Sample

The data for this study were collected with the employees of two organisations in China. Both organisations are state-owned enterprises with the first being a publishing house and the second being an industrial association. These two organisations

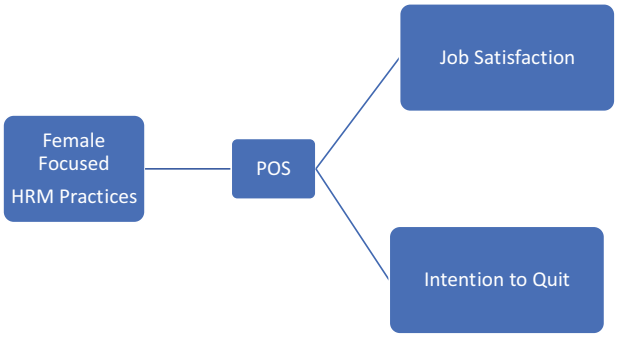

Fig. 4.1 The Conceptual Framework

were chosen mainly because of their suitability in answering the research questions: they both have a large proportion of female employees, have a wide range of family-friendly HRM practices in place, and are active in promoting corporate social responsibilities (CSR). The first company publishes CSR report each year since 2014 and the second has a dedicated department which helps companies to produce their CSR and publishes the industrial CSR report on annual basis. Family-friendly HR practices and CSR are not common among companies in China and explicit gender discrimination still prevails in China's labour market. It is therefore necessary to examine the best practices and to establish a business case for these practices (Fig. 4.1).

We distributed 400 anonymous questionnaires to full-time employees in hard copy, and received 227 valid questionnaires, a response rate of 56.75%. This relatively high response rate is mainly attributed to the strong support of the human resource department of both organisations. They assisted the researchers to distribute the survey and collect the survey. The demographic information of the respondents is summarised in Table 4.1.

As shown in Table 4.1, there is a small amount of missing data. We used the Maximization Likelihood (ML) estimation method to deal with the missing data; this method is widely used and recommended (Hair et al. 2003). Amongst the several ways of computing maximum likelihood estimators, we used the Expectation-Maximisation algorithm (or EM algorithm), which is one of the most commonly used estimators as it imposes the least bias into the estimated models (Hair et al. 2003; Kline 2005).

Table 4.1 Demographic profile of respondents

	Category	Percentage (%)		Category	Percentage (%)
Gender	Man	25.1	Qualification	High school	1.3
	Woman	70.9		College	7.5
Age	Missing	4.0		Bachelor's	44.1
				Master's	40.1
				PhD	5.3
	18–20 years old	0	Position	Missing	1.8
	21–30 years old	47.1			
	31–40 years old	34.8		Ordinary Employee	74.0
	41–50 years old	12.3		Junior Managerial	10.1
	51–60 years old	2.2		Middle Managerial	11.9
	61 years and older	.04		Senior Managerial	2.2
	Missing	.9		Missing	1.8

Source: Authors' survey, same below unless stated otherwise

4.3.2 Measures

With the exception of the female-focused practice measures, all items were measured using a five-point Likert scale (from 1 = 'strongly disagree' to 5 = 'strongly agree') indicating the level of agreement with each item. The initial survey was developed in English, and the researcher who conducted the survey engaged a bilingual team member to back-translate the survey to ensure the Chinese version was an accurate reflection of the English survey.

Female-Focused HRM
We first identified a range of literature-based female-focused HRM policies. To ensure these practices were applicable to the sample companies, we subsequently interviewed the head of the human resource department in both companies and chose four HRM practices that were available in both organisations: maternity leave, anti-sexual harassment policies, training for female employees and promotion policies focusing on female employees. These practices were chosen based on the two criteria: they were designed to benefit female employees exclusively, and had been in practice in both organisations for at least 2 years before the survey took place. While the anti-sexual harassment policy may potentially benefit male employees, workplace sexual harassment victims in China are predominately females (Halegua 2021). We trialled the survey with 10 employees in each organisation to ensure the measuring items were understood by, and applicable to, the intended participants. Based on the feedback, we combined the awareness and importance to create five options in the actual survey and asked the respondents to pick the one applied to them. The options were: "I am aware of this policy and it is very important to me (5)", "I am aware of this policy and it may be useful to me (4)", "I am aware of this policy, but it is not relevant to be (3)", "I am not aware of this policy" (2) and "unsure" (1). The alpha coefficient for this construct reliability was .57 suggesting a moderate reliability (Sideridis et al. 2018; Jain and Chetty 2021).

Perceived Organisational Support (POS) POS was measured using the four-item scale from Lynch et al. (1999). A sample item is "My company really cares about my well-being". The alpha coefficient was .81.

Job Satisfaction Job satisfaction was measured using the six-item scale covering the respondent's level of satisfaction on pay, working environment, supervisor, co-workers, career perspective and overall satisfaction, in accordance with Stanton et al. (2002). The alpha coefficient was .86.

Intention to Quit Intention to quit (ItQ) was measured using the two-item scale from Tepper et al. (2009), which cleanly captured "the culmination of the decision process regarding turnover" (Crossley et al. 2007, p. 1033). The sample items are "I often thought about resignation" and "I may leave for another company next year". The alpha coefficient was .83.

4.4 Findings

Table 4.2 presents the means, standard deviations, correlations, and reliabilities of all variables. In addition to testing the internal consistency of each measure, we also tested the convergent and discriminant validity of variables. The majority of the values ranged from .30 to .70 and from less than .30 respectively, suggesting the convergent and discriminant validity test was met at a moderate level (John and Benet-Martinez 2000; Ratner 2009; Henseler et al. 2015).

4.4.1 Common Method Variance (CMV)

The results may be subject to Common Method Variances (CMV) due to the cross-sectional design and self-reporting nature of the study. We attempted to avoid CMV by using the procedural recommendations of Podsakoff et al. (2003). First, we designed the survey into two sections with female-focused HRM in one section and the workplace attitudes in the other section. The way we measured the focal variable is quite different from that of other variables: for female-focused HRM, we asked the respondents to evaluate the importance and utilisation, which is more objective. For statements related to POS and workplace outcomes, respondents were asked about their attitude ranking from strongly disagree to strongly agree. We also added negatively worded (reverse-coded) items to minimise the cognitive bias. In addition, we also tested the influence of CMV by using the Harman single factor test to detect whether CMV had a significant influence on data. The results showed that the total variance for one factor is 29.89%, which is lower than 50%, suggesting that CMV does not affect the data (Podsakoff et al. 2003, 2012).

4.4.2 Hypotheses Tests

To test hypothesis 1, an independent-samples t-test was conducted to compare the means for female-focused HRM for males and females. There was no significant difference in scores (Table 4.3) for males ($M = 3.05$, $SD = .86$) and females ($M = 3.27$, $SD = .80$); $t\ (216) = -1.72$, $p = .09$ (two-tailed). While the mean is slightly higher for females, the difference is not substantial. Hypothesis 1 is therefore supported.

Structural equation modeling (SEM) was utilised to test hypothesis 2 and 3. Structural equation models are a popular analysis tool in management research as they enable researchers to test a wide range of hypotheses concerning the relationships among any combination of manifest and latent variables (Schumacker and Lomax 2004; Kline 2005) and allow the simultaneous modelling of relationships among multiple independent and dependent constructs (Gefen et al. 2000).

Table 4.2 Means, standard deviations and correlations of variables

		Mean	SD	1	2	3	4	5	6	7	8
1	Gender	1.74	.44								
2	Age	1.51	.50	−.024							
3	Qualification	1.46	.50	−.010	.015						
4	Position	1.41	.79	−.055	.417**	.155*					
5	Female Focussed HRM	3.22	.82	.116	.018	.049	.088	(.565)			
6	Perceived Organisation Support	3.47	.54	−.049	−.130	.123	.037	.169*	(.811)		
7	Job Satisfaction	3.62	.59	.039	−.004	.133*	.015	.085	.593**	(.863)	
8	Intention to Quit	2.29	.71	−.088	.016	−.012	−.048	.130	−.356**	−.300**	(.832)

Notes. N = 227; Scale reliability estimates α are presented in parentheses on the diagonal
*$p < .05$; **$p < .01$; ***$p < .001$

Table 4.3 Independent Samples T-Test by Gender

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Female focussed HRM	Equal variances assumed	.522	.471	−1.720	216	.087	−.21678	.12605	−.46522	.03167
	Equal variances not assumed			−1.658	92.226	.101	−.21678	.13074	−.47643	.04288

Table 4.4 Model fit index – whole sample

Model fit criterion	Acceptable level	Measurement model	Structural model
Discrepancies	*Discrepancy* *Degree of freedom* *P value*	*86.121* *76* *.200*	*95.937* *78* *.082*
Relative chi-square (CMIN/DF)	*1.0–5.0*	*1.133*	*1.230*
GFI	*0 (no fit) to 1 (perfect fit)*	*.949*	*.947*
TLI	*0 (no fit) to 1 (perfect fit)*	*.948*	*.981*
CFI	*0 (no fit) to 1 (perfect fit)*	*.962*	*.986*
RMSEA	*Value less than .05 indicates a good model fit*	*.024*	*.030*

The SEM process consists of two steps: validating the measurement model and fitting the structural model (Anderson and Gerbing 1988). The former is accomplished primarily through confirmatory factor analysis, while the latter is accomplished primarily through path analysis with latent variables. Only when the measurement model has been validated the researcher can proceed (Anderson and Gerbing 1988). Kline (1998) urges SEM researchers to always test the pure measurement model underlying a full structural equation model first, and to proceed to the second step to test the structural model only if the fit of the measurement model is found acceptable. The rationale of this approach is that accurate representation of the reliability of the indicators is best accomplished in two steps to avoid the interaction of measurement and structural models (Anderson and Gerbing 1988; Kline 2005).

As shown in Table 4.4, the measurement model of this study arrives at chi-square 86.12 with degrees of freedom 76, so the relative chi-square value is 86.12/76 = 1.133 (shown as CMIN/DF in Table 4.4). Furthermore, the measurement model of this study shows a great fit to the criterion of GFI, CFI, TLI, and RMSEA. Hence, we can confirm that the measurement model has a good fit to sample data.

Next, we proceeded with the estimation of the structural model. As shown in Table 4.4, the structural model was also accepted given the fit indices. Therefore, we further examined the estimates for structural paths. Three significant relationships were identified: female-focused HRM has a small and significant impact on POS (regression weight *.176* at $p < .05$ level); POS has significant and positive influence on job satisfaction (regression weight *.740* at $p < .001$ level), and is negatively correlated with intention to quit (regression weight $-.446$ at $p < .001$ level). Based on these results, H2 and H3a and H3b are supported.

4.5 Discussions and Conclusions

Organisations are increasingly expected to play a role in workforce diversity and are also a direct beneficiary of a diverse workforce with an access to more talent and a lower turnover rate. A more diverse workforce means more diverse needs in terms of

family responsibilities. It is difficult to use one term to capture all the different family-friendly HRM policies, which may vary considerably across organisations and target different employee cohorts. Kossek et al. (2011) suggest it is necessary to separate general support from family-specific support, and Beauregard and Henry (2009) propose that the availability and utilisation of work–life policies may influence different workplace outcomes through different social and psychological process. Other scholars even proceed further arguing that perceived organisational support related to family-friendly policies can be a distinct construct itself and have coined the term family-supportive organisation perceptions (FSOP), defined as the extent to which employees view their organisation as supportive of family life (Allen 2001; Butts et al. 2013).

This study follows this trend by focusing on a handful HRM policies exclusively benefiting female employees in order to present a clear roadmap as how they affect workplace outcomes. By coining the term of female-focused HRM and testing its impact, our results suggest that those policies do not affect workplace outcomes directly; instead, they are interpreted as organisational support and induce desired workplace outcomes through positive social exchange. This study extends signalling theory by demonstrating that HRM policies benefiting a certain group of employees are also likely to be perceived positively by non-beneficiaries and induce positive workplace outcomes for the latter.

This study also contributes to diversity management literature in China by adding more empirical evidence on how gender specific HRM practices influence employees' attitudes at work. This work adds to the body of knowledge that is necessary to gain further insight on diversity management practices in a Chinese context, however there is still much that is unknown and there have been repeated calls for more research in this area (Thomson et al. 2018; Zhu et al. 2022). It also builds a business case for a more diverse and inclusive workplace, which is still rare in China. As mentioned earlier in this chapter, gender discrimination and exclusion are still rampant at workplaces in China, and women's status in the labour market went backwards despite stunning economic growth in the last four decades and considerable improvement in education among females (Catalyst 2020). The resistance to a more diverse workplace may be deeply rooted in culture and individual bias or may be attributed to political and institutional factors (Zhu et al. 2022), but history has proven that culture can change, and perceptions can shift should convincing evidence be provided. Empirical evidence similar to what is reported in this study is useful to demonstrate the long-term benefits for organisations should they consider adopting policies to balance the work life of their employees, as well as informing government agencies to allow them to develop evidence-based policies.

Promoting diversity and inclusion at workplaces will become increasingly important in China, a country facing the imminent challenge of population decline (Peng 2022). Adding to the ageing population is the falling female workforce participation rate in the last few decades, which makes attracting and retaining females in the workforce a more critical task to maintain economic prosperity. In addition to the government's effort to enforce laws and legislation to protect female employees' rights in the workplace, manifesting the benefits of supporting female employees can

offer extra incentives for organisations to comply with the laws and even go beyond the law to introduce their own diversity and inclusion polices.

Despite its importance, there are several limitations in this study. First, the empirical findings are derived from surveys of two organisations in Beijing. Both organisations are pioneers in terms of developing a female-friendly workplace and have attracted a significant number of female employees, which is reflected in our sample. While the selection of the sample organisations serves the purpose of this study, findings need to be interpreted in such context. It also warrants replicating this study in other contexts, especially in organisation with male-dominant workforce to see whether the same results hold. Second, this study only tested the impact of female-focused HRM on two employee outcomes, and it will be useful to test other employee outcomes such as organisational commitment, job engagement and in-role and extra-role performance to build up more evidence and a better understanding of the impact of these policies. Last, this study is an attempt to isolate a group of HRM policies focusing exclusively on females. This attempt may not be complete and should be tested further to see whether such a grouping also holds in other organisations, or whether there are other female-focused HRM policies that have not been captured by our measures. Besides, given the significant number of practices under the name of family-friendly or work-life balance, it is worthwhile to conduct further groupings and investigate how other types of family-friendly HRM policies work on beneficiaries and non-beneficiaries.

References

Allen TD (2001) Family-supportive work environments: the role of organisational perceptions. J Vocat Behav 58:414–435. https://doi.org/10.1006/jvbe.2000.1774

Anderson J, Gerbing W (1988) Structural equation modeling in practice: a review and recommended two-step approach. J Psychol Bull 103(3):411–423

Appelbaum E, Bailey T, Berg P, Kalleberg A (2000) Manufacturing advantage: why high-performance work systems pay off. Cornell University Press, Ithaca

Beauregard TA, Henry CL (2009) Making the link between work–life balance practices and organisational performance. Hum Resour Manag Rev 19:9–22. https://doi.org/10.1016/j.hrmr.2008.09.001

Becker BE, Huselid MA (2006) Strategic human resource management: where do we go from here? J Manag 32(6):898–925. https://doi.org/10.1177/0149206306293668

Benkoff B (1997) Disentangling organizational commitment: the dangers of the OCQ for research policy. Pers Rev 26(2):114–131. https://doi.org/10.1108/00483489710157823

Branzei O, Ursacki-Bryant TJ, Vertinsky I, Zhang W (2004) The formation of green strategies in Chinese firms: matching corporate environmental responses and individual principles. Strateg Manag J 25(11):1075–1095. https://doi.org/10.1002/smj.409

Butts MM, Casper WJ, Yang TS (2013) How important are work–family support policies? A meta-analytic investigation of their effects on employee outcomes. J Appl Psychol 98(1):1–25

Catalyst (2020) Women in the Workforce: China (Quick Take). Retrieved from: https://www.catalyst.org/research/women-in-the-workforce-china/

Chen W, Zhang Y, Sanders K, Xu S (2018) Family-friendly work practices and their outcomes in China: the mediating role of work-to-family enrichment and the moderating role of gender. Int J Hum Resour Manag 29(7):1307–1329. https://doi.org/10.1080/09585192.2016.1195424

Chiu WC, Ng CW (1999) Women-friendly HRM and organizational commitment: a study among women and men of organizations in Hong Kong. J Occup Organ Psychol 72(4):485–502

Colella A, Hebl M, King E (2017) One hundred years of discrimination research in the journal of applied psychology: a sobering synopsis. J Appl Psychol 102(3):500–513. https://doi.org/10.1037/apl0000084

Connelly BL, Certo ST, Ireland RD, Reutzel CR (2011) Signalling theory: a review and assessment. J Manag 37(1):39–67. https://doi.org/10.1177/0149206310388419

Cooke F, Zhao C (2021) Towards a broader understanding of workplace inequality and exclusion in China: a review of discrimination based on social class, gender and physical ability. Asia Pac J Hum Resour 59(2):184–203. https://doi.org/10.1111/1744-7941.12276

Crossley CD, Bennett RJ, Jex SM, Burnfield JL (2007) Development of a global measure of job embeddedness and integration into a traditional model of voluntary turnover. J Appl Psychol 92(4):1031. https://doi.org/10.1037/0021-9010.92.4.1031

Demortier A, Delobbe N, El Akremi A (2014) Opening the black box of HR practices – performance relationship: testing a three pathways AMO model. Acad Manag Proc 2014(1):14932. https://doi.org/10.5465/ambpp.2014.102

Eisenberger R, Armeli S, Rexwinkel B, Lynch PD, Rhoades L (2001) Reciprocation of perceived organisational support. J Appl Psychol 86:42–51

Gefen D, Straub D, Boudreau M (2000) Structural equation modelling and regression: guidelines for research practice. Commun Assoc Inf Syst 7(7):1–48

Glass JL, Riley L (1998) Family responsive policies and employee retention following childbirth. Soc Forces 76(4):1401–1435. https://doi.org/10.1093/sf/76.4.1401

Grover SL, Crooker KJ (1995) Who appreciates family-responsive human resource policies: the impact of family-friendly policies on the organisational attachment of parents and non-parents. Pers Psychol 48(2):271–288

Hair J, Anderson R, Tatham R, Black W (2003) Multivariate data analysis, 4th edn. Prentice-Hall, London

Halegua A (2021) Workplace gender-based violence and harassment in China: Harmonizing Domestic Law and Practice with International Standards. Retrieved from: https://globallaborjustice.org/wp-content/uploads/2021/06/Halegua-Workplace-GBVH-in-China-FINAL-2021.06.21-10-am-EST.pdf

Henseler J, Ringle CM, Sarstedt M (2015) A new criterion for assessing discriminant validity in variance-based structural equation modeling. J Acad Mark Sci 43(1):115–135. https://doi.org/10.1007/s11747-014-0403-8

Hobfoll (1989) Conservation of resources: a new attempt at conceptualizing stress. Am Psychol 44(3):513–524. https://doi.org/10.1037/0003-066X.44.3.513

Jain R, Chetty P (2021) Criteria for reliability and validity in SEM analysis. Project Guru. Available at: https://www.projectguru.in/criteria-for-reliability-and-validity-in-sem-analysis/. Accessed 31 Aug 2022

Jiang K, Lepak DP, Hu J, Baer JC (2012) How does human resource management influence Organisational outcomes? A meta-analytic investigation of mediating mechanisms. Acad Manag J 55(6):1264–1294. https://doi.org/10.5465/amj.2011.0088

John OP, Benet-Martinez V (2000) Measurement: reliability, construct validation, and scale construction. In: Reis HT, Judd CM (eds) Handbook of research methods in social and personality psychology. Cambridge University Press, New York, pp 339–369

Kelly EL, Kossek EE, Hammer LB, Durham M, Bray J, Chermack K, Murphy LA, Kaskubar D (2008) Getting there from here: research on the effects of work–family initiatives on work–family conflict and business outcomes. Acad Manag Ann 2(1):305–349. https://doi.org/10.5465/19416520802211610

Kline RB (1998) Software review: software programs for structural equation modeling: Amos, EQS, and LISREL. J Psychoeduc Assess 16(4):343–364. https://doi.org/10.1177/073428299801600407

Kline R (2005) Principles and practice of structural equation modelling. The Guilford Press

Kossek EE, Friede A (2006) The business case: managerial perspectives on work and the family. In: Pitt-Catsouphes M, Kossek EE, Sweet S (eds) The work and family handbook. Erlbaum, Mahwah, pp 611–626

Kurtessis JN, Eisenberger R, Ford MT, Buffardi LC, Stewart KA, Adis CS (2017) Perceived organisational support: a meta-analytic evaluation of organisational support theory. J Manag 43:1854–1884

Lynch PD, Eisenberger R, Armeli S (1999) Perceived organizational support: inferior versus superior performance by wary employees. J Appl Psychol 84(4):467

Ma X (2022) Parenthood and the gender wage gap in urban China. J Asian Econ 80:101479. https://doi.org/10.1016/j.asieco.2022.101479

Miller J, Hom P, Gomez-mejia L (2001) The high cost of low wages: does maquiladora compensation reduce turnover? J Int Bus Stud 32:585–595. https://doi.org/10.1057/palgrave.jibs.8490986

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 it means for the world [Commentary]. Retrieved from: https://theconversation.com/chinas-population-is-about-to-shrink-for-the-first-time-since-the-great-famine-struck-60-years-ago-heres-what-it-means-for-the-world-176377

Podsakoff PM, MacKenzie SB, Lee J-Y, Podsakoff NP (2003) Common method biases in behavioural research: a critical review of the literature and recommended remedies. J Appl Psychol 88(5):879–903. https://doi.org/10.1037/0021-9010.88.5.879

Podsakoff PM, MacKenzie SB, Podsakoff NP (2012) Sources of method bias in social science research and recommendations on how to control it. Annu Rev Psychol 63(1):539–569. https://doi.org/10.1146/annurev-psych-120710-100452

Ratner B (2009) The correlation coefficient: its values range between +1/−1, or do they? J Target Meas Anal Mark 17(2):139–142. https://doi.org/10.1057/jt.2009.5

Rhoades L, Eisenberger R (2002) Perceived organizational support: a review of the literature. J Appl Psychol 87(4):698–714

Rynes S, Bretz RD, Gerhart B (1991) The importance of recruitment in job choice: a different way of looking. Pers Psychol 44(3):487–521. https://doi.org/10.1111/j.1744-6570.1991.tb02402.x

Schumacker RE, Lomax RG (2004) A Beginner's guide to structural equation modeling, 2nd edn. Lawrence Erlbaum Associates Publishers, Mahwah

Shen Y, Jiang L (2020) Labor market outcomes of professional women with two children after the one-child policy in China. J Soc Issues 76(3):632–658. https://doi.org/10.1111/josi.12387

Sideridis G, Saddaawi A, Al-Harbi K (2018) Internal consistency reliability in measurement: aggregate and multilevel approaches. Journal of modern applied statistical methods. J Mod Appl Stat Methods 17(1):15. https://doi.org/10.22237/jmasm/1530027194

Spence M (1973) Job market signalling. Q J Econ 87:355–374. https://doi.org/10.2307/1882010

Stanton JM, Sinar EF, Balzer WK, Julian AL, Thoresen P, Aziz S, Fisher GG, Smith PC (2002) Development of a compact measure of job satisfaction: the abridged job descriptive index. Educ Psychol Meas 62(1):173–191. https://doi.org/10.1177/0013164402062001112

Taj S (2016) Application of signalling theory in management research: addressing major gaps in theory. Eur Manag J 34(4):338–348. https://doi.org/10.1016/j.emj.2016.02.001

Tepper B, Carr JC, Breaux DM, Geider S, Hu C, Hua W (2009) Abusive supervision, intentions to quit, and employees' workplace deviance: a power/dependence analysis. Organ Behav Hum Decis Process 109(2):156–167. https://doi.org/10.1016/j.obhdp.2009.03.004

Tett RP, Meyer JP (1993) Job satisfaction, organisational commitment, turnover intention, and turnover: path analyses based on meta-analytic findings. Pers Psychol 46(2):259–293. https://doi.org/10.1111/j.1744-6570.1993.tb00874.x

The World Bank (2022) Labor force participation rate, female (% of female population ages 15+). https://data.worldbank.org/indicator/SL.TLF.CACT.FE.ZS?locations=CN
Thomas LT, Ganster DC (1995) Impact of family-supportive work variables on work–family conflict and strain. J Appl Psychol 80(1):6–15. https://doi.org/10.1037/0021-9010.80.1.6
Thompson C, Prottas DJ (2006) Relationships among organisational family support, job autonomy, perceived control, and employee well-being. J Occup Health Psychol 11(1):100–118. https://doi.org/10.1037/1076-8998.10.4.100
Thompson C, Beauvais LL, Lyness KS (1999) When work–family benefits are not enough: the influence of work–family culture on benefit utilisation, organisational attachment, and work–family conflict. J Vocat Behav 54(3):392–415. https://doi.org/10.1006/jvbe.1998.1681
Thompson PS, Bergeron DM, Bolino MC (2020) No obligation? How gender influences the relationship between perceived organisational support and organisational citizenship behaviour. J Appl Psychol 105(11):1338–1350. https://doi.org/10.1037/apl0000481
Thomson SB, Wei WX, Swallow P (2018) Equality and harmony: diversity management in China. Chin Manag Stud 13:113–127. https://doi.org/10.1108/CMS-10-2017-0290
Vander Elst T, Bosman J, De Cuyper N, Stouten J, De Witte H (2013) Does positive affect buffer the associations between job insecurity and work engagement and psychological distress? A test among South African workers. Appl Psychol 62(4):558–570. https://doi.org/10.1111/j.1464-0597.2012.00499.x
Weiss HM (2002) Deconstructing job satisfaction. Hum Resour Manag Rev 12(2):173–194. https://doi.org/10.1016/S1053-4822(02)00045-1
Winkler A (2022) Women's labor force participation. IZA World Labor 289:289v2. https://doi.org/10.15185/izawol.289.v2
Wright PM, Dunford BB, Snell SA (2001) Human resources and the resource based view of the firm. J Manag 27(6):701–721. https://doi.org/10.1177/014920630102700607
Zhou Y (2019) The dual demands: gender equity and fertility intentions after the one-child policy. J Contemp China 28(117):367–384. https://doi.org/10.1080/10670564.2018.1542219
Zhu X, Cooke FL, Chen L, Sun C (2022) How inclusive is workplace gender equality research in the Chinese context? Taking stock and looking ahead. Int J Hum Resour Manag 33(1):99–141. https://doi.org/10.1080/09585192.2021.1988680

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Chapter 5
What Drives Older People in China to Work?

Xin Deng, Kym Fraser, and Elisa Jean Jion Nor Pau

Abstract China is posited to become the country with the largest older population in the world with rising longevity and declining fertility. Its myriad retirement schemes and retirement age rules date back to the 1950s and are not suited to the fast-rising ageing population. Its myriad retirement schemes and retirement age rule traced back in the 1950s are struggling to cope with the fast-rising ageing population. There is limited understanding on what motivates people to work at an older age in China. This study examines how access to different types of pensions, human capital and economic factors influence the propensity of people aged 50 and above to work in China. Data sourced from the 2013 and 2015 waves of the China Health and Retirement Longitude Survey (CHARLS) are utilised for the analysis. We find a distinct gender difference in terms of working decisions at an older age: not only are men more likely to work than women, but financial pressure and marriage are correlated with a man's propensity to work. However, these factors have very little impact on women. Contrary to findings reported in previous literature, care responsibilities for parents does not have a statistically significant impact on an individual's working decision. In addition, the impact of caring responsibilities for grandchildren, while statistically significant, does not differ between men and women in China.

Keywords Propensity to Work · Pension · Retirement · Older Workers · China

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X. Deng et al. (eds.), *Ageing in China*, https://doi.org/10.1007/978-981-19-9681-8_5

5.1 Introduction

China, the most populous country in the world, is fast becoming an ageing society, and is posited to be the home of the largest ageing population within a few decades. The size of the working population has been on the decline since the 2010s, with declining fertility and rising longevity (Cai 2010), while the older population has been on the rise in the last few decades (United Nation (UN), 2017). The UN (2017) estimated that the old-age dependency ratio[1] in China will jump from 13.3 in 2015 to 44 by 2050. Including children as dependents, the total dependency ratio[2] will be as high as 67.5 (UN 2017). In other words, in 30 years' time, China will need to deal with the reality of every three working-age persons supporting two dependents. This is a situation that is currently faced by Japan, except that the size of China's population is 10 times as large as Japan.

The Chinese government has attempted various policy initiatives, including the adoption of a three-child policy to deal with the declining fertility with very limited success (The Editor 2021), and realised the need to address serious challenges brought by the ageing population. One of these challenges is the strain on the pension system. One report predicted that pension funds will be exhausted by 2035 without further actions (Zheng 2019). Therefore, it is not surprising that raising the retirement age was put onto the government's agenda (BBC 2015). A lift of the retirement age may force some people in China to stay in the workforce for longer but is unlikely to tackle the problem in the near future due to two reasons. First, the majority of the population in China will not affected by such changes, as they do not have access to pensions that will be affected by such changes. Second, this proposal was met with a strong public resistance (BBC 2015) and is currently put on hold. It is, therefore, more practical to understand what motivates people to work longer, and to boost those factors to encourage people to stay in the workforce for longer.

The last decade has witnessed some changes to the pension system in China and pension schemes vary considerably across gender, sector and location. There are several unique features in China's pension system, which makes it an ideal case to study the determinants driving people to work at an older age. First, there is a huge difference between rural and urban residents. Most rural residents do not have access to a pension unless they work for the government. This situation only changed after a scheme was introduced in 2009 which pays a minimum of RMB55 (USD$8) per month for people over 60 (China State Council 2009). Second, considerable variations exist in terms of access to pension in the urban area. While the access is better in general, there is no universal pension scheme either. There is a divide between

[1] The old-age dependency ratio is the ratio of the population aged 65 years or over to the population aged 15–64. They are presented as number of dependants per 100 persons of working age (15–64) (United Nations 2017).

[2] The total dependency ratio is the ratio of the population aged 0–14 and that aged 65+ to the population aged 15–64. They are presented as number of dependants per 100 persons of working age (15–64).

state and private sectors. People who work for government and state-owned entities normally have access to the state pension scheme. People working for private companies are required to set up a pension account and are able to access the money after reaching retirement age, provided that contributions have been made for more than 15 consecutive years. However, it is not unusual for many small private companies to skip payments and leave workers uncovered. Further, different provinces manage the basic pension scheme for those who are not covered by the state system or own a pension account, and the benefits and conditions differ significantly. Lastly, retirement age differs considerably across different systems. The age to access pension in a personal account is usually 60, but can vary with gender and the local government's regulations. The retirement age in the state system differs between genders and occupations. For public servants, the retirement age is 55 for women and 60 for men. For blue-collar workers, the respective age is 50 for women and 60 for men, and people engaging in heavy labouring jobs are allowed to retire even earlier (China Labour Bulletin 2019). The rules in the state system have been the same since the 1950s. This was when life expectancy was under 50, and people's mobility was restricted by a strict household registration system. As a result, pension benefits vary considerably, ranging from the full pre-retirement salary of the state pension scheme to less than 100RMB per month. Understandably, the central government is motivated to unify the numerous systems and to raise the age to access the pension. It proposed to raise the retirement age gradually from 2022 to reach 65 for both men and women by 2045, but did not outline the timetable to implement the change after receiving a wide-spread public discontent (BBC 2015).

To gain an in-depth understanding of access to the pension and other determinants that influence an older person's propensity work in China, this study utilises household survey data to analyse the working decisions of people aged between 50 and 75 in China. By examining the link between working decisions and a range of health, economic, family structure, responsibility and social security factors, it aims to answer one big question: what drives people to work after the statutory retirement age in China? In light of the current pension system in China, we also wish to explore the gender and regional differences in working decisions at an older age.

The remainder of the Chapter is organised as follows: Sect. 5.2 reviews the literature on factors influencing an older person's decision to work, Sect. 5.3 presents the data and research model, and Sect. 5.4 reports the results. The chapter concludes with a discussion of policy implications of the research findings.

5.2 Literature Review

Earlier research on older people's working decisions has predominately focused on their exit from the labour market, or retirement decisions. The statutory retirement age plays a significant role in such decisions, especially for most people in developed nations with a universal pension system, as a statutory retirement age marks their

access to their pension. A pension provides retirees with the financial means to live without the need to engage in paid work, thus making it possible for people to exit the workforce. A mandatory retirement age could also exert some psychological impact on older people, making them feel less competent and more dependent on others, with potentially negative consequences for their motivation to work (Vallerand et al. 1995). Therefore, pensions and other financial considerations have been the focus of early literature on retirement decisions (Gustman and Steinmeier 1986, 2004), and access to social security has been shown to reduce the hours of working (Vere 2011). For example, Usui et al. (2016) argued that lack of access to a pension explains the significantly higher workload of self-employed men than their salaried peers at the retirement age in Japan.

On the other hand, it is also widely recognised that the age of pension eligibility is just one of the many factors that influence the retirement/working decision of older people. First, chronological or calendar age is neither a reliable gauge of a person's ability to work, nor a reasonable predictor of his/her motivation to work (Kooij et al. 2008, 2011). People at the same age differ significantly in terms of their health and cognitive ability, which can also be affected by their own perceptions and their working environment. Sterns and Miklos (1995) proposed five age concepts in an attempt to consolidate age related factors that may influence people's motivation to continue to work: chronological age, functional age, psychosocial age, organisational age and lifespan age.

Second, family responsibilities could exert a significant influence on older people's working decisions. Care responsibility, for example, has been shown to be a significant determinant on older people's retirement decisions (e.g. Harper 2004; Carr et al. 2018). In contrast to the more homogenous childcare responsibility among younger people, the care responsibility of people close to retirement age may vary from grandchildren to spouses and older parents. The empirical results on its impact on working decisions are mixed. Van Houtven et al. (2013) found caregivers (aged 50–70 years) are less likely to work (men) or more likely to retire (women), compared to non-caregivers. Women are found to be more likely to reduce their working hours (Harper 2004) or exit full time employment (Brown et al. 2014). Others suggest that the link between caring responsibilities and employment is weak (Leigh 2010), or that caring increases the workload of carers rather than reduces their propensity for paid employment (Phillips 1994). Some even reported positive associations between caregiving and paid work. King and Pickard (2013), for example, found that women aged 50 and above were more likely to remain in employment (compared to non-caregivers) if they were providing low intensity care (less than 10 h a week). Carr et al. (2018) revealed some nuances on the link between caregiving and employment: full time workers that provided care within the household were more likely to stop working compared with non-caregivers. However, such action is mainly taken by women: only women who cared for a partner/spouse are more likely to stop working, and women who provide more than 10 h of care are significantly more likely to exit the workforce compared with those who do not provide any care.

In China, especially in the rural areas, caring for a grandchild is perceived as a grandparent's responsibility, and maintaining and caring for aged parents is also the responsibility of children (mainly sons). However, there is limited research on how such responsibility influences a carers' employment decision. Giles et al. (2011) reported that having living parents had a positive impact on a woman's propensity to work, but having grandchildren had a negative impact on a man's propensity to work. Feng and Zhang (2018) investigated grandparents' retirement on a grandchild's care provision and care time in urban China and reported some gender differences: women assume more childcare responsibilities regardless of whether more effort is demanded, while the input from retired men toward grandchild care is driven by an increase in the demand.

While previous studies have provided useful insights on factors that influence older people's decision to work, it is unclear how those findings can be applied in China. More importantly, it remains unknown how these factors affect different population cohorts such as rural and urban residents, males and females, and different age cohorts. This study aims to address these questions by providing a holistic picture of how both men and women's propensity to work is shaped by health, human capital, financial factors, as well as family responsibilities in China.

5.3 Methodology

To answer the research question, we started with the framework of the labour supply decision and adjusted our model by considering the availability of data and the Chinese context.

5.3.1 Model and Explanatory Variables

Following Giles et al. (2011), the framework for examining labour supply decisions is built on the general model of labour supply:

$$L_i^S = f\left(W_i^h, I_i, H_i, T_i, X_i, V_j\right) \tag{5.1}$$

Where the employment of an individual i, L_i^S, is a function of household wealth, W_i^h, income, I_i, health status of the individual, H_i, an individual's time endowment, Ti, a vector of individual and household characteristics X_i,, and potential unobserved characteristics related to location, V_j.

As Giles et al. (2011) point out, identifying effects of those variables is likely to be complicated by the endogeneity issue among those variables. For example, health status may affect income through productivity, available time, and available household wealth, and income is related to household wealth.

To address this issue, this study estimates reduced form models by excluding income and wealth and uses an opposite measure of wealth to evaluate the impact of a financial factor: debt. First, financial pressure, instead of the desire for more wealth, is more likely to impose a stronger incentive for people to work, and such incentives may be stronger in the later stages of life. Second, current employment decisions will impact on income significantly, but impact on debt to a lesser extent. Third, debt is a more reliable measure compared with wealth and income, as people in China tend to be reluctant to disclose their income and wealth level.

A logit model is used to check the individuals' employment decisions conditioned on their household economic status, health condition and care responsibilities. The model is shown as:

$$\begin{aligned}\mathrm{Ln}\left(\frac{P(working)}{p(not\ working)}\right) &= \beta_0 + \sum_{b=1}^{n}\beta_b(demographic\ characteristics) \\ &+ \sum\nolimits_{h=1}^{n}\beta_h(health) + \sum\nolimits_{f=1}^{n}\beta_f(Financial\ status) \\ &+ \sum_{c=1}^{n}\beta_c(care\ responsibilities\ ) + \mu_i\end{aligned}$$

5.3.2 Data and Variables of Interest

Data are sourced from the 2013 and 2015 wave of China Health and Retirement Longitude Survey (CHARLS), which was conducted by the China Centre for Economic Research, Institute of Social Science Survey, Peking University, China. The CHARLS data covers twenty-nine provinces and 150 counties including 18,604 individuals in 2013 and 20,453 individuals in 2015. The survey is structured into seven areas: demographic background, health status and functioning, health care and insurance, work retirement and pension, income, expenditures and assets, housing characteristics and biomarkers.

The dependent variable is employment status, which is derived from the primary question (fa002): "Do you work at least one hour last week?" The question was chosen because it also includes an explanation that only activities such as earning a wage, running a business and unpaid work for a family business are considered as work, and volunteering and household chores are not considered to be work. Respondents who answered "no" to the primary question are also included if they answered "yes" to the subsequent question (fa003): "Do you have a job but are temporarily laid-off, or on sick or other leave, or in-job training?" The variable is dichotomous with a value of 1 if the respondent was working, and 0 otherwise.

The independent variables are classified into the following four categories:

Demographic Variables Demographic variables include age, gender, marriage status, location and education levels. They are available in or constructed from CHARLS. The *age* variable is the age of the respondent at the end of the survey year. *Gender* is a dummy variable with 0 to be male and 1 to be female. *Location* is measured in two ways due to data limitations: in the 2013 wave, *Hukou* (household registration) is used to indicate the location into urban and rural areas. We had to drop this variable in the 2015 wave data due to insufficient observations. Instead, we used the area of current residence to indicate the location, which has three categories: urban, semi-urban and rural. Among them, semi-urban variables include five categories: a combination zone between urban and rural areas, the town centre, zhengxiang area, special area and township central. *Education levels* are measured at five levels. Illiterate covers those who had no formal education or are illiterate. Primary and lower includes those who completed primary education and those who did not finish primary school but are capable of reading or writing. Those who have reported to have completed junior high school are categorised as junior high. Those who have completed senior high school and vocational school are categorised as senior high. The rest fell into the category of tertiary education. This variable is only available for the 2013 wave, which explicitly asked the respondent's education level. The question related to education in the 2015 wave was amended to "whether your education level has changed since the last wave". Since many respondents were interviewed for the first time in 2015, there is no way to retrieve their education level. As a result, this variable was dropped for the 2015 data. We expected that the propensity to work is positively related to education, but negatively related to age, marriage, female and rural residency.

Health Disability, health condition and cognitive ability are used to represent the physical and mental health condition of the respondent. The disability variable has the value of "1" if the respondent reported any type of disability, "0" otherwise. The health condition variable is derived from the question asking the respondent whether they have any difficulty with running or jogging about 1 kilometre. Those who reported having some difficulties were classified as "fair" health, and those who reported having no difficulties were classified as "good" health. A self-evaluated memory is used to represent cognitive ability, which has five categories ranging from 1 (excellent) to 5 (very poor). The variable for cognitive ability is entered into the analysis as a continuous variable as such treatment is accepted and has been shown to have minimum impact on the regression outcome (Mijke et al. 2012). We expected a negative correlation between disability and propensity to work, and a positive relationship between health and cognitive condition and a propensity to work.

Financial Status is measured by debt and pension. The debt variable was entered as the logarithm of the actual debt, which is in RMB. This treatment is adopted mainly to avoid an small coefficient for the variable in the presentation of the regression results. Debt variable excluded home loans, which is how the data was collected.

CHARLS collected information on nine types of pension: pension from the government and affiliates, basic retirement insurance for enterprise employees, supplementary retirement insurance for enterprise employees, commercial retirement insurance, urban and rural resident retirement insurance, urban resident retirement insurance, new rural social retirement insurance and subsidies for older people. Since only the first two types of pensions provide an amount of money that allows the retirees to live comfortably, we merged all those types into two groups: a state pension and a basic pension. The former includes the first two types of the pension, and the rest are classified as a basic pension. We expected a positive relationship between debt and propensity to work, and that access to pension would reduce a person's willingness to work.

Caring Responsibilities track the caring responsibility of the respondent's grandchildren and parents. In terms of a caring responsibility for grandchildren, we used a dummy variable which has the value of 1 if the respondent reported having at least one grandchild and 0 otherwise. The caring responsibility for parents is also a dummy variable with the value of 1 if the respondent reported that he/she had spent time taking care of his/her parents and parents-in-law. We expected a negative relationship between care responsibility and a propensity to work and expected such effect would be stronger for females.

5.4 Findings

To observe the different determinants across different population cohorts we first estimated the model using the whole sample, then broke the sample into different demographic groups and re-ran the regression to observe the change in terms of coefficients and significance levels in order to understand the factors influencing different cohorts.

As shown in Fig. 5.1, the proportion of people who are working decreases with age, and the sharpest contrast is between males in the age cohort before and after turning 60, suggesting retirement age may have a role to play. We can also observe a significantly higher proportion of men who were working compared with women, however, the gap between males and females decreased with the age, and there is little gender difference among people who are over 70. Another interesting observation is that the proportion of working people was markedly higher in 2015 compared with 2013 across all age groups and both genders.

Table 5.1 presents the descriptive statistics of the sample, which only includes people aged between 50 and 75. Considering the tiny proportion of working people (less than 3%) among those aged above 75, as well as the small sample size, we feel that the motivations behind those who still work after 75 could be quite different and it is prudent to leave them out.

The sample contains a similar number of male and female respondents, with a slightly higher proportion of females (51%). The majority of the respondents are

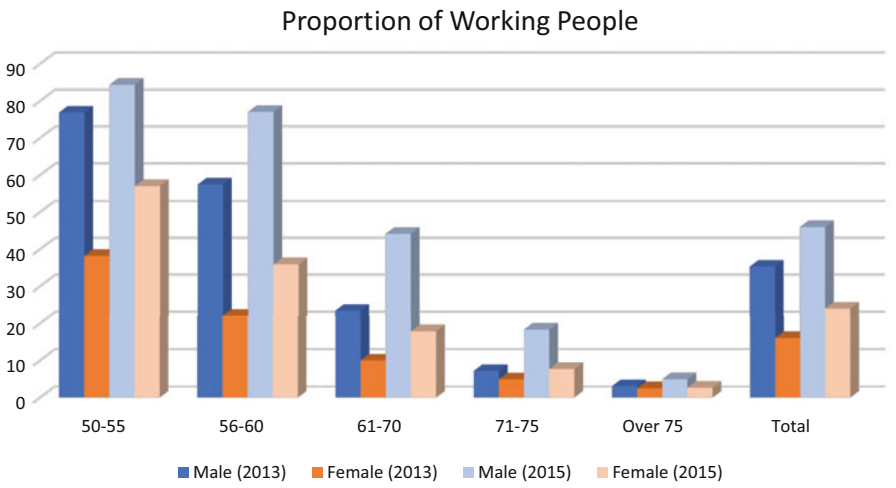

Fig. 5.1 Proportion of working individuals after 50. Source: Calculated from CHALS 2013 and 2015 wave

Table 5.1 Descriptive statistics

	2013				2015			
Variable	Mean	SD.	Min	Max	Mean	SD	Min	Max
Employment status	0.294	0.456	0	1	0.339	0.473	0	1
Age	60.7	6.86	50	75	61.63	7.14	50	75
Marriage	0.868	0.338	0	1	0.869	0.338	0	1
Gender	0.512	0.500	0	1	0.515	0.500	0	1
Location: Urban	0.240	0.427	0	1	0.144	0.351	0	1
Location: Semi-urban	NA				0.142	0.349	0	1
Disability	0.176	0.381	0	1	0.131	0.337	0	1
Cognitive ability	1.92	0.858	1	5	1.90	0.838	1	5
Log debt	0.607	2.424	0	14.5	0.640	2.531	0	15.6
Pension: State	0.129	0.336	0	1	0.08	0.271	0	1
Pension: Basic	0.078	0.268	0	1	0.576	0.494	0	1
Having grandchildren	0.482	0.500	0	1	0.406	0.491	0	1
Caring for parents	0.043	0.202	0	1	NA			
Observations	5379				7611			

Note: *Hukou* (household registration) is used for 2013 data and current permanent address is used for 2015 data as the location of the respondent due to insufficient response to "*hukou*" variable in 2015 data

located in rural areas, whether we measure the location using household registration (76%, 2013) or actual residency (71%, 2015). More than 10 percent of the sample has at least one form of disability, and the share of disabled people is lower in 2013 than in the 2015 sample. Nearly half of the respondents in the sample have grandchildren.

5.4.1 Overall Impact

Table 5.2 presents the results from the overall sample. Results have been largely consistent in both waves. Being female and being married are associated with a lower propensity to work. Health also plays a significant role in influencing people's decision to work: disability is negatively associated with a propensity to work, and a person's propensity to work increases with better health conditions and cognitive abilities. Location is another interesting variable, whereby having an urban *hukou* is associated with a lower propensity to work in the 2013 data. However, this correlation becomes positive in the 2015 data, and it is statistically significant for those residing in the semi-urban areas.

Financial variables depict an interesting picture. Similar to what is reported in the literature, debt is positively associated with a propensity to work, suggesting that financial pressure remains a significant factor for older people's decision to work. Access to a pension has long been argued to have a negative impact on labour supply, and our results largely support this argument. Our results, however, indicate the heterogeneous impact of different types of pensions. People with access to a state pension are significantly less likely to work than those who do not have such an access. However, the propensity to work of those who have access to a basic pension is not statistically different from those without pension. Our findings provide further evidence to support a previous study indicating little impact of the New Rural Pension Scheme (NRPS) on the labour supply behaviour of the elderly in rural China (Ning et al. 2016). In addition, our study suggests that it is likely to be the case for pension schemes providing similarly low coverage. This indicates that the amount of pension offered in the basic pension schemes is not high enough to have a significant impact on work decisions.

Both physical and mental health are important determinants for work. Having any form of disability is associated with a lower propensity to work, and people who reported their health condition as "good" or "excellent" have a significantly higher probability to work. Cognitive ability is also positively associated with a higher chance of working. Human capital, as predicated, is positively related to a propensity to work: people who have completed secondary school and above have a much higher chance of working compared with those who are illiterate.

Care responsibility presents an interesting contrast between caring for parents and grandchildren. Having a grandchild is associated with a lower propensity to work, however, individuals caring for their parents do not seem to be different from the rest of the sample in terms of their propensity to work. One possible explanation could be the small number of observations, as there were less than 5% respondents who reported spending time taking care of their parents.

To further investigate how the care responsibility for grandchildren impacts on a propensity to work, we constructed a few variables to capture the impact of care responsibilities. Those variables included the number of grandchildren, time period of caring for grandchildren, the satisfaction of the relationship with the children, and the number of people who had meals together. However, none of these variables are

Table 5.2 Factors influencing propensity to work

	2013	2015
Female	−0.162***	−0.227***
	(−0.011)	(−0.010)
Age	−0.014***	−0.018***
	(0.000)	(0.000)
Married	−0.051***	−0.042***
	(−0.015)	(−0.015)
Urban	0.069***	0.015
	(−0.014)	(−0.013)
Semi-Urban	NA	0.044***
		(−0.013)
Disability	−0.057***	−0.037***
	(−0.014)	(−0.015)
Health: fair	0.089***	0.082***
	(−0.018)	(−0.018)
Health: Good	0.141***	0.130***
	(0.012)	(0.012)
Cognitive	0.011*	0.014***
	(0.006)	(0.006)
Debt	0.009***	0.006***
	(−0.002)	(−0.002)
State pension	−0.222***	−0.193***
	(−0.016)	(−0.016)
Basic pension	−0.016	−0.002
	(−0.019)	(−0.011)
Grandchild	−0.055***	−0.071***
	(−0.011)	(−0.01)
Care for parent	0.035	NA
	(−0.028)	
Edu_Primary	0.003	NA
	(0.014)	
Edu_Junior high	0.035**	NA
	(0.018)	
Edu_Senior high	0.064***	NA
	(0.021)	
Edu_Tertiary	0.109***	NA
	(0.0.32)	
Constant	1.230***	1.667***
	(−0.055)	(−0.049)
Adjusted R^2	0.2770	0.3283
No. of Obs.	5379	6581

Note: standard error in the brackets
*, **, *** represent significance level at 10, 5 and 1%, respectively. The number of observations is smaller than the initial sample size due to dropped observations as a result of missing value

statistically significantly related to a propensity to work. That prompts us to consider whether age, instead of the responsibilities, is the main driving force behind the negative correlation between grandchildren and working decisions. We further investigated this issue in Sect. 5.4.3.

5.4.2 Gender Difference

We divided the sample by gender and age cohort to investigate how the impact of the factors mentioned above changed with different genders.

Table 5.3 presents the results of male and female samples across the two waves. The factors that have similar impacts on the propensity to work for both males and females are age, disability, pension, health status and care responsibility. Both men and women are less likely to work when they get older, have access to state pension, or have a disability. And they are more likely to work if their health condition is good or excellent. Interestingly, contrary to what has been reported by other studies, there is no gender difference in terms of care responsibility. Having a grandchild would reduce the propensity to work for both men and women, and the need to care for parents has no significant impact on either gender.

A noticeable contrast between males and females is the role of marriage. Married males are more likely to work, while married females are less likely to work, with both correlations being significant. That prompts us to think that the traditional views of a husband and a wife still have a considerable impact on a person's decision to work.

Another interesting change is education level. Once the sample is divided into two, it appears that the impact of education on the propensity to work is solely driven by females. There is no statistically significant difference in a propensity to work across different levels of education among males.

5.4.3 Location and Age Effect

Tables 5.4 and 5.5 present the results of subsamples by location and age cohorts.

Surprisingly, the urban and rural differences in terms of the way that those determinants influence working decisions are not as significant as we initially hypothesised. The factors that work differently in rural and urban areas are marriage, disability and education. While being married and having a disability reduced the propensity to work among non-rural residents, they do not seem to have much impact on urban residents. Education, on the other hand, only has a significant impact on rural residents. The coefficient of the marriage variable may be interpreted as marriage playing a role of social security, and such impact is more evident in the rural areas where access to a pension is limited. The role of a pension seems to be consistent with the findings of the aggregate model: only access to the state pension

Table 5.3 Gender difference

	Male sample		Female sample	
	2013	2015	2013	2015
Married	0.044*	0.062***	−0.067***	−0.069***
	(0.025)	(0.024)	(0.019)	(0.019)
Age	−0.019***	−0.022***	−0.009***	−0.015***
	(0.001)	(0.001)	(0.001)	(0.000)
Urban	−0.068***	0.010	0.047***	−0.007
	(0.021)	(0.019)	(0.019)	(0.018)
Semi-Urban	–	0.025	–	0.061***
		(0.019)		(0.018)
Disability	−0.079***	−0.051***	−0.035**	−0.023
	(0.021)	(0.021)	(0.018)	(0.020)
Health: Fair	0.132***	0.128***	0.055**	0.059***
	(0.028)	(0.027)	(0.023)	(0.023)
Health: Good	0.160***	0.139***	0.118***	0.124***
	(0.018)	(0.018)	(0.015)	(0.016)
Cognitive	0.015	0.022***	−0.001	0.003
	(0.009)	(0.008)	(0.008)	(0.008)
Debt	0.006*	0.005**	0.010***	0.067**
	(0.003)	(0.003)	(0.003)	(0.003)
State pension	−0.244***	−0.240***	−0.150***	−0.117***
	(0.024)	(0.023)	(0.023)	(0.022)
Basic pension	−0.014	0.006	−0.001	−0.008
	(0.031)	(0.016)	(0.024)	(0.015)
Grandchild	−0.055***	−0.086***	−0.048***	−0.073***
	(0.017)	(0.016)	(0.015)	(0.014)
Care for parent	0.064	(NA	−0.009	–
	(0.044)		(0.033)	
Education_Primary&Low	−0.019		0.026	
	(0.026)		(0.016)	
Education_Junior high	−0.004		0.044**	
	(0.030)		(0.023)	
Education_Senior high	−0.012		0.122***	
	(0.033)		(0.027)	
Education_Tertiary	0.045		0.182***	
	(0.045)		(0.052)	
Constant	1.496***	1.792***	0.786***	1.245***
	−0.085	−0.073	(0.068)	(0.065)
Pseudo R^2	0.3498	0.3897	0.1443	0.1864
No. of Obs.	2482	3051	2873	3530

Note: standard error in the brackets
*, **, *** represent significance level at 10, 5 and 1%, respectively

Table 5.4 Rural and urban differences

	Urban	Rural	Urban	Semi-Urban	Rural
	2013		2015		
Age	−0.017*** (0.001)	−0.013*** (0.001)	−0.020*** (0.001)	−0.022*** (0.001)	−0.015*** (0.006)
Female	−0.158*** (0.017)	−0.157*** (0.014)	−0.210*** (0.017)	−0.214*** (0.02)	−0.208*** (0.012)
Married	−0.043* (0.025)	−0.058*** (0.018)	−0.040* (0.024)	−0.096*** (0.032)	−0.003 (0.016)
Disability	−0.027 (0.024)	−0.081*** (0.016)	−0.121** (0.055)	−0.047 (0.056)	−0.120*** (0.028)
Health: Fair	+0.073*** (0.026)	+0.104*** (0.023)	0.043 (0.028)	+0.114*** (0.032)	+0.103*** (0.021)
Health: Good	+0.113*** (0.018)	+0.161*** (0.014)	+0.096*** (0.019)	+0.118*** (0.023)	0.176*** (0.014)
Debt	+0.008** (0.003)	+0.004* (0.02)	+0.010** (0.003)	+0.009*** (0.003)	0.009 (0.003)
State pension	−0.249*** (0.019)	−0.106** (0.044)	−0.170*** (0.019)	−0.191*** (0.030)	−0.155*** (0.035)
Basic pension	−0.055* (0.031)	+0.009 (0.022)	0.009 (0.022)	−0.02 (0.021)	0.002 (0.012)
Grandchild	−0.047*** (0.017)	−0.076*** (0.013)	−0.095*** (0.018)	−0.065*** (0.021)	−0.056*** (0.013)
Care for parent	+0.093*** (0.030)	−0.002 (0.037)	NA	NA	NA
Education_Primary	+0.006 (0.023	+0.059*** (0.014)	NA	NA	NA
Education_High school	+0.018 (0.029)	+0.160*** (0.031)	NA	NA	NA
Education_Tertiary	+0.057** (0.028)	+0.273*** (0.073)			
Pseudo R^2	0.3625	0.2760	0.4076	0.3679	0.3052
No. of observations	2345	3,737	2,188	1,711	4,629

Note: standard error in the brackets
*, **, *** represent significance level at 10, 5 and 1%, respectively. 2013 data divides the sample using the household registration information (Hukou), and 2015 data divides the sample using residential location information

scheme has a significant and negative impact on propensity to work, while the access to the basic pension scheme does not change the propensity to work. Our results seem to tell a different story from Ning et al. (2016), who reported that the new rural pension scheme decreased the labour supply of older people in rural China. One plausible explanation for the difference is that access to a basic pension scheme, such as the new rural pension scheme, does not alter older people's intention to work, but may prompt them to reduce the length of working hours.

Reaching the retirement age has been highlighted as a major factor to stop working. Giles et al. (2015) reported a jump in transition to retirement for men at

Table 5.5 Age differences

		2013			2015	
	50–55	56–65	66–75	50–55	56–65	66–75
Age	−0.025*** (0.007)	−0.022*** (0.003)	−0.007*** (0.002)	−0.014** (0.007)	−0.027*** (0.003)	−0.015*** (0.003)
Female	−0.301*** (0.030)	−0.203*** (0.020)	−0.053*** (0.016)	−0.239*** (0.024)	−0.361*** (0.193)	−0.126*** (0.019)
Married	−0.054 (0.054)	0.026 (0.028)	−0.015 (0.019)	0.010 (0.050)	−0.027 (0.034)	0.019 (0.025)
Urban	0.092*** (0.033)	0.053** (0.024)	0.021 (0.023)	+0.121*** (0.030)	−0.006 (0.024)	−0.069*** (0.024)
Semi-Urban	NA	NA	NA	+0.128*** (0.028)	+0.052 (0.023)	−0.016 (0.025)
Disability	−0.148*** (0.042)	−0.108*** (0.027)	−0.010 (0.018)	−0.023 (0.039)	0.005 (0.023)	−0.094** (0.025)
Health: Fair	+0.173*** (0.047)	+0.094*** (0.032)	+0.077*** (0.026)	+0.197*** (0.418)	+0.121*** (0.032)	+0.031 (0.031)
Health: Good	+0.216*** (0.032)	+0.157*** (0.020)	+0.066*** (0.017)	+0.177*** (0.032)	+0.166*** (0.022)	+0.126*** (0.019)
Cognitive	−0.002 (0.016)	0.007 (0.011)	0.001 (0.009)	0.008 (0.014)	0.026** (0.011)	−0.003 (0.011)
Debt	0.004 (0.004)	+0.014*** (0.004)	−0.006 (0.005)	0.003 (0.003)	0.004 (0.003)	+0.015*** (0.005)
State pension	−0.222*** (0.047)	−0.210*** (0.028)	−0.097*** (0.026)	−0.245*** (0.070)	−0.141*** (0.031)	−0.124*** (0.026)
Basic pension	−0.042 (0.049)	+0.007 (0.033)	−0.004 (0.027)	−0.017 (0.025	−0.002 (0.020)	+0.036* (0.021)
Grandchild	−0.131*** (0.029)	−0.022 (0.019)	0.003 (0.015)	−0.129*** (0.031)	−0.094*** (0.019)	−0.015 (0.018)

(continued)

Table 5.5 (continued)

		2013			2015	
	50–55	56–65	66–75	50–55	56–65	66–75
Care for parent	0.046 (0.046)	−0.004 (0.045)	−0.001 (0.045)	NA	NA	NA
Education_Primary	−0.024 (0.048)	+0.063* (0.025)	0.015 (0.018)	NA	NA	NA
Education_Junior high	−0.001** (0.044)	−0.054* (0.031)	0.035 (0.026)	NA	NA	NA
Education_Senior high	0.012 (0.052)	0.051 (0.038)	0.061* (0.033)			
Education_Tertiary	0.040 (0.081)	+0.127** (0.061)	+0.095** (0.03)	NA	NA	NA
Constant	1.956*** (0.407)	+1.773*** (0.209)	+0.589*** (0.186)	1.348*** (0.361)	+2.19*** (0.194)	+1.275*** (0.228)
Pseudo R^2	0.2445	0.1748	0.0359	0.1618	0.2489	0.1032
No. of Obs	1081	2102	1415	1373	2294	1847

Note: + indicates positive correlation, and – indicates negative correlation

*, **, *** represent significance level at 10, 5 and 1%, respectively, ≈≈≈ represents insignificant correlation. NA indicates that the relevant variable is not available

age 60 and for women at age 50 based on the CHARLS data, and our results also indicate that factors influencing people's working decisions differ before and after the statutory retirement age. While age, gender, health condition and access to the state pension remain to be significant factors on the working decisions of all age cohorts, the significance of marriage as an explanatory variable disappeared after the sample was divided into different age groups. In addition, the negative impact of grandchildren on a working decision becomes insignificant among the older age group. The latter is easy to understand given that the grandparents are needed only when children are young, and it is likely that people above 65 will have a grandchild well into secondary school, thus they are no longer needed. But the insignificance of marriage is interesting, especially considering the significance of this variable in all other models. Education is another interesting variable. While it does not have a significant impact on the working decisions of people aged 55 and below, it has significant impact on people who are above 65, which suggests that human capital is likely to be a very important factor driving people to work until a much older age.

5.5 Discussion and Conclusions

Post-retirement work has the potential to benefit society, organisations and individuals. It can mitigate skill shortage problems and relieve pressure on the pension system, while enabling organisations to continue to make use of know-how and organisation-specific knowledge built by the employees over the years. Post-retirement work in professional fields has been reported to be associated with better physical and mental health (Wang 2007), which can lead to a higher level of life satisfaction. Wöhrmann et al. (2014) also identified generativity, meaningful occupation, mental and physical fitness, and social integration as benefits for working after retirement, in addition to any financial benefit. However, public resistance to raising the retirement age is strong, and a higher retirement age has a profound impact on an individual's career and personal life planning. This can lead to unnecessary stress or even social unrest if forced upon people without considering the possible consequences.

This study sheds light on the working decisions of older people in China. Consistent with previous literature, we found that the propensity to work declines with age, and people in good health are more likely to work than those in poor health. The impact of age and health is consistent across various population cohorts.

More importantly, this research depicts how other factors, such as access to the pension, can impact an older person's propensity to work in China, and how these factors impact various cohorts. First, we found a significant gender difference in terms of the role of marriage on working decisions. Being married is positively associated with a man's propensity to work, but it is negatively associated with a woman's decision to work. This indicates that the traditional view of treating males as the breadwinner still dominates Chinese society after more than 50 years of advocating for gender equality. Second, evidence exists regarding the differences

between rural and urban residents in terms of determinants of the propensity to work. Being married or having a disability has a statistically significant impact on non-urban residents' propensity to work, but not on urban residents' propensity to work. Education seems to encourage rural residents to work but it does not make much difference on an urban residents' propensity to work. Third, the role of education seems to be more evident among certain population cohorts. Education has a positive impact on the propensity to work for females, rural residents and people who are over the age of 56. Fourth, different from the previous studies, this study does not find significant gender differences in terms of care responsibility. Having grandchildren seems to reduce a propensity to work for both males and females, and such effect is consistent irrespective of the location. In other words, residing in the urban areas where childcare facilities are more readily available does not seem to make a difference to a grandparent's decision to work. Last, we find the benefits of the pension, instead of the access to a pension, shapes people's decision to work. The propensity to work for people who have access to the basic level of pension is no different from those who do not have access to any pension. Only access to a state pension has any statistically significant impact to reduce a person's propensity to work.

This study also offers some insights for future policy making. First, our results indicate that an extension of the retirement age is likely to have a relatively small impact on the employment decisions of older people. Not only does the majority of the population not have access to a pension, but this study also shows that the basic pension schemes in China do not make any significant difference to an older person's propensity to work. Such a finding, on the one hand, provides some support for the government's proposal to extend the retirement age: delaying access to a state pension is likely to keep people in the workforce for longer. On the other hand, it also suggests that extending the retirement age itself is not sufficient to address the issues with an ageing workforce. Such a delay is only effective in encouraging those on generous pension schemes, such as government and firm pensions, to stay in the workforce longer. However, the influence is likely to be limited, as those who do not have access to those pension schemes are vastly outnumbered by those who do have access[3].

Our study also indicates that the responsibilities of caring for grandchildren can have a negative impact on employment decisions across different genders, regions, and especially among the younger age cohorts. That suggests that quality and affordable childcare may be a necessary condition to encourage older people's labour market participation, irrespective of gender and location. Lastly, our results support the positive link between the propensity to work and human capital and health, as already identified in the literature. With improvements in education and access to health care, it appears that working longer is an inevitable trend.

[3] CHARLS 2015 wave data indicates less than 15% respondents receive or participate in the state pension scheme (pension from government agencies and affiliates, and firms).

This study has also raised some questions that require further research. The role of marriage on the propensity to work, for example, is quite puzzling. It is worth exploring why it has the opposite impact on a male's and a female's propensity to work, and why its influence becomes insignificant once the sample is divided into difference age cohorts. It is also worth noting that the propensity to work is likely to change. It will be interesting to determine what factors will drive these changes over time.

References

BBC (2015) Pension: China announced timeline to raise retirement age (*in Chinese*). Retrieved from: https://www.bbc.com/zhongwen/simp/china/2015/03/150311_ana_china_retirement_age

Brown M, Dodgeon B, Goodman A (2014) Caring responsibilities in middle age: evidence from 1958 National Child Development Study at Age 55 (Briefing paper). Centre for Longitudinal Studies, London

Cai Y (2010) China's below-replacement fertility: government policy or socioeconomic development? Popul Dev Rev 36(3):419–440. https://doi.org/10.1111/j.1728-4457.2010.00341.x

Carr E, Murray ET, Zaninotto P, Cadar D, Head J, Stansfeld S et al (2018) The association between informal caregiving and exit from employment among older workers: prospective findings from the UK household longitudinal study. J Gerontol B 73:1253–1262. https://doi.org/10.1093/geronb/gbw156

China Labour Bulletin (2019) China's social security system. Retrieved from: https://clb.org.hk/content/china%E2%80%99s-social-security-system

China State Council (2009) Guideline on the trial of new rural social pension scheme. Retrieved from: http://www.mohrss.gov.cn/gkml/zcfg/gfxwj/201407/t20140717_136099.html

Dubois H, Anderson R (2012) Income from work after retirement in the EU. Publications Office of the European Union, Luxembourg

Feng J, Zhang X (2018) Retirement and grandchild care in Urban China. Fem Econ 24(2):240–264. https://doi.org/10.1080/13545701.2017.1370120

Giles J, Wang D, Cai W (2011) The labor supply and retirement behavior of China's older workers and elderly in comparative perspective, IZADiscussion Papers, No. 6088, Institute for the Study of Labor (IZA), Bonn. http://nbn-resolving.de/urn:nbn:de:101:1-201111213156

Giles J, Lei X, Wang Y, Zhao Y (2015) One country, two systems: evidence on retirement patterns in China. World Bank\Peking University, Washington, DC\Beijing

Gustman A, Steinmeier T (1986) A structural retirement model. Econometrica 54:555–584

Gustman A, Steinmeier T (2004) Social security, pensions and retirement behavior within the family. J Appl Econ 19:723–738

Harper S (2004) Family support of the elderly and female labour supply: trade-offs among caregiving, financial transfers, and work – evidence from the US Health and Retirement Survey. In: Harper S (ed) Families in ageing societies: a multi-disciplinary approach. Oxford University Press, Oxford. https://doi.org/10.1093/0199251169.003.0002

King D, Pickard L (2013) When is a carer's employment at risk? Longitudinal analysis of unpaid care and employment in midlife in England. Health Soc Care Community 21(3):303–314. https://doi.org/10.1111/hsc.12018

Kooij D, de Lange A, Jansen P, Dikkers J (2008) Older workers' motivation to continue to work: five meanings of age. J Manag Psychol 23(4):364–394. https://doi.org/10.1108/02683940810869015

Kooij DTAM, De Lange AH, Jansen PGW, Kanfer R, Dikkers JSE (2011) Age and work-related motives: results of a meta-analysis. J Organ Behav 32(2):197–225
Leigh A (2010) Informal care and labor market participation. Labour Econ 17(1):140–149. https://doi.org/10.1016/j.labeco.2009.11.005
Mijke R, Brosseau-Liard PÉ, Savalei V (2012) When can categorical variables be treated as continuous? A comparison of robust continuous and categorical SEM estimation methods under suboptimal conditions. Psychol Methods 17(3):354–373
Mooney A, Statham J, Simon A (2002) The pivot generation: informal care and work after fifty. Policy Press, Bristol, UK
Ning M, Gong J, Zheng X, Zhuang J (2016) Does new rural pension scheme decrease elderly labor supply? Evidence from CHARLS. China Econ Rev 41:315–330. https://doi.org/10.1016/j.chieco.2016.04.006
Phillips J (1994) The employment consequences of caring for older people. Health Soc Care Community 2(3):143–152. https://doi.org/10.1111/j.1365-2524.1994.tb00159.x
Sterns HL, Miklos SM (1995) The aging worker in a changing environment: organizational and individual issues. J Vocat Behav 47(3):248–268. https://doi.org/10.1006/jvbe.1995.0003
The Editor (2021) China's 2020 fertility and adoption of a three-child policy. Popul Dev Rev 47(3):877–879. https://doi.org/10.1111/padr.12434
United Nations (2017) World population prospects: the 2017 revision, volume II: demographic profiles. Department of Economic and Social Affairs/Population Division, pp 189–191. https://population.un.org/wpp/Publications/Files/WPP2017_Volume-II-Demographic-Profiles.pdf
Usui E, Shimizutani S, Oshio T (2016) Are Japanese men of pensionable age underemployed or overemployed? Jpn Econ Rev 67:150–168. https://doi.org/10.1111/jere.12094
Vallerand RJ, O'Connor BP, Hamel M (1995) Motivation in later life: theory and assessment. Int J Aging Hum Dev 41(3):221–238. https://doi.org/10.2190/YLFM-DGUE-HRL2-VWLG
Van Houtven CH, Coe NB, Skira MM (2013) The effect of informal care on work and wages. J Health Econ 32(1):240–252. https://doi.org/10.1016/j.jhealeco.2012.10.006
van Solinge H, Henkens K (2008) Adjustment to and satisfaction with retirement: two of a kind? Psychol Aging 23:422–434. https://doi.org/10.1037/0882-7974.23.2.422
Vere JP (2011) Social security and elderly labor supply: evidence from the health and retirement study. Labour Econ 18(5):676–686. https://doi.org/10.1016/j.labeco.2011.02.001
Wang M (2007) Profiling retirees in the retirement transition and adjustment process. J Appl Psychol 92(2):455–474. https://doi.org/10.1037/0021-9010.92.2.455
Wöhrmann AM, Deller J, Wang M (2014) A mixed-method approach to post-retirement career planning. J Vocat Behav 84:307–317. https://doi.org/10.1016/j.jvb.2014.02.003
Zheng B (2019) China pension actuarial report: 2019–2050, China Labor and Social Economic Press

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Chapter 6
Family Care or Work? Impact of Family Elderly Care on the Propensity to Work

Dan Li and Xi Chen

Abstract In a rapidly ageing society, the demand for family care is increasing. Understanding the relationship between family elderly care and the propensity to work can help us to understand what motivates individuals' choices for family care and work. Based on the 2018 China Health and Retirement Longitudinal Study (CHARLS), this study analyses the influence of family elderly care on the propensity to work. While no statistically significant correlation was detected between caring for elderly and the propensity to work, we found that providing elderly care significantly reduced the probability of the propensity to work after ruling out the endogeneity of elderly care with IV model. And health partially mediated the overall association between elderly care and the propensity to work. This study sheds some light on the complexity surrounding family care and the propensity to work in China.

Keywords Family elderly care · Propensity to work · Employment · Health

6.1 Introduction

Rapid population aging and high risks of disability among the elderly in China have driven up the demand for elderly care. The Organization for Economic Cooperation and Development (OECD) estimates that on average around 70–90% of those who provide care are family members (Fujisawa and Colombo 2009). In China, 90% families are in need of elderly care or child care (Chai et al. 2021) and because of the one-child policy, a couple caring for four parents has become a common phenomenon in China (Chen and Standing 2007). Rising demand for family elderly care means more individuals are faced with the struggle between work and caring for family.

The relationship between family elderly care and work has been studied extensively. The labour supply decisions examined include a caregiver's propensity to work or retire early as well as working hours and patterns (Carmichael and Charles

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2003). The impact of family elderly care on labour force participation has drawn considerable research interest (Moussa 2019).

From the standard labour-leisure choice theory perspective, individuals with family responsibilities must allocate time to labour work, leisure and unpaid home care to maximise their utility (Becker 1965; Gronau 1977). In the process of allocating time to these three activities, specifically the impact of elderly care on work can be uncertain due to two effects at play at the same time. On the one hand, the substitution effect sees individuals facing the trade-off between work and caring responsibilities, therefore they may reduce their hours of working or even be forced to withdraw from the workforce given the limited time. On the other hand, additional costs arising from caring may force them to increase their hours of work in order to cover the expenses (Carmichael et al. 2010).

Most literature found caregivers were significantly less likely to participate in the labour force compared with non-caregivers, regardless of gender. Specifically, caregivers may choose to reduce their working hours or even exit the workforce in response to the need to care for an elderly family member (Nguyen and Connelly 2014). The negative impact was stronger among those with weaker attachment, lower wages, and spotty employment (Fahle and McGarry 2017). And women were more likely to quit work when taking on elderly care responsibilities (King and Pickard 2013). Furthermore, those with elderly care responsibilities were less satisfied with their job and were more likely to change their work attitudes due to lack of support and resources, either from the organisation or elsewhere (Buffardi et al. 1999).

Other studies, however, reported a positive effect of elderly care on propensity to work. Dentinger and Clarkberg (2002) found that caregiving men were significantly less likely to retire than non-caregiving men in order to pay for the expense. Similarly, Carmichael and Charles (1998) found that caregiving women in the United Kingdom were 10% more likely to be in the labour force than non-caregivers (Carmichael and Charles 1998).

In addition, compared to the two different impacts above, a few studies found no significant effect of being a caregiver on employment probability after accounting for individual effects and ruling out endogeneity in the statistics (Van Houtven et al. 2013; Meng 2013). Similarly, Viitanen (2010) reported that once the state dependency of labour force participation and individual fixed-effects were controlled, the negative impact fell to a negligible level: 0.3 percentage point.

A major empirical issue with this question is the potential endogeneity. From the causal perspective, the association of family elderly care and work can be seen two ways: caregivers may reduce work hours or quit their job to care for the elderly; on the other hand, unemployed or part-time workers are more likely to become caregivers due to time availability. Instrumental variable and panel data are often used to address the endogeneity issue (Nguyen and Connelly 2014). Using panel data and instrumental variables, Ettner (1995) found that women faced with heavy caregiving responsibilities for their parents were choosing simultaneously to withdraw from the labour force and to move in with their parents or to have their parents move in with them in order to give care. Bolin et al. (2008) found that informal care

provision was associated with significantly lower employment probability for both men and women and thought that disregarding endogeneity would have underestimated the impact of family elderly care on the propensity to work.

In conclusion, existing literature does not provide a clear answer on how elderly care responsibilities influence individual's working decision. Moreover, people's choice between leisure, labour, and domestic work is influenced by factors such as preference, life cycle, institutional background and some individual characteristics. Among them, health is considered to be a major determinant of the propensity to work and hours of working across different demographic groups (Mussida and Patimo 2021). Prior studies have revealed the relationship between family elderly care and the propensity to work, but few have attempted to explore the potential mediator through which family elderly care relates to the propensity to work. Furthermore, most of the existing studies used samples from developed countries, which may not reflect the decisions of individuals in the developing world. This study, therefore, aims to fill this gap through answering two questions: What impact does family elderly care have on the propensity to work exactly? And what role does health play?

In order to answer these two questions, this study uses nationally representative data from the 2018 China Health and Retirement Longitudinal Study (CHARLS) baseline survey to examine the impact of family elderly care on the propensity to work, with the focus on the role of health. Findings from this study will enrich labour-leisure choice theory by revealing the mechanisms through which health influences the choices between work and family elderly care and provides actionable policy recommendations that support individuals with caring responsibilities to stay in the workforce.

6.2 Conceptual Framework and Hypotheses

Time is limited, and it is predicted that family elderly care may reduce the amount of time available for paid work and thereby decrease the level of labour force participation. This prediction is well-supported in the literature with studies reporting a significantly higher probability of retiring among caregivers (Van Houtven et al. 2013). There are two reasons behind it. First, competition for time. Family elderly care responsibilities need a significant time input, so they are likely to reduce time allocated for work. For instance, Bittman et al. (2007) observed that about 20% of full- time working women in Australia will give up full-time work for part-time work after taking on care duties. Second, loss of human capital. After a long duration of caring, caregivers may be unable to reenter employment because their job-specific knowledge is outdated (Carmichael et al. 2008). Therefore, it is expected that:

Hypothesis 1: Family elderly care is negatively associated with the propensity to work.

Health status plays an important role in labour participation decisions (Scott et al. 1977) and affects employment in three ways. First, as an important component of human capital, health status directly determines whether or not a person can participate in the labour force. Better health leads to better performance in employment, which means higher pay in the labour market and higher employment costs if pushed out of the job market. Second, health affects people's preference for direct substitution of work or leisure time, and thus labour hours. Health deterioration can lead to a reduction in work capacity and a withdrawal from the job market. Third, better health means more choices in the job market and easier access to employment, which affects the final decision to leave the job market and makes it less likely that a person will leave employment (Grossman 2017). Good health will boost market participation (Bartley and Owen 1996), people with good health are likely to have a higher propensity to be employed due to the higher returns they get from work (Cai and Kalb 2006). On the contrary, those who are sick often need more time for disease treatment and health care, which may affect their work orientation (Novignon et al. 2015). Especially, the experience of pain has a substantial negative association with labour force participation (Langley et al. 2010). Additionally, workers' labour productivity decreases after a health shock, so some workers are forced out of the labour market if they are unable to adapt to intense physical labour (García-Gómez et al. 2010).

Family elderly care may be associated with the propensity to work through the mediation of health. Family elderly care could impose negative health and psychological impact on caregivers, as caring for close family members may be a physically demanding and induce negative emotions. The physical effort required for caregiving may result in poor health for the caregivers, which subsequently reduces the caregiver's capacity for care provision and work. In addition, caregiving places a huge psychological burden on the caregivers and increases their chance of mental illness. Cooper et al. (2007) reported that dementia care is associated with high levels of caregiver anxiety. For people with poor mental health, the choice between care and work can add extra stress, which can affect work ability and the propensity to work. On the other hand, the psychological stress associated with caregiving activities may cause caregivers to choose to quit their job in order to reduce the potential mental stress at work. Hence, it is hypothesised that:

Hypothesis 2: Health mediates the association between family elderly care and the propensity to work.

6.3 Data, Measures and Methodology

6.3.1 Data and Sample

This study utilises the 2018 China Health and Retirement Longitudinal Study (CHARLS) baseline study, a nationally representative panel data designed to comprehensively understand social trends, socio-economic well-being, and the ageing of

community-dwelling Chinese adults aged 45 or older (Zhao et al. 2020). The normal pension age in China is 60 for males, 55 for white-collar women (such as teachers and civil servants), and 50 for blue-collar women. Consequently, in order to consider the potential trade-off between paid work and caregiving, we limited the sample to only men aged between 45–60 and women aged between 45–55 (N = 7584). After excluding participants who reported being either agricultural workers, unpaid family business workers (N = 3837), and those who had missing data in the survey (N = 564), 3183 valid respondents were yielded in our study, which comprised 1699 (53.38%) men and 1484 (46.62%) women.

6.3.2 Measures

6.3.2.1 Dependent Variable

The propensity to work was measured with a binary outcome variable to represent the individual's self-reported current labour force participation status using the question: "Did you work for at least one hour last week?" We considered any of the following activities as work: earning a wage, running a business and undertaking unpaid family business work. We excluded: doing own housework and doing activities without pay, such as voluntary work. Those who answered "Yes" were given the value of 1, while those who responded "No" were coded as 0.

6.3.2.2 Independent Variable

Family elderly care was measured with responses to the question: "During last year, did you or your spouse take care of your parents?" Those who answered "Yes" were coded as 1, while those who responded "No" were classified as 0.

6.3.2.3 Mediating Variables

In this study, three dimensions of health status were used: self-reported health, self-care ability and mental health.

Self-reported health was measured by the five-point Likert-type scale for the question: "Would you say your health is very good, good, fair, poor or very poor?" with responses including: "1 (very good)", "2 (good)", "3 (fair)", "4 (poor)", "5 (very poor)". We reverse-coded this variable, with higher scores indicating higher levels of self-reported health.

Self-care ability was assessed according to Katz's ADL scale, which consists of a physical self-maintenance scale (6 items) and an instrumental activities of daily living scale (6 items). The physical self-maintenance scale consists of six activities: dressing, bathing, eating, getting out of bed, using the toilet, controlling urination

and defecation. We summed the component scores to form a continuous variable (ranging from 0 to 18). The instrumental activities of the daily living scale consists of six activities: doing chores, preparing hot meals, shopping, managing money, making phone calls and taking medications. The scores of the six activities were aggregated to obtain a continuous variable between 0 and 17. The higher the value, the worse the ability to take care of oneself in daily life.

Mental health were obtained through the Depression Scale which was composed of ten items including: "I was bothered by things that don't usually bother me", "I had trouble keeping my mind on what I was doing", "I felt depressed", "I felt everything I did was an effort", "I felt hopeful about the future", "I felt fearful", "My sleep was restless", "I was happy", "I felt lonely" and "I could not get 'going'". Our study reverse-coded two items ("I felt hopeful about the future" and "I was happy") and summed the component scores to form a continuous variable (ranging from 10 to 40), with higher scores indicating higher levels of depression, also poorer mental health.

6.3.2.4 Control Variables

We extracted the following person-level characteristics from the survey that previously were identified in the literature to influence the propensity to work and care at home: age, gender (female = 0, male = 1), education level (elementary school and below = 0, junior school=1, high school = 2, college or above = 3), marital status was categorised as currently married and not married, urban residence (urban = 1, rural = 0), living arrangements (living with parents = 1, not living with parents = 0), and household income.

6.3.3 Data Analysis

STATA version 17.0 was used to perform data analysis. We examined the impact of family elderly care on the propensity to work using multivariate regression analysis. The dependent variable – propensity to work (PTW) is a binary variable, so the probit regression was used. We specified the propensity to work as a function of care and a vector of covariate control variables.

$$\mathrm{PTW} = \alpha \text{elderly care} + \mathrm{X}\beta + \mathrm{u}.$$

In the above equation, the structural parameter of α is the primary coefficient of the empirical investigation. The variables in X are common determinants of the labour supply, such as age, gender, education, marital status, urban residence, household income, whether living with parents and so on.

In order to address the potential endogeneity of elderly care, we introduced an instrumental variable. Valid instrumental variables must satisfy two conditions at the same time: firstly, they are related to the independent variable, family elderly care.

Secondly, they are exogenous, and they are not directly related to the dependent variable, the propensity to work. We used the number of living parents (ranging from 0 to 4) as the instrumental variable. The higher the number of living parents, the higher the likelihood of caregiving, and it is not directly related to the propensity to work.

6.4 Results

6.4.1 Sample Characteristics

Table 6.1 reports the descriptive statistics of the sample. The propensity to work rate for the full sample was 62.5%. Of the sample, 41.2% cared for their parents and the rest (58.8%) did not. The average age was 52 and 93% were married. A total of 37% were urban residents and 12.8% lived with their parents. The average value of the logarithm of household income was 10.72. In terms of the mediating variables, the mean value of the self-reported health was 3.29, which was approximately the level of "fair". The mean value of physical self-maintenance, instrumental activities of daily living, and mental health was 0.21, 0.49 and 17.38 respectively. The mean value of the IV variable the number of living parents was 1, suggesting that, on average, each person has one living parent.

Table 6.1 Descriptive statistics

Variables	Mean	Std.dev.	Min	Max
Dependent variable				
Propensity to work	0.625	0.484	0	1
Independent variable				
Family elderly care	0.412	0.492	0	1
Control variables				
Age	52.213	3.712	45	60
Gender	0.534	0.500	0	1
Education	0.923	0.905	0	3
Marital status	0.930	0.255	0	1
Urban residence	0.370	0.483	0	1
Living status	0.128	0.334	0	1
Household income(log-transformed)	10.720	0.860	0.693	15.607
Mediating variables				
Self-reported health	3.293	1.040	1	5
Physical self-maintenance (PSM)	0.207	0.994	0	18
Instrumental activities of daily living (IADL)	0.492	1.794	0	17
Mental health	17.384	6.062	10	40
Instrumental variable				
The number of living parents	1.495	1.146	0	4
Observations	3183			

6.4.2 Association Between Family Elderly Care and the Propensity to Work

Table 6.2 reports the results of the baseline and IV regressions. As shown by the baseline probit model results, the coefficient of family elderly care is negative but not significant. However, when employing the IV-probit model, the coefficient became significant and negative (coefficient $= -0.050$, $p < 0.05$), suggesting that family elderly care responsibility reduces the probability to work by 5%. The results confirm *Hypothesis 1*——that when caring for the elderly parents, people will be likely to have lower propensity to work. In addition, the coefficient is approximately twice that estimated using the baseline probit model and is significant only when using the IV-probit model.

In terms of the control variables, an increase in age leads to a decrease of probability of work by 3.3%. Compared to those in the illiterate/elementary school, those with high school graduation and university and above have a significantly higher propensity to work (6.4% and 12.8% respectively).

Table 6.2 also reports the reasonableness of the IV. First, the first-stage F-statistic is 59.36, which is larger than ten, indicating that IV (the number of living parents) is closely related to the endogenous explanatory variable (family elderly care).

Table 6.2 Influence of family elderly care on propensity to work

Variables	Probit	IV-Probit
Family elderly care	−0.027 (0.017)	−0.050** (0.021)
Age	−0.030*** (0.002)	−0.033*** (0.003)
Gender	0.294*** (0.015)	0.334*** (0.019)
Middle school	0.001 (0.019)	−0.001 (0.022)
High school	0.060** (0.023)	0.064** (0.026)
College and above	0.123*** (0.036)	0.128*** (0.039)
Marital status	0.039 (0.030)	0.030 (0.037)
Urban residence	−0.012 (0.017)	−0.014 (0.020)
Living status	0.012 (0.024)	0.008 (0.028)
Household income(log-transformed)	−0.013 (0.009)	−0.016 (0.011)
Self-reported health	0.054*** (0.008)	0.063*** (0.010)
Physical self-maintenance(PSM)	0.003 (0.011)	0.005 (0.013)
Instrumental activities of daily living(IADL)	−0.045*** (0.006)	−0.053*** (0.008)
Mental health	−0.001 (0.001)	−0.001 (0.002)
Pseudo R2	0.150	
AR statistic		4.16**
Wald statistic		4.07**
First-stage F statistics		59.36***
Wald test of exogeneity		6.76***
Observations	3183	

Note: The estimates represent marginal effects; standard errors in parentheses
*, ** or *** indicates a significance level at 10%, 5% and 1% respectively

Besides, the number of instrumental variables in this study is equal to the number of endogenous explanatory variables, so an over-identification test is not required. Furthermore, the p-values of AR and Wald are significant at the 5% level (AR = 4.16 and Wald = 4.07, respectively), which indicates that the instrumental variable selected is robust.

6.4.3 The Mediating Effect

Table 6.3 reports the mediating effect of health on family elderly care and the propensity to work. The results show that the effect of family elderly care is mediated by health. Among these four dimensions, the mediating effects were: self-reported health (0.044), physical self-maintenance (0.025), instrumental activities of daily living (0.047), and mental health (0.037).

6.4.4 Robustness and Sensitivity Checks

Then, we used a different health measure – Community Screening Instrument for Dementia – to test the robustness of the result. The results show that health still has a mediating effect, indicating the robustness (Table 6.4).

Table 6.3 Mediating effects of health

				Propensity to Work
Family elderly care				
		Health		
	Self-reported health	Physical self-maintenance (PSM)	Instrumental activities of daily living (IADL)	Mental health
Reduced (total effect)	0.115** (0.047)	0.117** (0.046)	0.123*** (0.047)	0.114** (0.046)
Full (direct effect)	0.071 (0.047)	0.092** (0.046)	0.076 (0.047)	0.077* (0.047)
Diff (indirect/ mediating effect)	0.044*** (0.010)	0.025*** (0.009)	0.047*** (0.012)	0.037*** (0.008)
Confounding percentage	38.24%	21.27%	38.46%	32.46%
Observations		3183		

Note: Standard errors in parentheses
*, ** or *** indicates a significance level at 10%, 5% and 1% respectively

Table 6.4 Robust check of the mediating effect of dementia

	the Propensity to Work
Family elderly care	
	Dementia
Reduced (total effect)	0.114** (0.046)
Full (direct effect)	0.102** (0.046)
Diff (indirect/mediating effect)	0.012** (0.005)
Confounding percentage	10.52%
Observations	3183

6.4.4.1 Subgroup Comparisons

The majority of working-aged individuals providing elderly care are middle-aged women and the elderly care recipients who receive the most care are those who do not live with their children or in-laws (Moussa 2019). So in order to further clarify the relationship between the two, this study distinguishes the sample by gender, place of residence, and whether or not the adult children live with their parents, using IV-probit models for analysis. The results are presented in Table 6.5.

In OECD countries, approximately two-thirds of those caring for the elderly are currently women in mid-life (OECD 2011). The disproportionally high level of care responsibilities saw women struggle with work life balance (Mussida and Patimo 2021). Therefore, we analysed the different impact of family elderly care of women and men. For women, family elderly care significantly reduced employment propensity by 10%, much more than the effect on men (0.05%).

China has a typical urban-rural dichotomy, with huge differences in people's employment propensity and family situations depending on place of residence, so we further divided into urban and rural samples to examine the effect of family elderly care on the propensity to work. The results show that taking on family elderly care responsibilities significantly reduces the propensity to work by 7.1% for the urban population, while it has no significant effect for the rural population.

Residence pattern is an important factor in people's propensity to work, and different living status affects the assumption of care responsibilities for the elderly, thus making a difference in the impact on propensity to work (Casado-Marín et al. 2011). We further divided the sample into two groups: those who live with their parents and those who do not. The results show that for the group who do not live with their parents, taking care of parents significantly reduces their propensity to work by 5.4%, while for the group who live with their parents, this effect is smaller and non-significant.

6.5 Discussion

Prior studies have documented the negative impact of elderly care on the propensity to work, either through examining the relationship or exploring the thresholds (Chai et al. 2021; King and Pickard 2013). In this study, we used data from the 2018 China Health and Retirement Longitudinal Study (CHARLS) baseline survey to explore

Table 6.5 Subgroup regression (IV-probit)

	Gender		Residence		Living status	
Variables	Women	Men	Rural	Urban	Not living with parents	living with parents
Family elderly care	−0.100*** (0.031)	0.005 (0.025)	−0.032 (0.027)	−0.071** (0.034)	−0.054** (0.023)	−0.027 (0.056)
Age	−0.049*** (0.005)	−0.021*** (0.003)	−0.028*** (0.004)	−0.043*** (0.005)	−0.035*** (0.003)	−0.024*** (0.008)
Gender	–	–	0.341** (0.024)	0.330*** (0.031)	0.351*** (0.020)	0.235*** (0.052)
Middle school	0.027 (0.032)	−0.022 (0.027)	0.032 (0.026)	−0.102** (0.040)	0.003 (0.023)	−0.025 (0.061)
High school	0.143*** (0.043)	−0.001 (0.031)	0.096*** (0.035)	−0.014 (0.042)	0.070** (0.028)	0.036 (0.071)
College and above	0.262*** (0.062)	0.036 (0.048)	0.104 (0.071)	0.082 (0.054)	0.133*** (0.043)	0.113 (0.097)
Marital status	−0.031 (0.053)	0.082* (0.049)	0.041 (0.050)	0.010 (0.054)	0.034 (0.039)	−0.012 (0.118)
Urban residence	0.009 (0.030)	−0.039 (0.024)	–	–	−0.016 (0.021)	−0.005 (0.059)
Living status	0.079* (0.042)	−0.043 (0.036)	0.003 (0.035)	0.007 (0.048)	–	–
Household income (log-transformed)	−0.036** (0.017)	0.006 (0.013)	−0.022 (0.014)	−0.002 (0.018)	−0.016 (0.012)	−0.009 (0.035)
Self-reported health	0.043*** (0.015)	0.069*** (0.012)	0.070*** (0.012)	0.051*** (0.017)	0.064*** (0.011)	0.051* (0.027)
Physical self-maintenance (PSM)	0.006 (0.020)	0.003 (0.015)	0.014 (0.014)	−0.034 (0.032)	−0.003 (0.014)	0.071* (0.037)
Instrumental activities of daily living (IADL)	−0.048*** (0.012)	−0.044*** (0.008)	−0.061*** (0.009)	−0.022 (0.015)	−0.054*** (0.008)	−0.053*** (0.019)
Mental health	−0.001 (0.002)	−0.002 (0.002)	−0.002 (0.002)	−0.001 (0.003)	−0.001 (0.002)	−0.007 (0.005)
Observations	1484	1699	2005	1178	2777	406

Note: The estimates represent marginal effects; standard errors in parentheses
*, ** or *** indicates a significance level at 10%, 5% and 1% respectively

the association between family elderly care and the propensity to work in China. The main findings are as follows.

First, family elderly care is significantly and negatively associated with the propensity to work. More specifically, family elderly care results in a significant reduction in the propensity to work by 5% under the endogenous assumptions. This is in line with Bolin et al. (2008), who suggested that disregarding endogeneity

would have underestimated the impact of family elderly care on the propensity to work and shows that the substitution effect dominates in the impact of family elderly care on work orientation in China.

Second, health partially mediates the relationship between family elderly care and the propensity to work. In general, family elderly care affects an individual's health status, which in turn affects his or her propensity to work. Elderly care takes a lot of time and energy from the caregiver, and the caregiving process may affect the carer's physical mobility, which is crucial in relation to propensity to work. However, higher levels of stress may affect the caregiver in different ways. Stress might lead the caregiver to seek emotional distraction, resulting in a greater willingness to take up employment, thus reducing the negative effect of family elder care on propensity to work.

Third, the effect between family elderly care and propensity to work differs between gender, residence and whether the carer lives with their parents, with women being more affected than men, urban residence being more affected than rural residence, and those who do not live with parents being affected more than those who do live with their parents. This is probably because women are still considered as the main carer in the household, and are more likely to sacrifice their employment if they have to take on elderly care responsibilities. Those who live in urban areas are affected more, maybe due to the fact that they bear a higher cost of living while caring for the elderly and spend more time providing care than rural care givers (Horwitz and Rosenthal 1994), so they have to stay in the labour market to secure their financial resources. Another potential reason could be the extra time and effort required for caregivers to travel. Taking on elderly care responsibilities requires more time and effort for the group who do not live with their parents and therefore may reduce their propensity work, while the group who live with their parents are likely to work and care for the elderly at the same time.

This study has limitations that should be considered. First, this study focused on the effect of caregiving on employment and the mediating effect of health. However, the effect on employment may vary across caregiving intensity and the mediating effect may also vary. Therefore, it is necessary to further focus on the effects of different caregiving intensities. Second, we only explored the mediating effect of health on the relationship between family elderly care and the propensity to work, while elderly care is associated with other outcomes beyond health. Thus, future studies can explore other potential mediators. Third, the data used in this study were cross-sectional rather than panel data; thus, we could not observe dynamic changes in the relationship between family elderly care and the propensity to work. In the future, research can employ panel data.

6.6 Conclusion

This study analysed the impact of family elderly care on the propensity to work based on the labour-leisure theory, arguing that substitution effects dominate in the impact of caregiving on work; and then further analysed the role of health, contributing to the literature on the mechanisms through which caregiving influences labour supply decisions.

The findings also have policy implications. A rapidly ageing population means the proportion of the working population is on the decline and the need to care for the elderly is on the rise. In large parts of China, family members, especially adult children, bear the burden of caring responsibilities for the elderly. Such arrangements can potentially lead caregivers to leave the workforce prematurely, thus exacerbating the labour shortage. To alleviate the problem of the declining labour supply due to the ageing population, community-based infrastructure development and public services for the elderly should be further improved, especially in rural areas. Secondly, employers need to provide more flexible working hours and paid leave for those with family elderly care responsibilities to help them achieve a better balance between caring roles and work. Thirdly, it is important to encourage children with elderly care responsibilities to live with their parents; this can help them take better care of their parents and can also reduce the negative impact of elderly care on employment. Finally, caregivers' health should be taken into account and respite services should be provided to help reduce the stress of caring for the elderly.

References

Bartley M, Owen C (1996) Relation between socioeconomic status, employment, and health during economic change, 1973–93. BMJ 313(7055):445–449

Bauer JM, Sousa-Poza A (2015) Impacts of informal caregiving on caregiver employment, health, and family. J Popul Ageing 8(3):113–145

Becker GS (1965) A theory of the allocation of time. Econ J 75(299):493–517

Berglund E, Lytsy P, Westerling R (2015) Health and wellbeing in informal caregivers and non-caregivers: a comparative cross-sectional study of the Swedish general population. Health Qual Life Outcomes 13(1):1–11

Bittman M, Hill T, Thomson C (2007) The impact of caring on informal carers' employment, income and earnings: a longitudinal approach. Aust J Soc Issues 42(2):255–272

Bookwala J (2009) The impact of parent care on marital quality and Well-being in adult daughters and sons. J Gerontol: Series B 64(3):339–347

Bolin K, Lindgren B, Lundborg P (2008) Your next of kin or your own career?: caring and working among the 50+ of Europe. J Health Econ 27(3):718–738

Buffardi LC, Smith JL, O'Brien AS, Erdwins CJ (1999) The impact of dependent-care responsibility and gender on work attitudes. J Occup Health Psychol 4(4):356–367

Cai L, Kalb G (2006) Health status and labour force participation: evidence from Australia. Health Econ 15(3):241–261

Carmichael F, Charles S (1998) The labour market costs of community care. J Health Econ 17(6): 747–765

Carmichael F, Charles S (2003) The opportunity costs of informal care: does gender matter? J Health Econ 22(5):781–803

Carmichael F, Charles S, Hulme C (2010) Who will care? Employment participation and willingness to supply informal care. J Health Econ 29(1):182–190

Carmichael F, Hulme C, Sheppard S, Connell G (2008) Work–life imbalance: informal care and paid employment in the UK. Fem Econ 14(2):3–35

Casado-Marín D, García-Gómez P, López-Nicolás Á (2011) Informal care and labour force participation among middle-aged women in Spain. SERIEs 2:1–29

Chai H, Fu R, Coyte PC (2021) Unpaid caregiving and labor force participation among Chinese middle-aged adults. Int J Environ Res Public Health 18(2):641

Chen L, Standing H (2007) Gender equity in transitional China's healthcare policy reforms. Fem Econ 13(3–4):189–212
Chen L, Fan HL, Zhao N, Chu L (2016) The impact of informal care on employment for women in China. Econ Res J 51(3):176–189
Cook S, Dong XY (2011) Harsh choices: Chinese women's paid work and unpaid care responsibilities under economic reform. Dev Chang 42(4):947–965
Connelly R, Dong XY, Jacobsen J, Zhao Y (2018) The care economy in post-reform China: feminist research on unpaid and paid work and Well-being. Fem Econ 24(2):1–30
Cooper C, Balamurali T, Livingston G (2007) A systematic review of the prevalence and covariates of anxiety in caregivers of people with dementia. Int Psychogeriatr 19(2):175–195
Crespo L, Mira P (2014) Caregiving to elderly parents and employment status of European mature women. Rev Econ Stat 96(4):693–709
Dentinger E, Clarkberg M (2002) Informal caregiving and retirement timing among men and women: gender and caregiving relationships in late midlife. J Fam Issues 23(7):857–879
Doty P (2010) The evolving balance of formal and informal, institutional and non-institutional long-term care for older Americans: a thirty-year perspective. Public Policy Aging Rep 20(1):3–9
Duffy M, Albelda R, Hammonds C (2013) Counting care work: the empirical and policy applications of care theory. Soc Probl 60(2):145–167
Ettner SL (1995) The impact of "parent care" on female labor supply decisions. Demography 32(1): 63–80
Ettner SL (1996) The opportunity costs of elder care. J Hum Resour 189-205:189. https://doi.org/10.2307/146047
Fahle S, McGarry KM (2017) Caregiving and work: the relationship between labor market attachment and parental caregiving. Michigan retirement research center research paper, (2017-356)
Finkelstein A, McGarry K (2006) Multiple dimensions of private information: evidence from the long-term care insurance market. Am Econ Rev 96(4):938–958
Fujisawa R, Colombo F (2009) The long-term care workforce: overview and strategies to adapt supply to a growing demand. In OECD health working papers, no. 44, OECD Publishing, Paris
García-Gómez P, Jones AM, Rice N (2010) Health effects on labour market exits and entries. Labour Econ 17(1):62–76
Gaugler JE, Pestka DL, Davila H, Sales R, Owen G, Baumgartner SA et al (2018) The complexities of family caregiving at work: a mixed-methods study. Int J Aging Hum Dev 87(4):347–376
Glavin P, Peters A (2015) The costs of caring: caregiver strain and work-family conflict among Canadian workers. J Fam Econ Iss 36(1):5–20
Gronau R (1977) Leisure, home production, and work--the theory of the allocation of time revisited. J Polit Econ 85(6):1099–1123
Grossman M (2017) On the concept of health capital and the demand for health. In: Determinants of health. Columbia University Press, pp 6–41
Heitmueller A (2007) The chicken or the egg?: Endogeneity in labour market participation of informal carers in England. J Health Econ 26(3):536–559
Horwitz ME, Rosenthal TC (1994) The impact of informal care giving on labor force participation by rural farming and nonfarming families. J Rural Health 10(4):266–272
Jacobs JC, Van Houtven CH, Tanielian T, Ramchand R (2019) Economic spillover effects of intensive unpaid caregiving. PharmacoEconomics 37(4):553–562
King D, Pickard L (2013) When is a carer's employment at risk? Longitudinal analysis of unpaid care and employment in midlife in England. Health Soc Care Community 21(3):303–314
Kitamura T, Adachi Y, Uemura T (2021) Effect of caregiving on employment for senior Workers in Japan. Ageing Int 46(2):142–169
Kolodziej IW, Reichert AR, Schmitz H (2018) New evidence on employment effects of informal care provision in Europe. Health Serv Res 53(4):2027–2046

Langley P, Müller-Schwefe G, Nicolaou A, Liedgens H, Pergolizzi J, Varrassi G (2010) The impact of pain on labor force participation, absenteeism and presenteeism in the European Union. J Med Econ 13(4):662–672

Leigh A (2010) Informal care and labor market participation. Labour Econ 17(1):140–149

Lilly MB, Laporte A, Coyte PC (2007) Labor market work and home care's unpaid caregivers: a systematic review of labor force participation rates, predictors of labor market withdrawal, and hours of work. Milbank Q 85(4):641–690

Maguire R, Hanly P, Maguire P (2019) Beyond care burden: associations between positive psychological appraisals and Well-being among informal caregivers in Europe. Qual Life Res 28(8):2135–2146

Marks NF (1998) Does it hurt to care? Caregiving, work-family conflict, and midlife Well-being. J Marriage Fam 60:951–966

Meng A (2013) Informal home care and labor-force participation of household members. Empir Econ 44(2):959–979

Meurs M, Giddings L (2021) Elder care and paid work: gender differences in the relationship between unpaid elder care work and employment in Bulgaria. J Eur Soc Policy 31(2):223–238

Montano D, Peter R (2021) Informal care-giving and the intention to give up employment: the role of perceived supervisor behaviour in a cohort of German employees. Eur J Ageing:1–11

Moussa MM (2019) The relationship between elder care-giving and labour force participation in the context of policies addressing population ageing: a review of empirical studies published between 2006 and 2016. Ageing Soc 39(6):1281–1310

Mussida C, Patimo R (2021) Women's family care responsibilities, employment and health: a tale of two countries. J Fam Econ Iss 42(3):489–507

Newey WK (1987) Efficient estimation of limited dependent variable models with endogenous explanatory variables. J Econ 36(3):231–250

Nguyen HT, Connelly LB (2014) The effect of unpaid caregiving intensity on labour force participation: results from a multinomial endogenous treatment model. Soc Sci Med 100:115–122

Novignon J, Nonvignon J, Arthur E (2015) Health status and labour force participation in sub-Saharan Africa: a dynamic panel data analysis. Afr Dev Rev 27(1):14–26

OECD (2011) Help wanted? Providing and paying for long-term care. In Private long-term care insurance: a niche or a "big tent"?

Osundina OA (2020) Sustainable development: does improvement in education and health of women improve female labour force participation rate? Sustain Dev 28(1):13–24

Otto AK, Bischoff LL, Wollesen B (2019) Work-related burdens and requirements for health promotion programs for nursing staff in different care settings: a cross-sectional study. Int J Environ Res Public Health 16(19):3586

Pandey MK (2009) Labor force participation among Indian elderly: does health matter? ASARC Working Papers

Pflueger CE, Wang S (2015) A robust test for weak instruments in Stata. Stata J 15(1):216–225

Rubin RM, White-Means SI (2009) Informal caregiving: dilemmas of sandwiched caregivers. J Fam Econ Iss 30(3):252–267

Scott LC, Smith LH, Rungeling B (1977) Labor force participation in southern rural labor markets. Am J Agric Econ 59(2):266–274

Smith PM, Cawley C, Williams A, Mustard C (2020) Male/female differences in the impact of caring for elderly relatives on labor market attachment and hours of work: 1997–2015. J Gerontol B 75(3):694–704

Skira MM (2015) Dynamic wage and employment effects of elder parent care. Int Econ Rev 56(1): 63–93

Stewart LM (2013) Family care responsibilities and employment: exploring the impact of type of family care on work–family and family–work conflict. J Fam Issues 34(1):113–138

Unger MR (2013) Effects of informal parental care on labor force participation in the Nordic countries (Master's thesis)
Van Houtven CH, Coe NB, Skira MM (2013) The effect of informal care on work and wages. J Health Econ 32(1):240–252
Viitanen TK (2010) Informal eldercare across Europe: estimates from the European Community household panel. Econ Anal Policy 40(2):149–178
Zhao Y, Strauss J, Chen X, Wang Y, Gong J, Qinqin Meng Q, Wang G, Wang H (2020) China health and retirement longitudinal study wave 4 User's guide. Peking University, National School of Development

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Chapter 7
Rural Age Pensions and Rural-Urban Migration in China

Yan Tan and Alec Zuo

Abstract Urbanisation is one of China's most profound demographic and social processes today. Social inequality, particularly regarding access to age pensions, poses challenges that have significant ramifications for sustainable urbanisation and migrant labour supply. This chapter addresses two questions. The first looks at the discrepancy in participation in the rural age-pension program among the three main groups of the rural *hukou*-holding population: (1) migrant households living in a mega city (Nanjing); (2) farmer households *with* members who are migrant workers and are employed or run their businesses *outside* the boundary of the prefectural city where their county is located, and; (3) farmer households *without* any member being a migrant worker, *or with* migrant workers who are employed or run their businesses *within* the boundary of the prefectural city where their county is located. Next, the study investigates how participation in the rural age-pension program impacts choices of future living destinations (urban versus rural areas). The analysis takes two counties (Anyue and Muchuan) of Sichuan province (one of the largest origins of migrant workers) in west China as the case studies. It compares the results with those obtained in Nanjing city of Jiangsu province (a destination of migrants on the east coast). Econometric methods were used to analyse primary data collected through specially tailored surveys to develop a thorough understanding of these issues. The choice of mobility concerning future resettlement destinations (urban versus rural) for diverse groups of the rural *hukou* population is a function of complex demographic, social and economic factors of individuals and their households.

Keywords Urbanisation · Age pensions · Social inequality · Migration · China

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X. Deng et al. (eds.), *Ageing in China*, https://doi.org/10.1007/978-981-19-9681-8_7

7.1 Introduction

Rapid industrialisation since the mid-1990s in China has driven massive numbers of rural labour migrants to cities. According to the 2020 China census, the numbers have increased dramatically from 76 million in 2000 to 375.8 million migrants in 2020 (124.8 million inter-provincial and 251 million intra-provincial migrants). This equates to 26.6% of China's 1.41 billion population (NBSC 2021). Migrants refer to people who live at least 6 months outside their registered household location. Many of them have not yet acquired urban citizenship. The megacities have experienced severe resource scarcity (Liu 2012; Xu et al. 2014) and substantial age-pension deficits, which will be exacerbated by the projected rapid ageing of China's population and a shrinking workforce over the next decade (Peng 2011). The megacities have also offered their registered urban households social welfare and security services substantially above those of smaller cities and rural areas. As a result, it will be challenging for those cities to cover the costs of absorbing the migrant population while maintaining the current level of services and welfare for their registered citizens.

Urbanisation tops the policy agenda in China. In a bid to divert rural migrants from megacities (which are cities with a population of over five million) to small and medium-scaled centres (with less than one million in population), the *New-Style Urbanisation Plan (2014–2020)* (SCC 2014) guides the progress of China's urbanisation. The *Plan* aims to absorb some 100 million rural residents of the western and central regions of China into local towns and cities, transferring their household registration (*hukou*) from agricultural (rural) to non-agricultural (urban) status and thereby allowing the rural residents to become urban citizens without migrating to other provinces. Linked to this goal, the State Council of China (2015) recently issued a set of policies on *Supporting Rural Migrant Workers, University Graduates and Soldiers to Return to Their Hometowns*. These processes of 'in-situ urbanisation' and 'return migration' reflect the reality that urban labour markets in the megacities of the east cannot absorb increasing numbers of rural-to-urban migrants (hereafter rural migrants) (Zhu et al. 2021). The policy initiatives for local urbanisation and return migration reflect the need for economic restructuring and upgrading in mega and large cities and for transferring labour and resource-intensive industries to the western and central regions.

Mounting pressures on the current economic, social and environmental development of China include the slowing down of Gross Domestic Product (GDP) growth (at a rate of less than 7% since 2015), resource and environmental constraints (e.g. the supply of energy, water, and urban land) in large and megacities, persistent disparity of development between eastern, central and western regions, and financial constraints that create pressures to limit the access of rural migrants to urban worker and urban resident social security schemes, education, and social housing subsidies. The financial constraints also operate unevenly across different tiers of Chinese cities. Cutting across demographic, social and economic issues, social security, especially the provision of the *rural age pension*, is expected to significantly impact China's 'new-style' urbanisation and rural development (World Bank 2014).

China's rural migrants and residents all have rural *hukou* status, and they meet the eligibility for participating in the national rural age-pension program. They are not a homogeneous group. In terms of residential nature, experience and distance of migration, the rural *hukou*-holding population can be classified into three groups: (1) 'migrant households' living in cities with no family members left in the countryside; (2) 'rural households' *with* some members working in distant cities; and (3) 'non-migrant rural households' *without* any member being a migrant worker or *with* some members being migrants working locally. These three groups are assumed to have differentials in participating in the rural age-pension program. This is because major socio-economic indicators, including income, gender, occupational category (e.g. agriculture, manufacturing, or services), employment sector (e.g., self-employment, state-owned sector, and private or foreign-invested sector), employment status (e.g., on-farm work, casual, informal, or holding a labour contract), and the level of education, are different among these groups.

Rural-to-urban migration and the associated urbanisation have long been recognized in development literature as vital to structural transformation and industrialisation. Some core themes explored include the obstacles facing agricultural development as the processes take place (Schultz 1968; Li and Tonts 2014); the movement of surplus labour from agriculture to industry, and the implications of the 'Lewisian turning point' as the surplus labour supply dries up (Knight et al. 2011); and the factors influencing the migration decision, especially the wage differentials between the rural and urban sectors (Zhao 1999; Shen and Wang 2012). International research (e.g., Hagen-Zanker and Himmelstine 2012) shows that access to social security can increase or decrease the tendency to move. However, there is limited literature on the relationship between migration and social security in China. Emerging research on the issue in China, e.g., the case study of Yu et al. (2014) in Shanghai, shows that rural migrants who participate in urban worker (or urban resident) pension schemes have less intention to return to their hometowns than their counterparts who hold rural age-pension memberships. Huang et al. (2020) find that participation in urban social insurance schemes motivates migrants' intention to have long-term residence in the city and to convert to urban *hukou*. A study by Xie et al. (2021) further shows that rural migrants who are socio-economically better off are more likely to participate in social insurance and settle in cities permanently. Yet how participation in the rural age-pension program in China may impact the mobility of the three groups of rural *hukou* holders, especially in their choices between urban and rural settlement destinations in the future, remains understudied.

7.2 Literature Review

Since the mid-1990s, the Chinese government has been developing a social security system to provide the urban population with an age pension, healthcare, unemployment benefits, work injury and maternity insurance (Watson 2012). Meanwhile, a separate rural system was also developed, providing a lower age pension and

healthcare level for rural residents (Watson 2015). It was estimated that by the end of 1997, the system only covered around 80 million farmers, or less than 10% of the 841.8 million rural population in the same year (NBSC 2021). After 2000, efforts were made to reform and improve these programs, but little progress was made. Thus the need to provide social security and welfare for farmers became more urgent. In 2007, the Chinese government and Communist Party announced policies to establish a rural pension system, and the New Rural Pension (NRP) scheme (compared to the 'old rural pension plan' formed in the 1990s) was proclaimed in 2009. All rural residents aged 16 and over are eligible to join the pension scheme via the village their *hukou* is attached. The NRP differentiates itself from the old scheme by having the program's major (non-contributory) component contributed financially by the central and local governments while collecting voluntary contributions from individuals (SCC 2009). Under the scheme, all rural residents, male or female, aged 60 years or older can receive a minimum monthly pension benefit of RMB 55 yuan (USD 1 = RMB 6.76 yuan as of 2 August 2022) from the non-contributory account of the program. In the western and central provinces, the benefits are fully guaranteed by the national budget of the central government. In the eastern provinces, half comes from the federal budget and half is funded by the provincial and local governments. The voluntary component usually sets up five individual contribution options ranging from 100 yuan to 500 yuan per annum, with an interval of 100 yuan. When the participants retire, they can also obtain monthly pension benefits equal to the total balance in their account upon retirement divided by 139, i.e., the actuarial estimate is that people will live 139 months after they retire.

The original plan was to trial the system in 2010 and then gradually extend it across China. In practice, however, the system spread rapidly and, in 2012, was merged with the Urban Residents' Pension Scheme, which shared the same design. By the end of 2014, the joint scheme had over 501 million members, of whom some 70% were contributors under 60 (MoHRSS 2015). As the plan was developed, however, there were a substantial number of local variations and experiments, and many difficulties were encountered (Watson 2015).

The introduction of this rural pension system created a new context for developing age pensions for migrant workers. Despite a relaxation of *hukou* since the mid-1980s, migrants remain tied to their original localities for social identity and welfare services. Previous studies have shown that China's rural-urban *hukou* divide, the decentralized social security system, the fragmented management and financing systems between different regions and pool areas, and the lack of adequate and reliable information and technology management platforms have been significant institutional barriers restricting migrants' participation in existing social security schemes (Chan and Buckingham 2008; Watson 2009; Cai 2010). As a result, except for some local experiments with particular forms of age pension insurance for migrant workers, migrants were largely excluded from the urban social welfare and services provided because of their rural origin (Sheng and Peng 2006; NPFPC 2012; NBSC 2015). It was not until the publication of the State Council Document in 2006, which reviewed the problems faced by migrant workers and called for policy changes to support them (SCC 2006), that efforts began to enable the migrants to

join the urban system. After 2009, new policies were introduced, allowing them to join the urban pension scheme. In July 2011, the Chinese central government enacted the *Social Insurance Law*, which legally entitles rural migrant workers to join the basic pension and health insurance schemes for urban workers, to have the right to transfer back to the rural pension plan if they wished, and to improve the mechanisms for the transfer of social security registration between pool areas (NPC 2010). Under the Law, employers must sign labour contracts with migrant workers, register contracted employees for the pension system at the local labour (or social security administration) bureau, and contribute to their social insurance accounts accordingly. Although the contribution and benefit rates usually vary by locality (Wang 2008), the standard contribution is at the rate of 20% of the worker's wage paid by the employer to the local pension pooling account, while the worker contributes 8% of their wage to the individual account. On retirement, rural migrant workers are entitled to the same pension benefits as local urban workers if they have contributed to their pension account for 15 years before retiring and if the last five years of insurance contributions have been in the pool area providing the pension.

To date, however, rural migrants still confront obstacles to joining urban pension schemes. The barriers include the high costs of participation in formal urban worker schemes, compared both to their wages (which are lower than their urban counterparts) and to the low-cost rural schemes in their hometowns; the complexities of transferring rights and benefits between different pool areas and between different levels from provincial to county; and the lack of articulation between urban and rural schemes (Lee 2012; Wang et al. 2014). Employers are not keen to raise their labour costs by registering their migrant workers and paying the age pension, health and other insurance contributions. Having low incomes, migrants are, in any case, less likely to want to participate and pay 8% of their wage into the scheme when the eventual outcome for them remains uncertain. Instead, they are more likely to have a higher propensity to participate in the cheaper NRP scheme. This study addresses the impact of the co-existence of these schemes and their operation on migrant behaviour and choices.

7.3 Primary Data

7.3.1 Data Collection

In April–May 2014, we conducted a survey in Sichuan province with the support of the Ford Foundation. In numerical and relative terms, Sichuan is China's second-largest source of inter-provincial migrants (8.9 million, or 10.4% of the total national inter-provincial migration) (Qiao and Huang 2013). It was therefore selected as the case study area to epitomize provinces that are the source of large inter-provincial migrants. Sichuan province is home to about 28 million migrants, a third of its total population. Census data from 2020 reveal that Sichuan province continues to be one of the top sources of inter-provincial migrants and epitomizes China's intra-national

exodus. Its urbanisation rate of 57% is below the national average of 64%, with more than 17% of its population aged 65 and above, which is well above the national average of 13.5%.

In Sichuan, the survey sample was selected to ensure that it was representative of the province's large and diverse rural areas. The two counties that were chosen (Anyue and Muchuan) are characteristic of the major agricultural areas in this province and typical of counties that are a source of migrants (Fig. 7.1). The selection took into account several essential criteria: demographic structure (including population size and out-migration ratio), and economic and environmental characteristics. Anyue is the largest county in Sichuan in terms of both size of the total population (1.62 million people at the end of 2012) and the number of out-migrants (accounting for 31.9% of the entire local *hukou* population) (SBAC 2013). It is primarily an agricultural area (86.1% of the people are agricultural-*hukou*

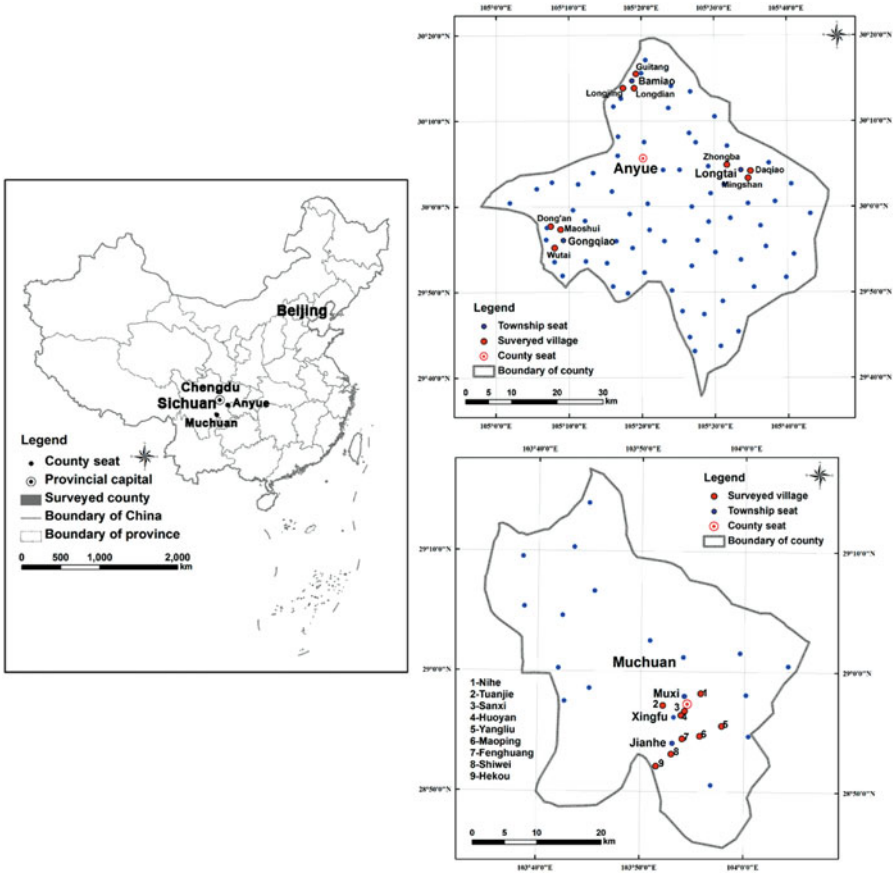

Fig. 7.1 Location of Anyue and Muchuan counties of Sichuan province and the surveyed townships and villages

holders, situated in a hilly region in the central part of the Sichuan Basin. Its economic development is at a medium level in the province in terms of the per capita annual net income of rural residents (7571 yuan at the end of 2012).

In comparison, Muchuan is situated in the southwestern mountainous area, a transitional fringe between the Sichuan Basin in the east and the highlands (part of the Tibetan Plateau) in the west. Over three-quarters (77.2%) of its total land area (1407 km^2) is mountainous, and another 22.7% of the land is hills. Cropping, livestock and forestry are the primary sectors in its agricultural production, accounting for 50.1%, 31.9% and 14.5% of the total agricultural output in 2012, respectively. Most of its total population (82.4% of 0.26 million) had agricultural *hukou* status at the end of 2012. Notably, over a quarter (27.3%) of its population left their rural hometown to seek wage employment in 2012. Of these, 37.9% of the out-migrants sought jobs within Muchuan, 35.7% worked in other counties or cities within Sichuan province, and 25.5% migrated to other regions beyond Sichuan (SBMC 2013). The overall economic development, in terms of the average annual net per capita income of the rural population, is at a low level (6039 yuan in 2012) compared to many other counties in the province. It has a mix of ethnic minority groups comprising Yi, Hui (Chinese Muslim), Tibetan and Miao. However, the proportion of ethnic minorities against the total population is tiny (0.15%) according to the 2010 Census of Muchuan.

Based on the population data for 2013, we used a stratified Probability Proportional to Size (PPS) sampling method to construct a three-tier stratified list of communities at township (first-tier), administrative village (second-tier), and villagers group (third-tier) scales, to select the communities to be included in the survey in each county. As a result, we randomly selected *three* towns within each county, *three* administrative villages within each town, and *five* villagers groups within each administrative village as the sample areas (see Fig. 7.1). In each selected villagers group, the sample size was approximately 11 households. The sample size was 500 rural households in Anyue and 300 in Muchuan. Finally, we used village rosters (provided by village cadres) to choose random willing households for survey in each villagers group.

Nanjing (with a population of eight million) was selected as a comparative case study because it is a primary destination for rural migrants and the provincial capital of Jiangsu. Jiangsu was designated in 2015 by the Chinese central government as a pilot province to explore 'new-style' urbanisation pathways. *Migration* here is defined as the movement of rural individuals beyond the boundary of a county (or urban district) where they used to live or have registered their household status. These individuals must have resided in their current locality for at least 6 months. Primary data was collected from a valid sample of 799 households in Nanjing. Our recent study detailed the methods for selecting the sample frame, random sampling techniques used and 33 sub-districts surveyed (Tan et al. 2015).

To maximize response rates, we employed structured questionnaire surveys through face-to-face interviews. We designed comparable structured questionnaires for the sample populations residing in different settings (coastal urban and inland rural) at household and individual levels. The household head of rural families in

Sichuan, or the primary migrant worker of a household in Nanjing, was asked to respond to the questionnaire. Where the household head or the direct migrant worker was not present, their spouse, or an informant who was most knowledgeable about the situations of the household members, answered the survey questions.

7.3.2 Data Description

The surveys gathered detailed primary information on some variables covering household experiences and outcomes of migration, employment, and the age pension. Data were collected on individual characteristics such as age, gender, schooling, self-assessed general health status, labour market and employment status, and wage. Data was also collected on household characteristics, including household income, the experience of migration (entire or partial household members), remittances (that farmer household received from migrant workers), housing tenure, satisfaction level with current housing, and plan for where to live (rural vs urban) in the future.

A total of 799 households (including 1491 individuals) in Nanjing, and 755 households (including 2579 individuals) in Sichuan, were interviewed. Tables 7.1 and 7.2 present a summary of important demographic, social and labour market characteristics of the respondents aged 16 years or older in the samples of Nanjing and Sichuan, respectively.

The mean age of the sample in Nanjing was 30.3 years, younger than the average age (38.3 years) of total rural migrant workers in China in 2014. Nearly 40% of respondents had all their household members live in Nanjing, while 71% of migrants have lived in Nanjing for less than 10 years. The majority (45.1%) of rural migrants in Nanjing were self-employed, compared to the average rate of 17% of the total rural migrants in China. A much higher proportion (72.5%) of rural migrants in Nanjing worked in the tertiary industry compared to the national average (42.9%). These differences between the national survey findings and the Nanjing sample can be seen to reflect the following factors: (1) the city is a major administrative, educational and tourism centre and a comprehensive transportation hub with a high proportion of service industries and demand; (2) employers in these industries are less likely to provide dormitory accommodation for their workers, and (3) the service sector has a large number of small-scale owner-operated businesses.

In the sample of Sichuan, the mean age was 46.8 years, unsurprisingly much older than the migrant group in Nanjing. The average household size was 4.2 persons, larger than that in Nanjing (3.8 persons). The average household income in 2013 was 44,244 yuan. The sub-sample of rural households *with* some members being migrants working in distant cities (*outside* the boundary of the prefecture where their county is located) received average remittances of 6565 yuan from their migrant members in 2013.

Table 7.1 Selected attributes of individual respondents aged 16 years or over, Nanjing

Characteristics	Count	%	Employment status[#]	Count	%
Age group			Labour market status		
16–24 years	355	26.9	Employed	1164	91.2
25–44 years	736	55.7	Unemployed	29	2.3
45–59 years	206	15.6	Not in the labour force	83	6.5
≥60 years	15	1.9	*Total*	*1276*	*100.0*
Total	*1322*	*100.0*	**Occupation**		
Gender			Retail, service & hospitality workers	917	79.1
Female	681	51.7	Technicians & trades workers	110	9.5
Male	635	48.3	Professionals	94	8.1
Married			Others	39	3.4
Yes	907	68.9	*Total*	*1160*	*100.0*
No	409	31.1	**Industry**		
Highest level of education			Hospitality	347	30
Primary school	242	18.4	Social service	217	18.7
Junior high school	549	41.7	Wholesale and retail	189	16.3
Senior high school	321	24.4	Other services	164	14.2
Cert./dip. & equivalent	114	8.7	Secondary industry	154	13.3
Bachelor's degree & above	90	6.8	Others	87	7.5
Did all household members Live in Nanjing			*Total*	*1158*	*100.0*
Yes	519	39.4	**Employer type**		
No	797	60.6	Self-employed	535	45.1
Had any disability or Long-term health problem			Privately owned business/foreign-invested enterprise	390	32.9
Yes	58	4.4	Government, state/collectively owned	161	13.6
No	1258	95.6	Land contractor	9	0.8
Hukou status			Others	91	7.7
Agricultural (rural)	1117	84.9	*Total*	*1186*	*100.0*
Non-agricultural (urban)	199	15.1	**Labour contract status**		
Total	*1316*	*100*	≥3 years	85	6.9
Province of hukou registered			1–3 years	164	13.3
In Jiangsu	472	38.8	≤1 year or no contract	982	79.8
Outside Jiangsu	826	61.2	*Total*	*1231*	*100.0*
Total	*1298*	*100.0*			

Source: Authors' survey

Note: [#]Employment status applies to people between 16 and 65 years by occupation, industry, employer type, and labour contract status of the highest earning job

Table 7.2 Selected attributes of individual respondents aged 16 years or over, Sichuan

Characteristics	Count	%		Count	%
Age group			Highest level of education		
16–24 years	340	13.2	Primary school	1574	60.5
25–44 years	924	35.8	Junior high school	808	31
45–59 years	586	22.7	Senior high school and above	220	8.5
≥60 years	729	28.3	**All household members live in their city**		
Gender			Yes	1333	51.7
Female	1228	47.6	No	1246	48.3
Male	1351	52.4	**Occupation**		
Married			Retail, service & hospitality workers	350	13.6
Yes	1962	23.8	Technicians & trades workers	620	24
No	613	76.2	Professionals	79	3.1
Participated in rural resident age pension			Famers	1023	39.7
Yes	1664	66.1	Unemployed or not in the labour force	507	19.7
No	852	33.9			

Source: Authors' survey

In the sample in Nanjing, the New Rural Pension (NRP) was the most popular scheme accessed by rural migrants, with a participation rate of 37.3%. This is compared to a lower participation rate (23.4%) in the Urban Worker Pension (UWP) and the Urban Resident Pension (URP) (8.5%). Over a third (36.6%) of rural migrants did not participate in *any* age pension scheme. In comparison, in the sample of Sichuan, the participation rate in the NRP was 66.1%. Specifically, for the sub-sample of farmer households *with* members being migrant workers who are employed or run businesses *outside* the boundary of the prefecture where their county is located, the average rate of participation in NRP of individuals was 66.4%. For the other sub-sample of farmer households *without* any member being a migrant worker *or* migrant workers who are employed or run businesses locally (*within* the boundary of the prefecture where their county is located), the participation rate in the NRP program was 65.9%. A minor proportion (5.5%) of respondents whose land had been requisitioned for infrastructure projects participated in the Pension for Farmers with Land Loss (PFLL) scheme. Over a quarter (28.4%) of rural respondents did not participate in *any* age pension scheme. Overall, 63.3% of migrant respondents in Nanjing, and 71.6% of rural respondents in Sichuan, have access to at least one age-pension scheme, respectively. Both rates are lower than the national average rate (about 80%) for the Chinese population in 2014, excluding those under 16 years and school students (MoHRSS 2015). They are far behind the national target level (no less than 90% by 2020), as set out in China's *National New-Style Urbanisation Plan (2016–2020)* (SCC 2014).

7.4 Methods and Variables

Regression models were used to analyze the survey data on participation in the rural resident age pension (i.e., NRP) and the choice of future living destinations (i.e., urban or rural areas). A probit model (see Greene 2008, pp.772–775 for detailed econometric specifications) was used to identify the variables associated with age pension participation. A Seemingly Unrelated Regression (SUR) model was used for future living arrangements to consider any correlation between the likelihood of living in urban and rural areas. Greene (2008, pp. 254–257) provides the detailed econometric specification for SUR. Table 7.3 provides the definitions of dependent and independent variables and their summary statistics for Sichuan samples. Probit and SUR models were estimated for each sample: (1) farmer households without any member being a migrant worker; (2) farmer households with one or more migrants. A migrant worker is a person who works outside the prefectural boundary of the original residence. Comparable variables and similar regression methods were used in the analyses of the sample in Nanjing (Tan et al. 2015).

7.5 Results

Results of the probit models for age pension participation for the two groups of rural residents in Sichuan are presented in Table 7.4. The marginal effects on the probability of participation in rural age pension schemes are reported for meaningful interpretation. For both samples, age categories are significantly associated with age pension participation. Older age groups are generally more likely to participate than younger groups. People with senior high school or above education levels are less likely to participate than those with primary schooling or who are illiterates. Occupational categories are generally not associated with age pension participation in both samples. A larger household is associated with a lower likelihood of rural age pension participation, but this is only statistically significant for those households without migrant workers (Model 1).

In contrast, higher household income is associated with a higher likelihood of age pension participation (at 0.1 significance level) for those households without migrant workers. As reflected in the survey data, larger households significantly correlate with lower household income, including no remittances (for non-migrant households) or only a few remittances sourced from migrant members (for households with migrant workers). This is because they work in local townships and county seats within the boundary of their prefectural city, earning fewer wages than their counterparts who work in distant megacities such as Nanjing. Low income reduces farmers' capacity to pay a pension premium. For the group with migrant worker household members, better health is associated with a lower likelihood of age pension participation, and married household members are more likely to participate than the non-married. Other variables, such as gender, on-farm work, off-farm

Table 7.3 Variable definitions and summary statistics, Sichuan

Variables	Definition	(1) Members of a household without any migrant worker		(2) Members of a household with one or more migrants workers	
		Mean	Std. dev.	Mean	Std. dev.
Dependent					
Social security schemes					
NRP[#]	1 if having a rural resident pension; 0 otherwise	0.66	0.47	0.66	0.47
Future living areas					
Urban	Likert scale of the likelihood of living in urban areas: [0, 10] = [very unlikely, very likely]	1.93	3.06	3.02	3.51
Rural	Likert scale of the likelihood of living in rural areas: [0, 10] = [very unlikely, very likely]	8.43	2.85	7.63	3.13
Independent					
Occupation (reference group is farmers)					
Professional	1 if people work as professional staff	0.03	0.16	0.03	0.18
Service	1 if people work as retail, service and hospitality workers	0.12	0.32	0.15	0.36
Trades	1 if people work as technicians and tradesmen	0.21	0.41	0.28	0.45
Unemployed/ NILF	1 if unemployed or not in the labour force	0.19	0.39	0.18	0.38
Age (reference group is between 16 and 24 years old)					
25–44 years	1 if between 25 and 44 years old	0.35	0.48	0.38	0.48
45–59 years	1 if between 45 and 59 years old	0.25	0.43	0.22	0.41
60 years or over	1 if 60 years old or older	0.30	0.46	0.27	0.44
Education (reference group is primary school or below)					
Junior high school	1 if the highest educational attainment is a junior high school	0.30	0.46	0.32	0.47
Senior high school and above	1 if the highest educational attainment is senior high school or above	0.07	0.25	0.09	0.29
Other factors					
Male	1 if male; 0 if female	0.51	0.50	0.54	0.50
Married	1 if married at the time of the survey; 0 otherwise	0.79	0.41	0.77	0.42
Household size	Number of members in the household	4.37	1.49	4.88	1.10
Health	Likert scale of a self-reported health condition: [0, 10] = [very poor, very healthy]	6.62	2.40	6.99	2.43

(continued)

Table 7.3 (continued)

Variables	Definition	(1) Members of a household without any migrant worker		(2) Members of a household with one or more migrants workers	
		Mean	Std. dev.	Mean	Std. dev.
Land size	Number of the household's landholding (mu)	4.59	6.08	4.24	5.38
Household income	Household income in 2013 (10,000 yuan)	4.14	5.44	5.29	5.37
Remittance	Remittance from migrant members of the household in 2013 (10,000 yuan)	0.71	1.52	0.68	1.18
Housing satisfaction	Likert scale of satisfaction level with housing: [0, 10] = [very unsatisfied, very satisfied]	6.61	2.97	5.99	2.89
On farm work	1 if did any on-farm job in 2013; 0 otherwise	0.57	0.50	0.46	0.50
Off-farm income	1 if earned any off-farm income in 2013; 0 otherwise	0.38	0.49	0.48	0.50

Note: #NRP is also used as an independent variable in the models for future living destinations

income and remittance, are not significantly associated with age pension participation. An anecdote is that families do not pay the pension scheme premiums for their daughters because they will marry out of the family, but they pay the premiums for their sons. This means that daughters must either pay their premiums or seek assistance from their in-laws. The data shows very little difference between the participation rates for females and males in the 16–24 year age group, indicating that young women still participate in the schemes despite not being supported by their families. The data shows that, for the youngest age group (aged 16–24 years), there is no significant difference in the participation rates between males (14.9%) and females (16.0%). Even for the whole sample, there is no considerable participation difference between males (66.4%) and females (65.8%) for the simple two-way tables. Also, in Sichuan, the preference for boys is not as apparent as in other provinces such as Fujian and Hubei.

Turning to the migrant group in the sample of Nanjing, there is no significant relationship between participation in the new rural pension (NRP) and employment-related variables, as reported by Tan et al. (2015). Notably, *entirely migrated households* are more likely to participate in urban worker pension (UWP) schemes than the NRP. The variables significantly associated with NRP participation are age, marital status, and level of education. Older residents are more likely to participate in the NRP. Markedly, *education* plays a decisive and substantial role in constraining the participation of rural migrants in the NRP, with higher-educated residents having a lower probability of participation in the pension program. These results are similar to the effects of significant variables identified for the two samples of rural people in

Table 7.4 Marginal effects of probit regression models for New Rural Pension participation in rural Sichuan

Variables	Model 1 (all household members living *within* the prefectural boundary)	Model 2 (some members of the household living *outside* the prefectural boundary)
Age		
25–44 years	0.38***	0.40***
45–59 years	0.57***	0.50***
60 years or over	0.57***	0.66***
Education		
Junior high school	−0.01	−0.04
Senior high school and above	−0.12*	−0.10**
Occupation		
Professional	−0.17	0.03
Service	−0.02	−0.01
Trades	0.02	−0.03
Unemployed/ NILF	−0.07	−0.10*
Other factors		
Male	0.001	0.004
Married	0.02	0.05*
Health	−0.01	−0.02**
Household size	−0.04***	−0.004
Household income	0.01*	0.001
On farm work	−0.01	−0.02
Off-farm income	0.03	0.02
Remittance	−0.003	−0.01
Observations	1138	1243
Pseudo R^2	0.15	0.22

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Sichuan. The discrepancy between the three samples in Nanjing and Sichuan is that *age* plays a relatively more significant role for rural residents to participate in the NRP in Sichuan, while *education* and *marital status* play comparatively more effective roles for migrants in Nanjing to participate (marriage) or not participate (education) in the rural pension program. Those migrants with relatively higher educational attainment, regardless of whether they worked locally or in distant major cities, had a higher probability than the less qualified to secure stable employment, which enables them to join the Urban Worker Pension scheme and later get higher pension benefits upon retirement. This result is consistent with other studies

(e.g., Cheng et al. 2014; Huang and Cheng 2014). Married migrants in both Nanjing and Sichuan (i.e., the group with some members of the household living *outside* the prefectural boundary) have a greater probability of participation in the NRP. This result might reflect their familial responsibilities (or linkages) to their (rural) families.

In Sichuan, for the sample of rural households *without* any migrant workers, respondents that have the rural resident pension (NRP) are not significantly different from those that do not have the NRP in their choices of future living destination (rural vs urban areas) (Model 3 in Table 7.5). For the other sample of households with migrant workers, having the NRP is significantly associated with a higher likelihood of living in rural areas in the future (Model 4 in Table 7.5).

For the two samples in Sichuan, *older age* is negatively associated with living in urban areas while positively associated with living in rural areas (Models 3 and 4 in Table 7.5). A relatively higher level of *education* (i.e., senior high school or above) is positively associated with living in urban areas while negatively associated with living in rural areas. These results are consistent with the literature (Zhao 2002; Huang et al. 2020). *Healthier condition* is positively associated with living in urban areas while negatively associated with living in rural areas. *Higher household income* is positively associated with living in urban areas. On-farm work is negatively associated with living in urban areas while positively associated with living in rural areas. Satisfaction with current housing is negatively associated with living in urban areas, while positively associated with living in rural areas.

For the sample of households with migrant workers, *employed* individuals, regardless of their occupations, have a higher likelihood of living in urban areas than farmers. Being *married* is negatively associated with living in urban areas, while positively associated with living in rural areas. This result is consistent with other studies highlighting that marital separation and associated demands from family members residing in the countryside are critical reasons for the return (Zhao 2002; Wang and Fan 2006). Higher *remittances* are negatively associated with living in urban areas while positively associated with living in rural areas. Remittances are used mainly for building and renovating houses and supplementing agricultural input, as reported by respondents in our in-depth interviews and observed in other studies (Murphy 2002; Fan 2004; Naud'e et al. 2017).

In the sample of Nanjing, migrant respondents that hold the NRP have a lower propensity to live in urban areas in the future. At the same time, the likelihood of returning to rural hometowns is much higher (Tan et al. 2015). The rural migrants that have a greater possibility of returning to their hometown and living in rural areas permanently are also characterized by: having family members living in their rural hometown, having lived in Nanjing temporarily (for less than 10 years), having rural cooperative health insurance (RCHI), being at middle and senior working ages (45–59 years), holding rural *hukou* status, being very unhealthy, having a lower household income, and having not purchased or rented housing but living in free and low-quality dormitories provided by employers or accommodation provided by relatives or friends. Notably, there is a greater likelihood of living in cities

Table 7.5 Seemingly Unrelated Regression (SUR) results (coefficients) on a future living destination in rural Sichuan

Variables	Model 3 (all household members living *within* the prefectural boundary)		Model 4 (some members of the household living *outside* the prefectural boundary)	
	Urban areas	Rural areas	Urban areas	Rural areas
New rural pension	−0.12	0.15	−0.19	0.34**
Age				
25–44 years	−0.63**	0.58*	−0.79***	0.96***
45–59 years	−1.93***	1.08***	−2.36***	2.32***
60 years or over	−2.21***	1.48***	−2.94***	2.57***
Education				
Junior high school	0.70***	−0.54***	0.60***	−0.46***
Senior high school and above	1.60***	−1.76***	1.28***	−1.59***
Occupation				
Professional	−1.01*	0.79	1.58***	−1.43***
Service	0.16	−0.11	1.30***	0.19
Trades	0.29	0.28	1.50***	−0.06
Unemployed/NILF	−0.14	0.00	0.12	0.29
Other factors				
Male	−0.02	0.13	0.10	0.10
Married	−0.25	0.2	−0.37*	0.35*
Health	0.15***	−0.15***	0.12***	−0.17***
Household size	−0.06	0.04	−0.08	−0.18***
Household income	0.09***	0.01	0.05***	−0.02
On farm work	−1.05***	0.88***	−0.89***	1.16***
Off-farm income	0.44	−0.41	−0.19	−0.06
Remittance	0.08	0.02	−0.14**	0.26***
Land size	0.01	−0.04***	−0.05***	0.02*
Housing satisfaction	−0.14***	0.08***	−0.08***	0.04*
Constant	3.47***	7.45***	4.61***	6.84***
Observations	1098		1195	
R^2	0.42		0.46	

permanently for migrant households with all family members currently living in Nanjing and those family members have lived there for over 10 years. Compared to the unemployed group, those working under *unstable employment* conditions (holding 1–3 years of labour contracts) are less likely to choose cities as their ultimate destination. This group of migrants, however, is not found to be significantly associated with a choice to return to rural hometowns in the future. This result may reflect this group's great uncertainty and high mobility in the workplace and occupation because they hold comparatively unstable job contracts.

7.6 Conclusion and Policy Implications

An understanding of the discrepancies in age-pension participation and choices of future living places among the three groups of rural *hukou* holders is of importance if China aims to refine its age-pension policy, to promote in-situ urbanisation in less developed rural areas (e.g., by changing surplus rural labour into local urban residents and drawing migrants back to their hometowns), and to sustain the momentum of labour flows from the less developed western and central regions to the major coastal cities in the following decades. This study provides evidence that rural resident age pension schemes offer basic social security to the diverse groups of rural *hukou* holders, who are mainly rural migrants working in megacities and rural residents (including migrant members working locally or distantly) characterized by old age, poor health conditions and low education levels. The employment status of migrant workers in a megacity (Nanjing in this case) or occupational differences among farmers (including migrant members) in rural areas (two counties of Sichuan province under this study) do not explain rural pension participation primarily because, as institutionally designed, there is almost no threshold for all rural *hukou* holders to access the rural pension program and because it has the lowest benefit level compared to other pension schemes designated for urban workers and urban residents.

The choice of mobility concerning future resettlement destinations (urban vs rural) for diverse groups of the rural *hukou* population is a function of complex demographic, social and economic factors of individuals and their households. Holding a rural pension membership functions as a significant 'pull force' for return migration, stimulating rural migrants working in megacities or in distant large urban centres to choose their rural hometown as their ultimate destination for future living. The two-way migration process is a continuity of existing migration patterns between rural and urban regions, but this process is becoming increasingly more selective. At the place of the migrants' *origin*, those rural residents who have more significant human and social capital - as characterized by being young, healthy and wealthy, possessing senior high school or above qualifications, and having household members employed in large (distant) cities – have a firm intention to resettle in urban areas permanently in the future. At the place of the migrants' destination (major cities), the migrants who are disadvantaged economically and socially are more likely to be excluded from the pension schemes for migrants. Those who are older, have poor health and lower income, have short-term urban living experiences, have not purchased or rented housing, or have unstable employment status will miss out. This exclusion occurs through the increasingly competitive and selective labour market in large cities. Consequently, these citizens have a stronger tendency to return to their rural hometowns for retirement and living.

These findings have some important policy implications. First, it is necessary to recognize that the rural resident pension scheme is the ultimate safety net for socially and economically disadvantaged and vulnerable migrants and that improvements in the quality of the scheme and in resolving the types of implementation problems

identified above are essential for achieving more significant social equity and solving the challenges of rural ageing. Second, developing better articulation between the urban and rural schemes is necessary. Rural migrants working in urban areas are more likely to participate in the urban schemes if they know they can transfer their full accumulated benefits back into the rural scheme should they return to their hometowns in retirement. This would help solve their retirement income challenges and transform the current situation where urban age pension contributions made by migrant workers essentially provide benefits to the urban population by increasing the size of the local pool rather than offering an accumulation of retirement funds to the workers themselves. Such a policy would also facilitate the aims of return migration since it would incentivize migrants to return to their hometowns because they would know that they could retain all the benefits earned elsewhere. Conversely, family members residing in rural areas might be able to join their descendants in urban areas if they could take their rural pension benefits with them. This could facilitate migrant workers and their family members settling in urban areas permanently or on a long-term basis.

These findings underline that the ultimate goal of age pension reform in China should focus on developing a nationally integrated scheme in which there is complete transferability and portability of rights and benefits so that there are no systemic barriers to mobility and place of residence. While different population groups might end up with varying levels of benefits, depending on their employment history and contributions, the goal of achieving more significant social equity and easier access to age pension benefits would be best served by removing the barriers that exist between the different schemes and the different locations and by recognizing and responding to the socio-economic characteristics that contribute to outcomes and choices.

References

Cai F (2010) How migrant workers can further contribute to the urbanization: potentials of China's growth in post-crisis era. Chin J Popul Sci 1:2–10. (in Chinese)

Chan KW, Buckingham W (2008) Is China abolishing the Hukou system? China Q 195:582–606

Cheng ZM, Nielsen I, Smyth R (2014) Access to social insurance in urban China: a comparative study of rural–urban and urban–urban migrants in Beijing. Habitat Int 41:243–252

Fan CC (2004) Out to the city and back to the village: the experiences and contributions of rural women migrating from Sichuan and Anhui. In: Gaetao AM, Jacka T (eds) On the move: women and rural-to-urban migration in contemporary China. Columbia University Press, New York, pp 177–206

Greene W (2008) Econometric analysis. Pearson Education Inc, New York

Hagen-Zanker J, Himmelstine CL (2012) What do we know about the impact of social protection programmes on the decision to migrate? Migr Dev 2:117–131

Huang YQ, Cheng ZM (2014) Why are migrants not participating in welfare programs? Evidence from Shanghai, China. *Asian Pac Migr J* 23(2):183–210

Huang Y, Liu W, Zhuo Y, Sun X (2020) Social insurance participation and urban settlement intentions of China's floating population. Popul Space Place 26:e2366

Knight J, Quheng D, Shi L (2011) The puzzles of migrant labor shortage and rural labor surplus in China. China Econ Rev 22:585–600
Lee L (2012) Decomposing wage differentials between migrant workers and urban workers in urban China's labor markets'. China Econ Rev 23(2):461–470
Li L, Tonts M (2014) The impacts of temporary labor migration on farming systems of the loess plateau, Gansu province, China. Popul Space Place 20(4):316–332
Liu H (2012) Comprehensive carrying capacity of the urban agglomeration in the Yangtze River delta, China. Habitat Int 36:462–470
Ministry of Human Resources and Social Security (MoHRSS) (2015) Annual report on social security development in China 2014. http://www.mohrss.gov.cn/gkml/xxgk/201507/t20150702_213521.htm
Murphy R (2002) How migrant labor is changing rural China. Cambridge University Press, Cambridge
National Bureau of Statistics of China (NBSC) (2015) 2014 dynamic monitoring & surveys of rural migrant workers in China. http://www.stats.gov.cn/tjsj/zxfb/201504/t20150429_797821.html
National Bureau of Statistics of China (NBSC) (2021) Main data on the 7th National population census in China. Released on 11 May, Beijing. http://www.stats.gov.cn/tjsj/zxfb/202105/t20210510_1817176.html
National People's Congress (NPC) (2010) Zhonghua Renmin Gongheguo Shehui Baoxian Fa [The social insurance law of the PRC], 28 October. http://www.china.com.cn/policy/txt/2010-10/29/content_21225907.htm
National Population and Family Planning Commission of China (NPFPC) (2012) 2012 report on China's migrant population development. China Population Publishing House, Beijing
Naud'e W, Siegel M, Marchand K (2017) Migration, entrepreneurship and development: Critical questions. IZA J Migr 2017(6):1–16
Peng XZ (2011) China's demographic history and future challenges. Science 333:581–587
Qiao XC, Huang YH (2013) Floating population across provinces in China: analysis based on the sixth census. Popul Dev 19:13–28
Schultz T (1968) Economic growth and agriculture. MacGraw-Hill, New York
Shen J, Wang G (2012) Estimating the contributions of migration factors to interprovincial migration in China 1995–2000. Ann GIS 18(4):257–266
Sheng LY, Peng LQ (2006) Quantity, structure and characteristics of migrant workers. In: Cai F (ed) *Reports on China's population and labor no. 7: demographic transition and its social and economic consequences*. Beijing, Social Sciences Academic Press (China), pp 44–60
State Council of China (SCC) (2006) *Guanyu jiejue nongmingong wenti de ruogan yijian* [Some proposals for resolving the problems of migrant workers], Issued 27 March. http://www.gov.cn/jrzg/2006-03/27/content_237644.htm
State Council of China (SCC) (2009) The state Council's guideline on the pilot for the development of the new rural pension, State Council Document 2009/32, Issued 7 September. http://www.gov.cn/jrzg/2009-09/07/content_1411208.htm
State Council of China (SCC) (2014) National new-type urbanization plan 2014–2020. People's Publishing House, Beijing
State Council of China (SCC) (2015) Supporting rural migrant workers, university graduates and soldiers to return to their hometown establishing businesses, Government document No. 47, issued 17 June. http://www.gov.cn/zhengce/content/2015-06/21/content_9960.htm
Statistical Bureau of Anyue County (SBAC) (2013) *Annual statistical yearbook of Anyue County*, internal publication. SBAC, Anyue, Sichuan province
Statistical Bureau of Muchuan County (SBMC) (2013) *Annual statistical yearbook of Muchuan County*, internal publication. SBMC, Muchuan, Sichuan province
Tan Y, Zuo A, Watson A (2015) Social security and migration: meeting the needs of China's rural migrants, Working paper, department of geography, population and population, The University of Adelaide, Australia

Wang D (2008) The design of a social security system for rural migrant workers in China. In: Nielsen I, Smyth R (eds) Migration and social protection in China. Mainland Press Pte Ltd., Singapore, pp 51–64
Wang WW, Fan CC (2006) Success or failure: selectivity and reasons of return migration in Sichuan and Anhui, China. Environ Plan A 38(5):939–958
Wang HN, Guo G, Cheng ZM (2014) A distributional analysis of wage discrimination against migrant workers in China's urban labor market. Urban Stud 52(13):2383–2403
Watson A (2009) Social security for China's migrant workers – providing for old age. J Curr Chin Aff 38(4):85–115
Watson A (2012) Building social welfare in China: providing retirement incomes in a transforming economy. In: McKay H, Song L (eds) *Rebalancing and sustaining growth in China*. Canberra, ANU Press, pp 265–287
Watson A (2015) Social protection and livelihoods: providing old-age social insurance for migrant workers in China. In: Heather, Zhang X (eds) Rural livelihoods in China. Routledge, Abingdon, UK, pp 48–73
World Bank (2014) Urban China: toward efficient, inclusive, and sustainable urbanization. World Bank, Washington, DC. https://doi.org/10.1596/978-1-4648-0206-5
Xie S, Chen J, Ritakallio V, Leng X (2021) Welfare migration or migrant selection? Social insurance participation and rural migrants' intentions to seek permanent urban settlement in China. Urban Stud 58(10):1983–2003
Xu X, Tan Y, Chen S, Yang G (2014) Changing patterns and determinants of natural capital in the Yangtze River delta of China 2000–2010. Sci Total Environ 466:326–337
Yu Y, Sun B, Sin X (2014) Can social security influence migrant workers' return intention? An analysis based on Shanghai survey data. Popul Econ 207(6):102–108. (Abstract in English)
Zhao Y (1999) Labor migration and earnings differences: the case of rural China. Econ Dev Cult Chang 47(4):767–782
Zhao YH (2002) Causes and consequences of return migration: recent evidence from China. J Comp Econ 30(2):376–394
Zhu Y, Wang W, Lin L, Shen J, Ren Q (2021) Return migration and in situ urbanization of migrant sending areas: insights from a survey of seven provinces in China. Cities 115. https://doi.org/10.1016/j.cities.2021.103242

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National Commission for UNESCO, the National Climate Change Adaptation Research Facility, the federal Department of Agriculture, Fisheries and Forestry, the Australian Centre for International Agricultural Research, the Australian Consumer and Competition Commission and the Murray Darling Basin Authority.

Chapter 8
Informal Employment at an Older Age in China: Why Your First Job Matters

Ge Yu and Ning He

Abstract Using the data of individuals approaching retirement age from the China Health and Retirement Longitudinal Study (CHARLS), this chapter explores factors associated with informal employment at older age in China. We found that males, individuals with more education, or those with urban residency have a lower chance of being in informal employment at an older age. We further examined career path dependency by investigating the link between a worker's first job and the status of their employment at a later stage in life. Our findings show that older workers whose first job was in the state sector were the least likely to work informally at an older age. In contrast, individuals who were self-employed in their first job had 22.69% higher chance ending their working life with informal employment at older age than those who started in state sector. Results indicate that employment opportunities among older workers are segmented by, and depend on, institutional arrangements. The difficulties in breaking up the structural barriers in employment suggest that disadvantages at an early stage of life are likely to be exacerbated at an older age, which further enlarges the inequalities among older people. This raises serious challenges for policy makers as how to ensure those who have been in precarious employment have access to basic social security after they retire.

Keywords Informal employment · Older workers · Ageing population · China

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X. Deng et al. (eds.), *Ageing in China*, https://doi.org/10.1007/978-981-19-9681-8_8

8.1 Introduction

Informal employment, also known as non-standard, atypical, flexible, alternative, irregular, and precarious employment, is defined as workers who lack formal labour contracts, receive few or no social insurance benefits, and are often not protected by labour laws (International Labour Organization (ILO) 2020). Older workers with informal employment are especially vulnerable as lacking access to social protection means work is their only option to survive. (OECD and ILO 2019). A key feature of the rapid economic development of China is the deregulation of the labour market and the dramatic growth of informal employment (Cooke 2011; Wang et al. 2016). While the precise number is difficult to obtain, previous studies estimated that informal employment accounts for around 45% of urban employment (Zhang et al. 2015), and over 60% of the total workforce in China (Zhou 2012). While the informal economy contributes substantially to China's employment and economic growth and has arguably lifted many out of poverty through providing employment opportunities for those who were unable to enter the formal sector (Cai and Wang 2004; Hu and Zhao 2006), the lack of protection of those with informal employment has long been an issue. Workers who are employed informally do not receive the basic social security mandated by the government, and some even do not get paid for their work. Many of those who entered the labour market through informal employment in the early 1980s have reached, or are approaching, their retirement age and may face the reality of losing their main source of income.

Despite growing literature on informal employment in China (see for example, Meng 2000; Park and Cai 2011; Huang 2009; Cooke 2011; Kuruvilla et al. 2011; Park et al. 2012; Chen and Hamori 2013; Liang et al. 2016; Wang et al. 2016, 2021), limited attention has been paid to older workers. This is in sharp contrast to rich literature in developed countries regarding late career instability and inequality (e.g. Blossfeld et al. 2006; Gesthuizen and Wolbers 2011; Hofäcker 2010; Blossfeld et al. 2011; Grenier et al. 2020). With the exception of Giles (2009), older informal workers have been a topic largely untouched by the current literature in China. This paucity of literature is unjustifiable given that China is currently experiencing a radical demographic shift: the population is ageing and the labour force is contracting. Such a shift calls for a better understanding of older workers, particularly older workers without access to social protection through their employment. This chapter attempts to fill this gap by focusing exclusively on older workers aged 45 and 60 (before the official mandatory retirement age) in urban China.

Our work contributes to the current literature on informal employment through the following channels. First, this study draws on a status maintenance model, and combines a labour market segmentation perspective and a life course perspective to hypothesise on cumulative advantages/disadvantages at a later life stage. Second, we generate empirical evidence through our analysis of the 2018 national baseline survey data of the China Health and Retirement Longitudinal Study (CHARLS). Our findings contribute to the social stratification literature by revealing the role of

institutional and structural factors on the probability of older workers engaging in informal employment in urban China (socioeconomic status attainment and maintenance). Third, it contributes to discussions of age and the labour market, and life course and social inequality, by examining the links between segmented labour markets and the heterogeneity among older workers in the context of rapid demographic change and population ageing in China. Finally, findings in this study can help to formulate evidence-based social policy aiming to reduce social inequalities in the older population, which is likely to become more important due to China's rapidly ageing population. This chapter is structured as follows: Section Two provides the theoretical framework and hypothesis development. The third section outlines the data and methodology. The fourth section presents the empirical results, and the chapter concludes with discussions, policy implications and research limitations.

8.2 Background and Hypothesis Development

8.2.1 Background

China's economic reform in 1978 has fundamentally transformed both rural and urban labour markets. The rapid expansion of the private sector and the concomitant decline of the state sector since the late 1990s substantially altered the nature of the Chinese labour market, which has resulted a surge of informal employment in urban China. Such a change may have a profound impact on older workers' life chances.

Taking advantage of China's rapid economic growth in the last four decades, the private sector has expanded rapidly with the marketisation reform, and its dominance was underscored with the privatisation of numerous state-owned enterprises (SOEs) in the 1990s. Along with the rapid expansion of the private sector came the exponential growth of informal employment. One of the main consequences of the state sector reform was the privatisation or closure of SOEs, and the subsequent loss of formal jobs with guaranteed lifetime social protection, or so-called "iron rice bowl". Older workers were hit hard in this reform which led to a decline in the employment of urban older workers (Meng 2012). Some urban older workers withdrew completely from the labour force due to the "discouraged worker effect" (Meng 2012; Giles et al. 2006), and others re-entered the labour market through informal employment. The major source of informal workers is migrant workers from rural areas. Initially, they were barred from moving to the urban area due to the restrictions of the household registration (*hukou*) system. Market reform has created opportunities for them to work in the city, but usually in an informal capacity. It will be interesting to find out whether those who took informal employment when they entered the job market will be able to improve their status later in their life stage.

8.2.2 *Labour Market Segmentation and the Dual Labour Market*

Labour market segmentation theory originated primarily from the labour economics field in the United States in the 1960s. It focuses mainly on the internal labour market within an organisation. Doeringer (1967) conceptualised it as "an administrative unit within which the market functions of pricing, allocating, and often training are performed. It is governed by a set of institutional rules, which delineate the boundaries of the internal market and determine its internal structure" (p. 207). Conceptually, there are relatively clear and stable career ladders in the internal labour market: employees are expected to be promoted to jobs with higher pay and a higher status once certain criteria are met, career progression is not influenced by the determinants of the external labour market, salaries and individual promotion depend on seniority, especially firm-specific experience (Piore 1978).

Doeringer and Piore (1971) later extended labour market segmentation theory and developed the dual labour market theory, with an additional distinction between primary and secondary labour market segmentation which showed that "a primary labour market offers relatively higher-paying, stable employment, with good working conditions, chances of advancement and equitable administration of work rules; and a secondary labour market is less attractive in all of the these respects"(Piore 1969, p. 102). In contrast to the primary labour market, the secondary labour market has two types of employment: unskilled jobs and temporary work in the informal labour market is part of the first type, which has no links between employment and internal labour markets (Doeringer and Piore 1971). The other includes jobs on the "fringe" areas of large companies which have employment relationships with the internal labour market, but one's entrance and exit are not attached to the work rules of the internal labour market, and career advancement chances are very limited, with low salary levels (Blossfeld and Mayer 1988).

The concepts of a dual labour markets (or sectors) have now gone beyond the boundary of an internal market. As Marshall (1998) explains, the primary labour market is "commonly understood to mean people with secure jobs and good conditions of work in public-sector employment, the large corporations, and highly unionised industries; while the secondary labour-market is understood to cover small employers, non-unionised sectors of the economy, and highly fragmented and competitive industries such as retailing, where jobs are less secure and conditions of work and pay generally poorest" (p. 1).

While the segmentation theories discussed above originated from observation on western labour markets, especially the United States (Deakin 2013), the insight that a country's labour market institutions may account for the segmented labour market is applicable to other nations. China's labour markets are comparatively newly developed, evolving over the past forty years, from a nascent labour market to a mature one (Warner 2011). Unlike in developed economies, the segmentation of the Chinese labour market mainly results from state institutions (institutional arrangements). That is, institutional segmentation is the main characteristic that dictates

segmentation in the Chinese labour market (Li and Wan 2014). Additionally, segmentation in the Chinese labour market is more complicated, and comes in a variety of forms, and the two most influential institutions for the labour market are the household registration system and the ownership of organisations.

Household registration, or *hukou* in Chinese, was set up in the early 1950s to limit the mobility of residents and allocate resources under the planned economy. Institutional segmentation associated with the *hukou* system in China has played a pervasive and persisting role in determining social stratification in contemporary China (Xie et al. 2009). It created the urban-rural segmentation which divides the overall Chinese labour market into two separate markets with the urban labour market being primary and more prestige, and the rural labour market being the secondary labour market (Li and Wan 2014). Hukou creates a significant barrier for mobility, making it difficult for rural residents to enter the urban labour market.

Additionally, segmentation through ownership has existed between the state sector (represented by the public sector and SOEs) and the market sector (represented by private enterprises). Accordingly, Song (2013) posited a three-sector segmented labour market model (SOE, private and agriculture). Notably, such institutional segmentation has long been associated with the *hukou* system in China, which has played a pervasive and persistent role in determining social stratification in contemporary China, particularly in urban China (Xie et al. 2009).

Prior to the 1980s, under a state socialist command economy, the Chinese economy operated under a system of public ownership. The public, or the formal, sector predominated, while the private or informal, sector was virtual non-existent in China. Economic activities were heavily controlled by the State. All rural workers were organised into people's communes, and most urban workers held a formal and lifelong job with the same employer in the formal sector, such as in state-owned organisations. Dual labour market segmentation was reinforced by the hukou system, limiting mobility between rural and urban areas and safeguarding the rural-urban divide. Subsequently, employees in the urban labour market have enjoyed significantly higher salaries and welfare benefits (Zhou et al. 1997). Economic reform since the late 1970s saw the private sector come out of the shadows and gradually overtake the state sector to become the main source of employment (Lardy 2014).

Song (2013) proposed a three-sector segmented labour market model (State, private and agricultural), with formal employment mainly in the first sector. Since formal employment remains attractive due to the benefits and protection associated with it, urban *hukou* residents are given priority. *Hukou* is usually used as a screening mechanism to bar rural job seekers. Since the majority of formal jobs are located in urban areas, rural hukou creates a significant barrier to formal employment. Therefore, we have,

Hypothesis 1: Older workers with a rural hukou are more likely to work informally in later life than their counterparts with an urban hukou.

Human capital, however, can pave the way to break into the segmentation of the labour market. According to human capital theory (Becker 1964), education level is

an important determinant of a person's employability and earning power. Lower education attainment has often been cited as one of the disadvantages in the labour market, and OCED and ILO (2019) found that the average proportion of workers with tertiary education stood at 7% in 2016 in the general labour market, compared with 34% in the formal economy. Further, they reported that education levels among informal workers varies significantly worldwide, with the proportion being as high as 26% in the Americas and as low as 5% in Asia. Considering the lack of universal social security coverage in China, the benefits attached to formal employment are substantial and attractive. Individuals with more human capital will attempt to move to formal employment and will have higher chance of doing so. Therefore, we have the following hypothesis:

Hypothesis 2: Older workers with higher levels of education are less likely to be informally employed.

8.2.3 "Cumulative Dis/advantage" Theory

"Cumulative dis/advantage" theory explains how influences of early disadvantages and advantages cumulate over the life course (Crystal et al. 1992; Elder 1995). Workers will naturally have different working experience when they work in the primary or secondary labour market. Individuals working in the secondary market are more likely to possess fewer skills and be less educated, and thus have less opportunity for improvement. Consequently, there is a high probability of quitting, lateness and absenteeism. Some are confined in the secondary market (Mayer and Carroll 1987), which could lead to more cumulative disadvantages of already disadvantaged groups during the life course (Blossfeld and Mayer 1988). It is possible that older workers with disadvantages in their previous working history could be limited in their later employment and economic well-being. As Elder (1995) found, with cumulative advantage (or disadvantage), earlier life experience will subsequently lead to advantageous or vulnerable outcomes.

In China, the state sector remains attractive, with job security and generous employee benefits. Workers initially from the state-owned sector may have "comparative advantages of trained capacity, structural location, and available resources make for successive increments of advantage" (Merton 1988, p. 606). Workers from other sector, especially those who started as self-employed or in the agricultural sector, are outsiders to the formal employment system. Additionally, such a system could easily lead outsiders, such as agricultural workers, to be "entrapped in low-skill and low-pay jobs characterised by chronic employment insecurity and instability" (Zhou 2012). This concurs with the views of Henretta and Campbell (1976), and Hardy (1991) that job-related characteristics at younger ages may continue to determine relative heterogeneity in work patterns and economic outcomes at older ages. Based on the previous discussion, we propose the following hypothesis:

Hypothesis 3: Older workers are more likely to be informally employed if their first job is in non-state sector.

8.3 Methodology

8.3.1 Data Source and Sample

This study used CHARLS data – a biennial survey carried out by the China Centre for Economic Research at Peking University, China. CHARLS aims to collect a nationally representative sample of the residents of China aged 45 and older, with no upper age limit. The survey currently has four waves. The baseline national wave of CHARLS was fielded in 2011 and contains data on about 10,000 households and 17,500 individuals in 150 counties/districts and 450 villages/residents' committees. The second, third, and fourth waves of CHARLS were launched in 2013, 2015, and 2018. This survey covers a wide range of topics for multidisciplinary analyses. The current study uses data from the fourth wave, with some social demographic variables such as gender, age, education and marital status derived from the baseline survey. Since the formal retirement age in China is 60 for males and 55 for females, we selected male participants aged from 45 to 60 (n = 4210) and female participants aged from 45 to 55 (n = 3430). Only 796 participants reported their current job types in 2018, so the final sample featured 544 male and 252 female participants who have complete information.

8.3.2 Variables

Dependent Variable

Informal employment. This study follows criteria by Park et al. (2012)[1]. We use two criteria to capture employment informality: formal labour contract and social security benefits. The CHARLS survey has a question asking the respondent whether he/she has signed a formal labour contract with their employers. Respondents were also asked whether they received social security benefits (e.g. pensions and health care insurance) from their employers. If a respondent answered "no" to both of the questions above, they fell into the category of informal employment. In other words, respondents who were employed without signing a formal job contract and without being paid social security benefits were considered to be informally employed. The self-employed were also treated as informal workers.

[1] No formal labour contract and no social security benefits.

Independent Variable
Work organisation type of first job. Participants were asked about the type of the organisation they worked for in their first job. There were six types listed. Government or institutions (*shi ye danwei*, such as schools, universities and hospitals) were coded as "state sector". NGOs or companies were categorised as "non-state sector". Participants who worked in individual firms or households, including domestic helpers, were categorised as "self-employed & house worker".

Control Variables
We also included several control variables that might be associated with the probability of being informal workers in later life. Sociodemographic variables included gender (1 = male, 0 = female), age in years, age squared, and education level, which we classified into three levels: those who are illiterate or have only completed primary school or lower were treated as no or little education (1), those who have completed junior and senior high school were coded as 2 and the rest was coded as high education (3), which included vocational school, college/associate degree and above. *Hukou* (household registration) was measured as a dummy variable with 1 for urban *hukou*, 0 for rural *hukou*). Marital status was coded as a dummy variable (1 = married or cohabitant, 0 = being single/ divorce/separated). First job starting year (1 = after 1986, 0 = before 1986), having schooling children (1 = Yes, 0 = No) were also included. Health was measured by the respondent's self-reported health status in 2018. Participants had five response options: very good, good, fair, poor, and very poor. We coded it as a dummy variable (1 = good health, if very good, good or fair was reported; 0 = poor health if poor or very poor was reported).

8.4 Results

Descriptive analysis and logistic regression model were conducted using Stata 15. T-tests and chi-squared tests were conducted to compare the differences between informal workers and formal workers. Multivariable logistic regression was employed to explore the relationship between work organisation type of first job and the probability of being informal workers in later life.

8.4.1 Descriptive Analysis

Table 8.1 presents characteristics of older formal and informal workers in the urban labour market in 2018. There were 653 (82.04%) participants doing informal work and 143 (17.96%) doing formal work in the sample. The work organisation types of first job were significantly different from informal and formal workers ($\chi 2 = 64.03$, $p < 0.001$). A majority of the participants were male (N = 544, 68.34%), aged at 54.52 (SD = 2.88), with low (N = 246, 33.17%) or middle (N = 275, 34.55%)

Table 8.1 Descriptive statistics

	Total (N = 796)	Informal work (N = 653; 82.04%)		Formal work (N = 143; 17.96%)			
	M (SD)/%	N	M (SD)/ %	N	M (SD)/ %	χ^2 or t	p
Type of first job						$\chi^2 = 64.03$	<0.001
State-sector	124 (15.58%)	69	10.57%	55	38.46%		
Non-state sector	133 (16.71%)	95	14.55%	38	26.57%		
Self-employed	71 (2.95%)	68	10.41%	3	2.10%		
Agricultural	432 (54.27%)	393	60.18%	39	27.27%		
other	36 (86.14%)	28	4.29%	8	5.59%		
Gender						$\chi^2 = 9.19$	0.002
Male	544 (68.34%)	431	66.00%	113	79.02		
Female	252 (31.66%)	222	34.00%	30	20.98%		
Age	54.52 (2.88)	653	54.51 (2.90)	143	54.55 (2.80)	$t = 0.14$	0.890
Education						$\chi^2 = 80.24$	<0.001
Low education	264 (33.17%)	246	37.67%	18	12.59%		
Middle education	275 (34.55%)	230	35.22%	45	31.47%		
Senior middle education	168 (21.11%)	131	20.06%	37	25.87%		
High education	89 (11.18%)	46	7.04%	43	30.07%		
Hukou						$\chi^2 = 72.50$	<0.001
Urban	283 (35.87%)	188	29.06%	95	66.90%		
Rural	506 (65.04%)	459	70.94%	47	33.10%		
Marital status						$\chi^2 = 6.83$	0.009
Married	747 (93.84%)	606	92.80%	141	98.60%		
Unmarried	49 (5.65%)	47	7.20%	2	1.40%		
First job starting year						$\chi^2 = 3.48$	0.062
Before 1986	633 (83.51%)	530	84.66%	103	78.03%		
After 1986	125 (16.49%)	96	15.34%	29	21.97%		

(continued)

Table 8.1 (continued)

	Total (N = 796)	Informal work (N = 653; 82.04%)		Formal work (N = 143; 17.96%)			
	M (SD)/%	N	M (SD)/ %	N	M (SD)/ %	χ^2 or t	p
Have schooling children						$\chi^2 = 2.34$	0.126
Yes	50 (6.28%)	37	5.67%	13	9.09%		
No	746 (93.72%)	616	94.33%	130	90.91%		
Good health						$\chi^2 = 7.63$	0.006
Yes	649 (87.58%)	523	86.02%	126	94.74%		
No	92 (12.42%)	85	13.98%	7	5.26%		

Source: Authors' calculation based on data from CHARLS

education, having a rural *hukou* (N = 506, 65.04%), and married (N = 747, 93.84%). Only a few participants retired early (N = 3, 0.38%). Most of the participants started working before 1986 (N=633, 83.51%), did not have children in school (N = 746, 93.72%), and reported good health (N = 649, 87.58%).

8.4.2 Logistic Regression Model

Table 8.2 shows ORs with 95% confidence intervals (CIs) from logistic regressions. The participants who worked as self-employed (OR = 22.69, $p < 0.001$), and in agriculture (OR = 2.99, $p < 0.001$) as their first jobs were more likely to be informal workers in later life than those who worked in state-sector as their first jobs. Male participants were less likely to be informal workers in later life than female (OR = 0.38, $p < 0.001$). Participants with middle education (OR = 0.38, p = 0.01) or high education (OR = 0.30, p = 0.01) were less likely to be informal workers in later life than those with low education. Participants with an urban *hukou* were less likely to be informal workers in later life than those with a rural *hukou* (OR = 0.39, $p < 0.001$). Participants who reported good health were less likely to be informal workers in later life than those who reported poor health (OR = 0.33, p = 0.03).

8.5 Discussion and Conclusion

Along with China's rapid economic development over the past forty years, there has been a rise in informal employment. Informal employment has become the main type of employment since the late 1990s. Undeniably, informal employment plays a very important role in China's economic transition. It has facilitated the rapid expansion

Table 8.2 Determinants of being informal workers in later life in 2018 (N = 701)

	OR	*p*	*95%CI*
Type of first job (ref: State-sector)			
Non-state sector	1.51	0.21	0.80–2.85
Self-employed	22.69***	0.00	2.85–180.45
Agriculture	2.99***	0.00	1.43–6.22
Other	1.17	0.77	0.41–3.34
Male (ref: female)	0.38***	0.00	0.21–0.69
Age	0.52	0.55	0.06–4.54
Age^2	1.01	0.50	0.99–1.03
Education (ref: low education)			
Middle education	0.38***	0.01	0.19–0.76
Senior middle education	0.60	0.21	0.27–1.33
High education	0.31**	0.01	0.13–0.76
Urban Hukou (ref: rural Hukou)	0.39***	0.00	0.21–0.71
Marital (ref: unmarried)	0.29	0.11	0.06–1.30
Start year after 1986 (ref: before 1986)	1.10	0.80	0.54–2.26
Having schooling children	0.59	0.21	0.26–1.35
Good health (ref: poor health)	0.33**	0.03	0.12–0.90

Note. OR = odds ratio. Pseudo $R^2 = 0.22$
Data Source: CHARLS

of the private sector and has been a driving force for economic prosperity. The increase in the prevalence of nonstandard work arrangements, however, has also resulted in a shift towards more precarious work in China.

This chapter draws on labour market segmentation theory and the cumulative advantage/disadvantage theory and investigates how labour market segmentation influences older workers' employment opportunities in China's urban labour market. Our findings reveal that older workers originally from the state sector are the most likely to continue to be core formal workers in later life. In contrast, older workers originally from agricultural work face high risks of being entrapped into a peripheral workforce as precarious workers. Our analysis suggests that the segmented labour market is difficult to change and has created sustained disadvantage for those who did not manage to secure employment in their early years. Older workers whose first job was in the state sector were the least likely to work informally at an older age, which was followed by those who started their career in the non-state sector. Those who were self-employed or who worked in the agricultural sector when they were young were likely to end up in the same occupation in their later life. The precarious status is further reinforced by rural *hukou*, which attracts minimum social security and creates a significantly higher chance of workers being informally employed. The only way to break into the segmented labour market is education, which increases an individual's likelihood to engage in formal work at older age.

This study also indicates that a hierarchy of employment opportunities among older workers is an outcome of institutional arrangements beyond individual control.

These arrangements construct and maintain the structures and processes through which resources are allocated among social groups, where workers from the state sector are at the top, and agricultural workers are at the bottom. This supports the argument of Wang and Xie (2015) that structural factors in the economic sector shape individuals' life chances in China. Additionally, the results are consistent with the argument of the "cumulative advantage/disadvantage" theory that some influences of early advantages and disadvantages accumulate over the life course (e.g. Crystal et al. 1992; Elder 1995).

Further, this finding corroborates Nee's observations that human capital is important in the process of social stratification in contemporary China (Nee 1989, 1996). Last, the analysis of this study supports the results from Wang and Xie (2015) in that the post-1978 economic reform has not diminished the role of the state or old institutions. The state and old institutions continue to be powerful due to institutional inertia, and the dualistic labour market system that still exists in transitional China, and which segregates the state sector (internal labour market) from the non-state sector. Since the expansion of the non-state (private) sector, particularly the strong growth of the informal sector in the late 1990s, employment security has deteriorated. Since the expansion of the non-state (private) sector, particularly the strong growth of the informal sector in the late 1990s, employment security has deteriorated. Gallagher et al. (2011) postulated that the deterioration of employment security is due to the distinction between core formal workers and periphery informal workers.

On top of that, workers are distinguished into two groups by the *hukou* system: urban workers are treated as "insiders" with privileges and benefits, and rural workers as "outsiders" to the urban cities and are in the most disadvantaged position. Such institutional arrangements of segmentation reinforce the hierarchy of social status, along with China's institutional transition from a centrally planned economy to a market-based economy. With the state playing a lead role in control over the Chinese economy, and segmented labour market, state-enforced institutions and policies, could deepen the effect of the segmented labour market (Fan 2002; Wang and Xie 2015). For example, the introduction of the Labour Contract Law in 2008 was meant to provide more protection to the vulnerable workers, but lead to a much larger earning gap between workers with and without an employment contract (Schmillen 2022).

The rising inequalities between formal and informal employment pose an extra challenge for China, a country that is also facing rapid population ageing and a shrinking workforce. This is particularly evident among China's rural-urban migrant workers in the urban labour market, who are the backbone of the nation's manufacturing industry. As informal employment is associated with poverty and vulnerability, older workers who engage in this unregulated work are a concern for China from the perspective of both social justice and sustainable economic development. Limited protection of informal workers implies an exploitation of cheap labour under poor work conditions, which can damage individual well-being, motivation in the workplace and performance quality (Zhou 2012).

Against the backdrop of a rapidly ageing Chinese society and a declining labour force, inequalities and the inequitable treatment of certain groups of workers inevitably alienates these workers and causes them to drop out of the workforce earlier than they would otherwise. This will further lead to a decline in the productivity of the manufacturing and other industries in urban China and, subsequently hurt the national economy as a whole. The state needs to be aware of the consequences of institutional obstacles, particularly the "fragmented market" system with high advantages in the state sector and poor development in the private sector (Zhao 2012). Incorporating informal (older) workers into a more regulated labour market system would be one step. Providing them with fair terms of employment and an egalitarian working environment would be another (Zhou 2012), and providing support for skills-upgrading, particularly among older workers with low educational attainment, is another important step (Giles et al. 2012). Further, the *Hukou* system that results in the urban-rural divide and segregates urban from rural workers must be abolished, and a universal social safety net for all individuals regardless their residential location is also called for. Compliance on Labour Contract Law in the private sector needs to be enforced, and social insurance benefits such as pensions and medical insurance must be tied to employment, regardless of who the employer is. These actions will not only mitigate the negative effects of the ageing and declining workforce, but also facilitate the sound and sustainable economic development of China to promote a more inclusive society.

There are several limitations of this study. First, the data used in this study only contains older workers aged 45 and over in one year. Longitudinal data with individually complete employment histories will produce a more convincing story and reveal more nuances on how cumulative advantage/disadvantage has been built up over time, as inequality is a cumulative process over the life course rather than a static outcome (Jill 2001). Second, we only examined one variable related job mobility: first job. While China was a low-mobility labour market, job mobility has improved considerably in the last decade or so (Naughton 1997; Wang 2008, See also Xie et al. 2009). Longitudinal data will allow us to examine other determinants of job mobility (entry into formal and informal employment, unemployment and retirement) of workers later in their careers, as well as exploring the change of job mobility over time. Last, this study only investigated the determinants of informal employment without exploring the impact of informal employment on individual wellbeing. Further research can be carried out in these areas.

References

Becker G (1964) Human capital: a theoretical and empirical analysis, with special reference to education. University of Chicago Press, Chicago

Blossfeld HP, Mayer KU (1988) Labor market segmentation in the Federal Republic of Germany: an empirical study of segmentation theories from a life course perspective. Eur Sociol Rev 4(2): 123–140

Blossfeld HP, Buchholz S, Hofäcker D (2006) Globalization, uncertainty and late careers in society. Routledge, London/New York
Blossfeld HP, Buchholz S, Kurz K (2011) Aging Population, Globalization and the Labor Market. Edward Elgar, Cheltenham/Northampton
Cai F, Wang MY (2004) Informal employment and the labour market development: the general interpretation of the employment growth in urban China. Econ Dyn 2:24–28. (in Chinese)
Chen G, Hamori S (2013) Formal and informal employment and income differentials in urban China. J Int Dev 25(7):987–1004
Cooke FL (2011) Labour market regulations and informal employment in China: to what extent are workers protected? J Chin Hum Resour Manag 2(2):100–116
Crystal S, Shea D, Krishnaswami S (1992) Educational attainment, occupational history, and stratification: determinants of later-life economic outcomes. J Gerontol 47(5):S213–S221
Deakin S (2013) Addressing labour market segmentation: the role of labour law. International Labour Organization
Doeringer PB (1967) Determinants of the structure of industrial type internal labor markets. Ind Labor Relat Rev 20:206–220
Doeringer P, Piore MJ (1971) Internal labor markets and manpower adjustment. DC Heath and Company, New York
Elder GH Jr (1995) The life course paradigm: social change and individual development. In: Moen P, Elder G, Lüscher K (eds) Examining lives in context. American Psychological Association, Washington, DC, pp 101–139
Fan CC (2002) The elite, the natives, and the outsiders: Migration and labor market segmentation in urban China. Ann Assoc Am Geogr 92(1):103–124
Gallagher ME, Lee CK, Kuruvilla S (2011) Introduction and argument. In: Kuruvilla S, Gallagher ME, Lee CK (eds) From iron rice bowl to informalization. Cornell University Press, New York
Gesthuizen M, Wolbers MH (2011) Late career instability and the transition into retirement of older workers in the Netherlands. In: Blossfeld H-P, Buchholz S, Kurz K (eds) Ageing populations, globalization and the labor market: Comparing late working life and retirement in modern societies. Edward Elgar, Cheltenham, pp 65–90
Giles J (2009) Economic restructuring and retirement in urban China. Available at SSRN 1368820
Giles J, Park A, Cai F (2006) How has economic restructuring affected China's urban workers? China Q 185:61–95
Giles J, Wang D, Cai W (2012) The labor supply and retirement behavior of China's older workers and elderly in comparative perspective. In: National Research Council (US) Panel on Policy Research and Data Needs to Meet the Challenge of Aging in Asia, Smith JP, Majmundar M (eds) Aging in Asia: findings from new and emerging data initiatives. National Academies Press, Washington, DC
Grenier A, Hatzifilalithis S, Laliberte-Rudman D, Kobayashi K, Marier P, Phillipson C, Heyn PC (2020) Precarity and aging: a scoping review. The Gerontologist 60(8):e620–e632. https://doi.org/10.1093/geront/gnz135
Hardy MA (1991) Employment after retirement: who gets back in? Res Ageing 13:267
Henretta JC, Campbell RT (1976) Status attainment and status maintenance: a study of stratification in old age. Am Sociol Rev 41(6):981–992
Hofäcker D (2010) Older workers in a globalizing world: an international comparison of retirement and late-career patterns in Western industrialized countries. Edward Elgar Publishing
Hu AG, Zhao L (2006) Urban Informal employment and informal economy in the transitional period in China (1990–2004). J Tsinghua Uni Philos Soc Sci 3:111–119
Huang PCC (2009) China's neglected informal economy: reality and theory. Modern China 35(4): 405–438
International Labor Organization (ILO) (2020) Frequently asked questions on social protection for workers in the informal economy. https://www.ilo.org/beijing/what-we-do/publications/WCMS_761053/lang%2D%2Den/index.htm

Jill Q (2001) Aging and the life course, McGraw Hill Companies Elder, Glen H. Jr, 1985,/ Perspectives on the life course. In: Elder GH (ed) Life course dynamics: trajectories and transitions, 1968–1980. Cornell University Press, Ithaca

Kuruvilla S, Gallagher ME, Lee CK (2011) From iron-rice bowl to informalization: markets, state and workers in a changing China. Cornell University Press, Ithaca

Lardy NR (2014) Markets over Mao: the rise of private business in China. Peterson Institute for International Economics

Li S, Wan H (2014) Institutional labour market segmentation in China. Bus Publ Adm Stud 8(1): 7–24

Liang Z, Appleton S, Song L (2016) Informal employment in China: trends, patterns and determinants of entry. IZA Discussion Paper No. 10139. https://doi.org/10.2139/ssrn.2826973

Marshall G (1998) Labour-market segmentation. In: A dictionary of sociology. Encyclopedia.com.; http://www.encyclopedia.com/doc/1O88-labourmarketsegmentation.html. Accessed 20 Dec 2015

Mayer KU, Carroll G (1987) Jobs and classes: structural constraints on career mobility. Eur Sociol Rev 3:14–38

Meng X (2000) Labour market reform in China. Cambridge University Press, Cambridge

Meng X (2012) Labor market outcomes and reforms in China. J Econ Perspect 26(4):75–101

Merton RK (1988) The Matthew effect in science, II: cumulative advantage and the symbolism of intellectual property. Isis 79:606–623

Naughton B (1997) Danwei: the economic foundations of a unique institution. In: Lü X, Perry E (eds) Danwei: the changing Chinese workplace in historical and comparative perspective. M. E. Sharpe, Armonk, pp 169–194

Nee V (1989) A theory of market transition: from redistribution to markets in state socialism. Am Sociol Rev 54:663–681

Nee V (1996) The emergence of a market society: changing mechanisms of stratification in China. Am J Sociol 101(4):908–949

Organization of Economic Cooperation and Development (OECD) and International Labor Organization (ILO) (2019) Tackling Vulnerability in the Informal Economy, Development Centre Studies. OECD Publishing, Paris. https://doi.org/10.1787/939b7bcd-en

Park AF, Cai F (2011) The informalization of the Chinese labor market. In: Kuruvilla S, Gallagher M, Lee C-k (eds) From iron rice bowl to informalization: markets, state and workers in a changing China. Cornell University Press, New York, pp 17–35

Park A, Wu Y, Du Y (2012) Informal employment in urban China: measurement and Implications. World Bank Working Chapter, 77737

Piore MJ (1969) On-the-job training in the dual labor market public and private responsibilities in on-the-job training of disadvantaged workers. In: Weber AR, Cassel FH, Ginsburg WL (eds) Public-private manpower politics, Industrial Relations Research Association Series. Industrial Relations Research Association, Madison, pp 101–132

Piore MJ (1978) The dual labor market: theory and implications. In: Grusky DB (ed) Social stratification: class, race, and gender in sociological perspective. Routledge, Milton, pp 435–438

Schmillen AD (2022) Two-tier earnings structures and labour market reform. Appl Econ Lett 29(11):993–1000. https://doi.org/10.1080/13504851.2021.1904103

Song Y (2013) Essays on the Chinese labor market. PhD dissertation, Cornell University

Wang F (2008) Boundaries and categories: rising inequality in post-socialist China. Stanford University Press, Stanford

Wang J, Xie Y (2015) Feeling good about the iron rice bowl: economic sector and happiness in post-reform urban China. Soc Sci Res 53:203–217

Wang J, Cooke FL, Lin Z (2016) Informal employment in China: recent development and human resource implications. Asia Pac J Hum Resour 54(3):292–311

Wang F, Liang Z, Lehmann HF (2021) Import competition and informal employment: empirical evidence from China. IZA Discussion Paper No. 14650, Available at SSRN: https://ssrn.com/abstract=3908865 or https://doi.org/10.2139/ssrn.3908865

Warner, M. (2011). Labour markets in China: coming to terms with globalization. The dynamics of Asian labour markets: balancing control and flexibility. New York, Routledge, 134-147.
Xie Y, Lai Q, Wu XG (2009) Danwei and social inequality in contemporary urban China. Res Sociol Work 19:283–308
Zhang YJ, Chen QC, Qin B (2015) The effect of informal employment in the urban area on economic growth: an analysis based on the panel data of 31 provinces and municipalities in China. Econ Issues Explor 3:82–89
Zhao W (2012) Economic inequality, status perceptions, and subjective well-being in China's transitional economy. Res Soc Stratif Mobil 30:433–450
Zhou Y (2012) The state of precarious work in China. Am Behav Sci 57(3):354–372
Zhou X, Tuma NB, Moen P (1997) Institutional change and job-shift patterns in urban China, 1949 to 1994. Am Sociol Rev 62:339–365

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