

How Aging and Low Fertility Influence Household Savings: A Case Study in China

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Abstract: This paper investigates the intricate relationship between demographic changes, particularly population aging and declining fertility, and household savings rates, with a specific emphasis on China. These demographic shifts carry significant consequences for economic growth and stability. As China's population ages, the growing demand for healthcare and pensions exerts pressure on household savings, while a declining fertility rate raises concerns about the future labor force and the sustainability of long-term savings. This paper reviews key theoretical frameworks such as the life-cycle hypothesis and precautionary savings theory, examining how shifts in population age structure influence consumption patterns, savings behavior, and overall economic resilience. Additionally, it delves into the broader socio-economic challenges posed by these demographic trends, including potential labor shortages and increased fiscal strain. By synthesizing a wide range of research, this review provides a comprehensive analysis of these demographic trends, offering insights for policymakers to promote sustainable household savings while ensuring balanced economic growth.

Keywords: household saving rate, aging population, low fertility.

1. Introduction

Savings are an important source of investment and consumption. Sufficient savings provide ample capital for high investment, driving China's economic development, but they also reflect a long-standing weakness in consumer spending [1]. Consumption demand plays a crucial role in driving investment demand, and a weak consumer appetite can hinder the long-term stable growth of the national economy [2].

According to the life cycle hypothesis proposed by Modigliani and Brumberg, the age structure of the population plays an important role in the savings rate [3]. Lingguo Meng also pointed out the impact of an aging population on various savings rates, including household savings [4]. The relationship between the household savings rate and population age structure has attracted the attention of scholars worldwide. While numerous studies have confirmed a connection between demographic changes and household savings rates, the specific conclusions vary to some extent across different research.

This literature review aims to synthesize existing research on the effects of changes in China's population age structure, particularly aging and declining birth rates, on household savings. By critically analyzing the current body of literature, the review seeks to offer insights into how these

demographic shifts may influence household savings rates, promote consumption, and support sustainable economic growth.

2. Case Introduction

China's demographic shifts, particularly its aging population, declining fertility rates, and persistently high household savings, have garnered significant scholarly attention. By 2023, China's old-age dependency ratio surpassed the world average, while its crude birth rate and young-age dependency ratio remained lower than both OECD and global figures. These demographic changes have been further complicated by recent adjustments to China's family planning policies, including the introduction of the two-child policy in 2015 and the three-child policy in 2021 [5].

China's high savings rate has been a defining feature of its economy. According to the World Bank, between 1982 and 2022, China's gross savings rate consistently exceeded the world and OECD averages by 16.6 and 20.3 percentage points, respectively. Although it declined slightly after 2010, it still stood at 46% in 2022, far above international norms. Household savings also remained elevated, increasing from 15% in 1990 to 33% in 2022. In comparison, the household savings rate of the United States has consistently stayed below 10% during the same period.

The family planning policy implemented since the 1980s contributed to a sharp decline in China's birth rate. Simultaneously, economic growth, medical advancements, and improved social security reduced mortality rates, dramatically altering the country's age structure [2]. Between 1980 and 2023, China's old-age dependency ratio rose from 7% to 21%, while the young-age dependency ratio dropped from 61% to 24%, and the crude birth rate fell from 18 to 7 per 1,000 people.

These demographic shifts have raised concerns about the potential effects on household savings behavior. Given the evolving population structure and its impact on savings, this paper uses China as a case study to explore how demographic changes influence household savings rates and the broader economic landscape.

3. Problem Analysis

3.1. Impact of Aging Population on Household Savings Rate

The aging population has a profound impact on household savings rates, shaped by several key factors such as changes in consumption patterns, increasing healthcare costs, and the growing need for pension security. As people age, their spending habits tend to shift, with a larger focus on healthcare and retirement needs. This can lead to either an increase or decrease in household savings, depending on the broader economic and social environment.

Leland introduced the concept of uncertainty into the study of savings behavior, analyzing the consumption and savings decisions of different individuals, which led to the development of the precautionary savings theory [6]. He argued that individuals do not distribute their lifetime income evenly across all stages of life because future income is inherently uncertain. To guard against future risks and unforeseen events, individuals tend to increase precautionary savings. Income uncertainty results in lower expectations for the future, which intensifies the precautionary savings motive, consequently suppressing consumption. Conversely, when individuals have more optimistic expectations about the future, precautionary savings decrease, leading to higher consumption levels. In China, due to the incomplete pension system, residents generally have a higher precautionary savings motive, often opting to save more in preparation for the uncertainties of old age.

Studies such as those by Xu et al. and Jin et al. further support this view, demonstrating a positive correlation between aging and savings rates in China. These studies argue that the precautionary savings motives among the elderly, combined with cultural values that emphasize thrift, encourage older individuals to continue accumulating savings in preparation for future needs [2,7].

However, a competing body of research, including the life cycle hypothesis proposed by Modigliani and Brumberg, presents a different perspective. This theory views consumers as rational agents who aim to maximize their lifetime utility. Individuals make consumption and savings decisions based on their anticipated lifetime income, aiming to optimize these choices throughout different life stages: they typically smooth consumption by borrowing during lower-income phases and saving during higher-income phases [3]. According to this theory, savings rates tend to decline in old age. As individuals retire and gradually exit the labor market, they lose their primary income sources and rely on the savings accumulated during their working years to cover daily expenses. Additionally, as their physical health declines, their need for healthcare services increases, leading to higher consumption and, consequently, lower savings.

Moreover, research by Chen et al., Aini Zhang, and Pascual-Saez suggests that an aging population can lead to a reduction in household savings, as older individuals increasingly depend on their accumulated savings for daily living costs, thereby reducing overall savings rates [1,8,9]. The increased financial burden on the working-age population, resulting from a higher dependency ratio of the elderly, may further reduce savings rates [8]. As the number of elderly members within a family increase, the caregiving burden grows, especially in China, where families assume a fundamental role in elderly care. Children often provide financial support, physical care, emotional comfort, and even housing assistance to their aging parents [10].

Although the impact of population aging on household savings is broadly recognized, the direction and extent of this effect are influenced by a range of factors, such as socio-economic conditions, policy frameworks, and cultural norms.

3.2. Impact of Low Fertility Rate on Household Savings Rate

The increase in the number of children within a household influences saving behavior in various ways, mainly through the pressure of long-term economic demands and immediate changes in household spending. As noted in studies by Xu et al. and Wang, a rise in the young-age dependency ratio or the number of children often leads to a decrease in household savings, as more income is directed toward child-rearing expenses [2,5]. Additionally, Wang observes that policies such as China's two-child policy have led to increased household consumption, further reducing savings rates in certain cases [5].

Building on this, Becker introduced the concept of "child quality," expanding the understanding of how household savings are influenced. Becker argued that savings are not only impacted by the number of children but also by parents' desire to invest in the quality of their children [11]. In families with fewer children, parents may not necessarily cut back on consumption but rather invest more in each child, aiming to improve their overall quality [8]. This creates a trade-off between the quantity and quality of children, where having fewer children often leads to higher investments in their education and well-being. This increased focus on child quality can lead to more optimistic expectations for old age, thereby reducing the need for precautionary savings. However, a smaller proportion of young children also pushes parents to save more for future elderly care, even as they continue to invest heavily in their children, which raises household expenses and further limits savings. The effects of child dependency on savings also vary depending on household characteristics such as rural-urban distinctions and gender. Yuan's research shows that rural residents align more with the life cycle theory, where fewer children result in higher savings rates [12,13]. In contrast, urban residents tend to follow Becker's model, where fewer children lead to greater investments in each, increasing consumption and lowering savings. Additionally, Xu's research on gender differences in education spending suggests that Becker's model may apply differently depending on the child's gender [2]. Therefore, the relationship between child dependency and

household savings in China is shaped by a complex set of factors, including location and cultural context.

3.3. Impact on Macro-Economy

The shifts in population structure, driven by aging and declining fertility, have profound implications for the macro-economy. As Liu points out, changes in the age structure affect economic growth by influencing key factors such as consumption, investment, and net exports [14,15]. This relationship can be represented as the equation (1):

$$Y_t = C(AGE_t) + I(AGE_t) + NE(AGE_t) \quad (1)$$

where net export effects are reflected primarily in changes to the current account balance, and consumption effects are largely driven by household consumption [14].

Liu's research highlights that while the child dependency ratio does not significantly affect fixed asset investment, population aging has a pronounced, though somewhat delayed, suppressive effect on investment growth, with the relationship between population age structure and fixed asset investment also varying considerably across regions [14]. Additionally, an increase in the elderly population tends to reduce total household consumption but increase developmental consumption, while a higher proportion of young children enhances consumption optimization, raising both survival and developmental spending. These trends contribute to widening social inequality in consumption as China experiences population aging and declining fertility [15].

The population's dependency burden has a nonlinear effect on government debt, as indirect tax rates directly shape household consumption patterns and levels [14]. This occurs because families with children have different consumption needs and financial capabilities than those with elderly members, leading to varied resource allocation strategies depending on their respective dependency burdens [14].

According to Liu, changes in China's population age structure impact import-export trade, as reflected in current account fluctuations [14]. A declining child dependency ratio positively affects the current account but suppresses economic growth, while an increasing elderly dependency ratio boosts the current account but hinders growth: these combined trends have contributed to both a current account surplus and a slowdown in economic growth [14].

4. Discussion and Suggestions

The challenges posed by an aging population are increasingly hindering economic growth. To address these issues and stimulate domestic demand, the following recommendations are proposed:

First, the economic structure should be adjusted to actively address aging while unlocking the consumption potential of both the elderly and younger generations. Strengthening the social pension system at the institutional level will help ease the burden of elderly care. In terms of industry, promoting consumption through the "silver economy" by developing innovative elderly care models and encouraging spending among the aging population is vital. Additionally, fostering the digital economy can improve supply-demand efficiency and enhance financial services for aging households, reducing elderly care risks through inclusive finance, insurance, and modern AI technologies, all of which will help boost consumption. The government should also promote integrating the digital economy with education and healthcare services to drive growth in the service sector [16]. Establishing community-based elderly care assistance mechanisms can ensure broader access to financial services, prevent exclusion, and better manage risks, further enhancing the digital economy's role in household consumption.

Second, it is important to tackle economic challenges in underdeveloped regions and promote balanced urban-rural development. Policymakers should focus on the changing population age structure when making decisions on industrial restructuring and public resource allocation, ensuring inclusive policies target rural areas to steadily improve income levels.

Given the aging population and rising healthcare demands, it is essential to improve welfare and public policies to ease family care burdens and increase labor force participation. Expanding investments in healthcare, sanitation, education, and developing childcare and elderly care services will help working-age individuals manage caregiving responsibilities more effectively.

To further encourage childbirth, targeted policies should offer incentives for families impacted by past family planning policies. Expanding maternity insurance and enhancing parental and maternity leave systems can help alleviate concerns about childbearing.

5. Conclusion

This study highlights the significant impact that demographic changes, particularly population aging and declining fertility, have on household savings rates in China. The research demonstrates that as the population ages, households face rising healthcare costs and greater demand for pension security, which drives an increase in precautionary savings. Conversely, declining fertility rates reduce the future working-age population, potentially limiting labor force participation and leading to concerns over the long-term sustainability of household savings. The dual pressures of an aging population and shrinking younger generation reshape household consumption and savings behaviors, with regional and socio-economic factors further influencing these patterns. Ultimately, population aging tends to raise savings rates, while low fertility may suppress them by shifting household resource allocation towards fewer children.

Looking forward, future research should delve deeper into the long-term macroeconomic effects of population structure changes, particularly how aging and declining fertility interact to influence national savings rates, investment levels, and overall economic growth. Additionally, future studies could explore the role of policy interventions, such as pension system reforms and family planning policies, in mitigating the negative impacts of demographic shifts. Understanding the regional variations in the effects of aging and fertility decline, especially in urban versus rural areas, will be crucial for developing targeted strategies to support different population segments. Finally, the potential societal impacts of demographic changes—such as increased inequality, intergenerational support burdens, and shifts in social security structures—should be explored to guide effective policymaking and ensure sustainable economic and social development in the context of China's evolving population dynamics.

References

- [1] Chen, Y., Guo, Y., & Yao, Y. (2014). *The Impact of Population Aging on China's High Savings*. *Journal of Financial Research*, (01), 71-84. doi:CNKI:SUN.0.2014-01-006.
- [2] Xu, Z., Zhang, H., & Jiang, J. (2024). *Population Aging, Low Birthrate, and Household Savings Rate in China*. *Gansu Finance*, (07), 61-71. doi:CNKI:SUN.0.2024-07-008.
- [3] Modigliani, F. and Brumberg, R. (1954) *Utility Analysis and the Consumption Function: An Interpretation of Cross-Section Data*. In: Kurihara, K., Ed., *Post Keynesian Economics*, New Brunswick: Rutgers University Press, 388-436.
- [4] Meng, L., & Ma, J. (2020). *The Mechanism and Effects of Population Aging on Various Savings Rates*. *Journal of Guangdong University of Finance and Economics*, (01), 30-43.
- [5] W, J. (2020). *A Study on the Impact of Demographic Structure Changes on Household Savings Rates* (Master's thesis, Nanjing Agricultural University).
- [6] Leland, H. E. (1968). *Saving and uncertainty: The precautionary demand for saving*, *Quarterly Journal of Economics*[J], 1968, 82: 465-473.

- [7] Jin, B., & Zhang, X. (2023). *Population Aging, Consumption Propensity, and the Study of Chinese Household Savings Rates*. *Jilin Financial Research*, (10), 4-8+22.
- [8] Zhang, A. (2022). *The Impact of Changes in China's Population Age Structure on Household Savings Rates* (Master's thesis, Jilin University).
- [9] Pascual-Saez, M., Cantarero-Prieto, D., & Manso, J. R. P. (2020). *Does population ageing affect savings in Europe?*. *Journal of Policy Modeling*, 42(2), 291-306.
- [10] Zhu, D. (2008). *The Innovative Role of Intergenerational Support Relationships in the Choice of Elderly Care Models*. *Innovation*, (01), 33-36. doi:CNKI:SUN.0.2008-01-011.
- [11] Becker, G. S. (1981). *A Treatise on the Family*, Cambridge Mass: Harvard U. Press, pp. XV-288.
- [12] Yuan, N. (2020). *An Analysis of the Impact of Demographic Structure on China's Household Savings Rates: Based on 2001-2018 Provincial Dynamic Panel Data*. *Statistics and Management*, (08), 4-8.
- [13] Coale A. and Hoover E. (1981). *Population growth and economic development in low-income countries: a case study of India's prospects*[J]. Princeton, New Jersey: Princeton University Press, 1958.
- [14] Liu, Y. (2020). *A Study on the Impact of China's Population Age Structure Changes on Economic Growth* (Doctoral dissertation, Jilin University).
- [15] Li Shengqi, & Xu Wenlong. (2022). *Population Structure, Fertility Policy, and Household Consumption*. *Northwest Population*, (04), 15-31.
- [16] Wang, X., & Hu, D. (2017). *A Study on the Impact of Mobile Payments on Consumer Behavior: A Comparison of Different Payment Methods*. *Consumer Economics*, (5), 77-82+97.