

Restructuring Household Consumption through Fertility Decisions: A Systematic Literature Review from a Behavioral Economics Perspective

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Abstract:

This study investigates how fertility decisions under the context of China's low fertility rate reshape household consumption structures through the lens of behavioral economics. Combining rational choice theory with behavioral biases such as loss aversion, mental accounting, social norms, and present bias, the research applies the PSR (Pressure–State–Response) model to systematically analyze the mechanisms behind consumption divergence. The “Pressure” stage identifies educational expenditure as a dominant driver of fertility pressure; the “State” stage reveals its role in sustaining low fertility trends; the “Response” stage examines how behavioral biases lead childbearing households to prioritize education-related spending while compressing hedonic consumption, whereas non-childbearing households reallocate resources toward self-oriented and instant gratification expenditures. The result of research not only provides evidence for the theoretical framework linking fertility decisions and household consumption patterns, offering empirical insights for targeted policy interventions, but also offers practical implications for aligning fertility policies with differentiated consumption demands.

Keywords: Low fertility; Behavioral economics; Consumption structure; Educational expenditure; PSR model

1. Introduction

In recent years, the phenomenon of lower fertility rate and high household educational expenditure anxiety is increasingly prominent in China, attracting widespread attention [1,2]. As early as 20th century,

the link between fertility and household consumption was first researched by Becker in family economics, pointing out that fertility is similar to investment which closely relates to household expenditure [3]. This perspective lays the theoretical foundation for research on the interaction between investment in

family education and fertility decisions, such as analyzing the trade-off mechanism between the number of children and educational investment in Chinese families through this theory [4]. Besides, the Chinese government also pays great attention to fertility and educational burden, primarily including The State Council's Decision on Optimizing Fertility Policies to Promote Long-Term Balanced Population Development and Opinions on Further Reducing the Homework Burden of Students in the Compulsory Education Stage and the Burden of Off-campus Training [5, 6]. Traditional economic theories often take rationality as a basic assumption in analyzing fertility and household expenditure decisions [3]. It describes that there is a substitution relationship between quantity and quality of children [3]. When educational expenditure which is an indication of children's quality increases, families tend to reduce the number of children while allocating more resources to investment in each child [3]. Moreover, recent research continues to adopt the quantity-quality substitution model, suggesting that the competition for household educational resources may contribute to low fertility rate [7]. However, the premise of rationality ignores the potential impact from irrational variables such as cognitive biases and mental accounting, drawing increasing attention in recent research.

In contrast, classic behavioral economic theory points out that due to loss aversion, the cost of child-rearing is perceived as a loss, which probably reduce the positive expectation on happiness brought by children [8]. This perspective has recently been applied in studies examining how perceived gender discrimination in the workplace influences fertility intentions, showing that negative changes in perception may have a greater impact than positive ones [9]. Additionally, behavioral economic proposes that people will mentally categorize into separate accounts such as food, education, and tend to make spending decisions based on intra-account optimization [10]. This theory continues to serve as a foundation for research on household and individual financial behaviors [11]. Nevertheless, these studies generally remain focused on the level of intentional analysis or on the mechanisms of mental accounting itself, without linking it to the household expenditure structure and behavioral data.

Against the backdrop of traditional economics' limited explanatory power, this study combines rational and behavioral perspectives to analyze how low fertility rates restructure household consumption patterns.

Meanwhile, there are several research gaps. Expect the ignorance of the impact from irrational variables, household structural expenditure and behavior data is also insufficient. Furthermore, the disconnection of behavioral biases and consumption structure shift result in difficulty to comprehensively reveal the asymmetric restructuring mechanism of household spending priorities under the

phenomenon of low fertility rate. Therefore, this article aims to analyze following questions: 1) How do behavioral biases guiding fertility decisions affect the consumption structure of families? 2) How are household consumption priorities reshaped under the influence of psychological mechanisms?

To comprehensively research the questions, PSR model is utilized in an innovative way. PSR model is a conceptual framework that categorizes issues into three sections including pressure, state and response to originally analyze environmental sustainability and ecological management issues [12]. Specifically, the "Pressure" section analyzes the macro pressure brought by children's educational expenditure; the "State" section presents the process by which these pressures result in macro-outcomes; the "Response" section explores how behavioral biases modulate the impact of fertility decisions on consumption structure, and prompts what kind of reconfiguration in spending priorities families undertake.

This research contributes to both theoretical and practical aspects. From the perspective of theoretical significance, the study forms an innovation analysis path and introduces irrational behavioral mechanism, expanding the application of behavioral economics in fertility-related economic research. For practical significance, the research reveals the logic of expenditure reshaping based on behavioral psychological factors, which provides evidence for government to alleviate the pressure from downward fertility rate to strengthen the effectiveness of fertility policies and strategies.

2. Theoretical Basics

2.1 Core Theories

The basic theory of this study primarily includes social norms, loss aversion and mental accounting, while is combined as complementary perspectives to support the analysis.

Loss aversion is proposed by Kahneman and Tversky (1979) within the framework of prospect theory, which refers to an asymmetric psychological mechanism that people feel more pain from losses than satisfaction from equivalent gain [8]. To be more specific, the psychological impact from losses is approximately twice as equal gain, which indicates that people tend to avoid losses rather than pursue profits when facing same magnitude of losses and profits [8]. This theory is widely applied in behavioral explanation areas involving investment, consumption, and fertility economics.

Mental accounting is introduced by Thaler (1999) to explain how individuals and families' evaluate and pursue a series of financial actions, separated into three sections [10]. Firstly, mental accounting explains the ways that

people subjectively feel and assess economic results, as well as making decisions [10]. The second component is the classifying income and consumption into different accounts, limited by the psychological budget of each account with irreplacability [10]. Although other account's budgets are sufficient, the account that budget has been exhausted will still stop expenditure rather than budget shifting [10]. Accounts' assess frequency is the third section of mental accounting that evaluates each account on different period, affecting the decisions of money allocation [10]. This theory helps people to deeper understand the motivation of choice, supporting the research of behavioral economics [10].

Social norms is first suggested by scholars such as Cialdini (1991) in the research related to the influence of group norms on behavior [13]. It emphasizes that individual behaviors is often affected by two factors from others rather than completely base on self-rational judgement [13]. The first is descriptive norms, stating that personal action potentially guided by most people's behavior through observation [13]. For instance, if most people enroll their children in after-school classes, it creates a social norm that encourages others to do the action as well. Alternatively, injunctive norms indicate that individual adjusts behaviors in response to perceived social expectations, such as not having children to conform to young generation's standards of appropriateness [13]. In the domain of economic, this theory is utilized to reveal the reason of imitating others' behavioral and financial decisions.

Present bias refers to a systematic decision-making distortion related to time in which individual's irrational prioritizes immediate rewards over future benefits [14]. This bias leads people to favor instant gratification in

short-term contexts, ignoring long-term self-control [14]. Furthermore, it highlights the phenomenon of time inconsistency, where preferences shift over time, influencing behaviors such as saving, investing, and consumption patterns [14].

3. Research Analysis

3.1 Pressure

According to survey data in 2023, 84% respondents reported experiencing pressure of childbearing [1]. The three major sources of pressure include income burden (58.07%), insufficient time and energy (50.30%) and high educational cost (49.40%) [1]. This study focuses on the pressure of educational expenditure primarily because Chinese parents increase their investment on children education under the fierce competition for high-quality educational resources to obtain return associated with academic success, which is particularly prominent due to its widespread prevalence [15]. Compared with factors which is more differentiating on influence such as time or income, it has direct function and representativeness on reshaping household consumption expectation. Moreover, relative data also proves the significance of educational consumption's growth.

In figure1, the cost of Chinese families on their children's education exhibited a continuous upward trend during 2010 and 2020, with the average cost across all educational stages in 2020 exceeding three times the level recorded in 2010, suggesting heavier pressure on expected financial burden on childbearing [2].

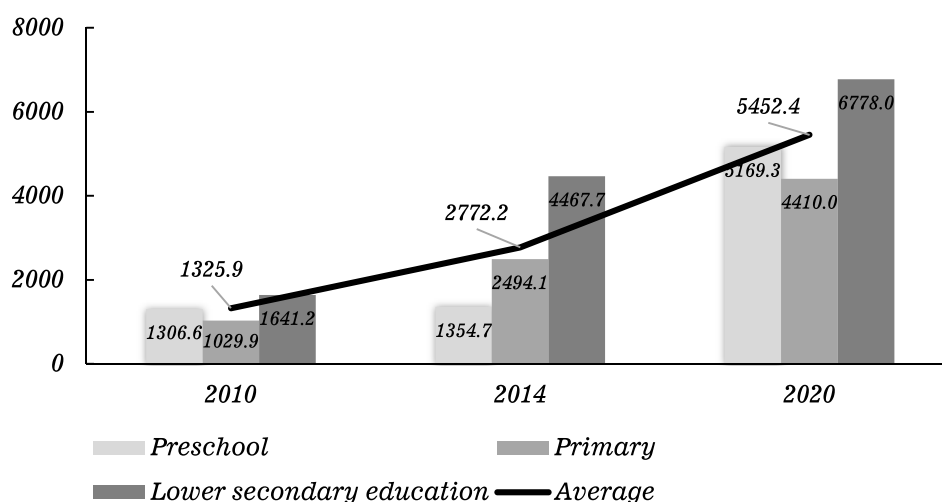


Fig.1 Average Household Educational Spending in the Past 12 Months: 2010, 2014, and 2020

From a behavioral economics perspective, the continuous growth of educational expenditure is driven by multiple factors. According to mental accounting theory, families

often perceive educational spending as an investment in their children's future success rather than as current consumption [10]. Hence, they tend to tolerate high levels

of expenditure and categorize it within a rigid mental account. In addition, if a family is surrounded by those families who invest in private education, a descriptive norm is formed that most parents follow this action. Simultaneously, an injunctive norm possibly exists that the failure to make such an investment constitutes irresponsibility of parents. Due to these social expectations, families' financial and psychological pressure becomes aggravated, and even families with limited wealth find it hard to resist conforming.

Expect external pressure, the growth of household educational expenditure also interacts with internal psychological pressure. Loss aversion serves as a catalyst that makes people more sensitive to the failure of investment in children's education than the happiness from its success, thus choosing to over-invest to avoid investment losses. Under the combined influence of these factors, educational expenditure has emerged as a significant macro burden, exerting substantial pressure on Chinese households that have not yet had children and directly contributing to the decline in fertility intentions.

3.2 State

As a result of perceiving heavy household educational consumption, families' intention of fertility gradually decreases,

ultimately transforming into actual inhibition of fertility and reflected in the macro population structure.

According to a 2023 survey report, over 40% of respondents agreed with the notion that people should not have children without sufficient financial resources, among whom approximately 56% were women of childbearing age [1]. Furthermore, compared to traditional Chinese fertility values such as the belief that a larger number of children enhances family happiness or that childbearing is a way to provide support for aging parents, the idea of fewer but better raised children received broader support, accounting for approximately 45% of the sample [1]. This phenomenon aligns with the behavioral economics concept of social norms. Given the current landscape of public attitudes in China where economic capacity and the prioritization of child quality have become dominant fertility norms, those who viewing childbirth as a social obligation are increasingly regarded as outdated, exacerbating the resistance to childbearing among people of fertility age. Therefore, the fertility intention in China is continuously negative.

Concentrating on the figure 2, China's fertility rate declined from 1.714 in 2013 to 0.999 in 2023, accompanied by a consistent negative growth trend from 2017 to 2023, which is a sustained deterioration in fertility level.

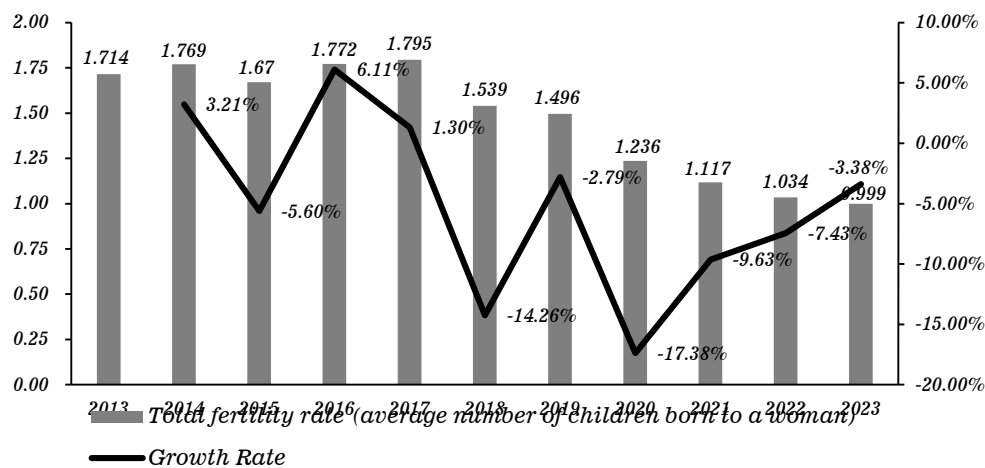


Fig.2 China's Fertility Rate and Its Growth Rate, 2013–2023

This continuous decline has triggered chain reaction across the macro population structure in China. In figure 3, China's natural population growth rate plunged from 0.743% to -0.060% between 2012 and 2022. Since 2016, the growth rate has experienced a constant slowdown, ultimately resulting in negative population growth in 2022.

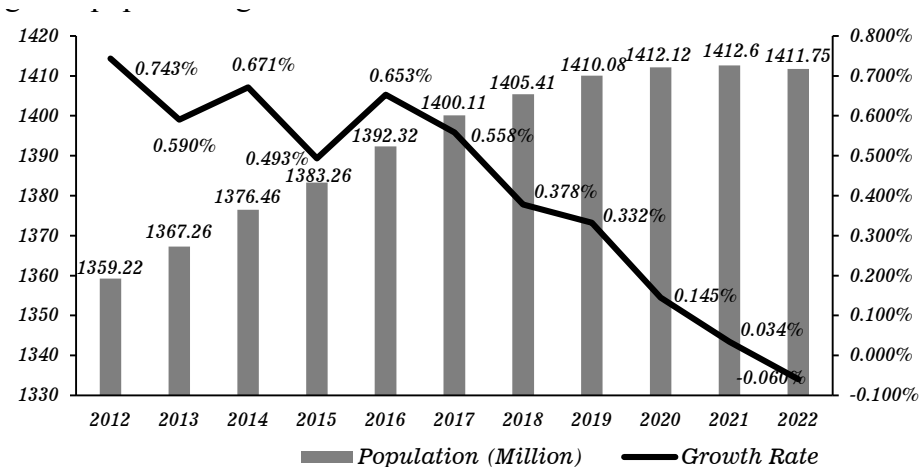


Fig.3 China's Total Population and Natural Population Growth Rate, 2012–2022

Figures 2 and 3 not only illustrate significant change in the fertility rate and the natural growth rate of the population, but also provide empirical evidence that such state is persistent rather than short-term, which signals that a fundamental transformation in reproductive behavior among Chinese families is underway, demonstrating the establishment of the low-fertility trend.

3.3 Response

In the circumstances of increasing household educational

cost and societal expectations, behavioral biases significantly influence fertility decisions. These biases cause families to either over invest in child-related expenditures or entirely avoid the perceived risks of childbearing, which is the crucial node for the differentiation in household consumption structure. Hence, household consumption patterns tend to shift in two directions: emphasizing education-related spending or a diversified and self-oriented consumption model, as table 1 showed.

Table 1. Divergent Consumption Logic

Household Type	Main Spending Focus	Key Behavioral Biases
Fertility-Choosing	Education priority; cut leisure & entertainment	Mental accounting; loss aversion
Non-Childbearing	Travel, dining, leisure	Mental accounting; social norms; present bias

3.3.1 Consumption Structure Shift in Fertility-Choosing Households

Among households that have chosen to bear children, a pronounced inclination toward educational expenditure is evident within their consumption structure. According to a consumer survey in 2024, families identified as married with children from kindergarten to 12th grade contribute 82% of current total educational expenditure, as well as 87% of the projected incremental spending in this category, indicating a high degree of concentration in educational investment [16].

This reallocation of the consumption structure further reinforces the pronounced rigid educational expenditure characteristic, as moderated by the mechanism of mental accounting. Meanwhile, loss aversion drives parents to prioritize improving the quality of their children's education through reducing the expense of hedonic consumption such as travel and entertainment, transforming budget from these accounts to the educational expenditure. The

interaction between rational prioritization and cognitive bias results in a restructured hierarchy of consumption, in which education assumes an priority under the low-fertility context.

3.3.2 Consumption Structure Shift in Non-Childbearing Households

The consumption structure of households who chooses not to have child reflects explicit characteristic of self-pleasing. The consumer survey reflects a relatively high proportion of respondents indicated an intention to increase spending over the next 12 months on non-essential categories such as travel (45%), dining (45%), and cultural entertainment (34%) [16]. Moreover, individuals aged 18–35 constitute the primary driver of travel demand, with the travel intentions of non-parent households significantly exceeding those of households with children [17].

From the view of behavioral economics, mental accounting guides childless households to reallocate the portion of their budget from a logic opposite to that of childbear-

ing families, which assigns child-rearing account into a self-investment account directing it toward travel, fine dining, and other expenditures with high subjective value. Additionally, social norms convert from the traditional concept of parenting duties to pursue individuals' development and freedom in the young generation, which encourages self-pleasing consumption. Another behavioral bias, defined as present bias, reveals that young consumers gradually prefer to seek the immediate emotional gratification brought by consumption rather than postpone enjoyment in exchange for future benefits, igniting the growth of instant gratification spending. Ultimately, the overall consumption structure of childless households shifts toward prioritizing personal satisfaction.

4. Conclusion

The research finds that under the context of a low fertility rate, households' fertility decision-making is dominated by multiple psychological mechanisms caused by behavioral biases, which directly trigger the transformation of consumption structure. Childbearing households exhibit a pronounced concentration on educational expenditure while compressing hedonic consumption such as travel and entertainment, whereas non-childbearing households tend to redirect budgets toward instant gratification-oriented spending. This differentiation pattern indicates that the restructuring logic of consumption priorities is significantly related to fertility decisions.

This study addresses a gap in existing literature by integrating behavioral economics theories with household consumption structure changes, enriching the theoretical framework for understanding consumption divergence in low-fertility societies. Moreover, the findings offer practical implications for governments in identifying differentiated consumption demands across household types, thereby enabling more targeted policies and consumption guidance measures to support household economics.

However, there are some limitations in the research, such as a lack of comparison data across different regions and the absence of long-term tracking of changes in consumption motives. In the future, research in this area is recommended to incorporate cross-cultural data to explore the adjustment functions for behavioral biases and consumption structures under different cultural and national systems.

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