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# *Research on Poverty and Saving Behavior*

## *- Based on the Perspective of Scarcity Mentality and Time Preference*

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***Abstract:*** The lack of dependable savings accounts seems common to the world's low-income group. It will greatly limit the process of becoming rich, and even cause some people who have been out of poverty to return to it again. Today, new research from the fields of behavioral economics is shedding light on how poverty may shape an individual's saving behaviors. Hence, this article focuses on two psychological traits that are strongly associated with saving behaviors, especially for low-income groups: scarcity mindset (poverty reducing mental bandwidth) and time preference (favoring immediate rewards over long-term considerations). Through the literature reviewing, we propose a general analytical framework of "poverty-scarcity mindset-limited cognitive capacity and executive control-time preference (present bias)-saving behavior-poverty trap". Then we present commitment programs and cognitive supports as two anti-poverty policy recommendations based on these phenomena, to promote welfare for low-waged families.

***Keywords:*** low-income, scarcity theory, time preference, saving behavior, anti-poverty policy

## 1. Introduction

After the elimination of absolute poverty in China, there are still large-scale low-income groups [1]. For the low-income people who have just been lifted out of poverty, their livelihood is highly vulnerable and they are easily pushed back into poverty again. The key to efficiently preventing poverty is enhancing the endogenous power of sustainable income growth for them, and savings have played a positive role in this. Yet being poor places an extra and virtually overwhelming burden on one's attention. Due to the attention pressure, people often fail to save money, which prevents them from taking advantage of possibilities to improve their condition. Saving behaviors and poverty appear to form a mutual feedback loop. In order to reduce the poverty-return phenomena, it is crucial to understand the fundamental dynamics leading to sub-optimal saving behaviors of the poor.

In section 2, one analytical framework of the poverty loop is proposed. In section 3, this study presents two policy advice based on these behavior features to help low-income individuals escape from the poverty trap and promote societal welfare. Section 4 outlines the conclusion, compiling a set of open questions from our analysis in the previous sections.

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## 2. Literature Foundation and Analysis Framework

Through literature reviewing, this study creatively introduces the scarcity theory and time preference theory in behavioral economics. This section analyzes the inner link between poverty, scarcity mindset, mental bandwidth, time preference and savings behavior, and puts forward a general analytical framework of the poverty loop.

### 2.1. Scarcity Theory

The scarcity mindset is a common mental condition of the poor. The basic tenet of the scarcity theory is that poverty breeds a scarcity mindset, which occupies the brain's bandwidth and impairs impoverished people's capacity to make decisions and behave appropriately [2]. Executive control and cognitive ability to make judgments and actions are included in mental bandwidth, also known as cognitive function [3].

From the foregoing, it can be deduced that poverty decreases mental bandwidth (cognitive ability and executive control), which in turn causes time discounting and present bias to increase. Numerous experiments provided proof for this hypothesis. In a lab experiment, Mani et al. asked participants to think about solutions of financial challenges, like an urgent $1500 automobile repair. They discovered that low-income individuals performed noticeably worse when confronted with severe financial problems that triggered thoughts of scarcity and compromised their cognitive abilities [4]. According to Ong et al., debt alleviation led to improvements in cognitive control, decreased negative affect, risk aversion, and present bias among low-income participants [5].

### 2.2. Time Preference Theory

The preference for instant utility over delayed benefit is referred to as time preference. Since the 1980s, behavioral economists have found that people's time preferences (i.e., discount rates) are not always consistent. The existing literature points out that cognitive capacity and self-control are the main reasons for individuals' inconsistent time preference. Hinson et al. found that the higher the cognitive judgment capacity, the more people prefer future utility [6]. The research by Wit et al. shows that the self-control ability of a person has a significant negative effect on time preference: the weaker the willpower or planning, the lower the individual's patience for future utility, and the weaker the time preference [7].

Also, time preference is closely related to saving behavior. Laibson put forward the Hyperbolic Discounting Model to explain the widespread over-consumption in European and American countries. Because of short-term intense impatience, Hyperbolic Discounting will make individuals indulge in the temptations of the current period, thus causing over-consumption (low savings) [8].

### 2.3. Theoretical Analysis Framework

In view of the above analysis of scarcity mindset and time preference, we can clarify the relationship between scarcity mindset, cognitive capacity and executive control, time preference and saving behavior, and establish a theoretical framework as shown in Figure.1.

As shown in Figure.1, the scarcity theory proposes a poverty cycle in which, via particularly psychological mechanisms, poverty itself leads to behaviors that reinforce poor. First, poverty creates an attitude of scarcity that consumes fundamental cognitive resources (e.g., attention, memory and self-control). The scarcity mindset further narrows the mental bandwidth (cognitive and executive control). Since cognitive capacity and executive control(self-control) are the indispensable reasons for individual time preference, it could be taken as intermediary elements, to connect the scarcity theory and time preference, supplement and improve the specific impact path of poverty on household saving behavior. Subsequently, the reduced mindset leads to greater time preference and present bias. As a result, it forces low-income people to make sub-optimal saving decisions and behaviors. For low-income people who have just been lifted out of poverty, their limited self-capital accumulation and weak ability to continuously increase their income, coupled with the lack of sufficient savings, greatly reduces their ability to resist risks and they are more likely to fall into poverty again.

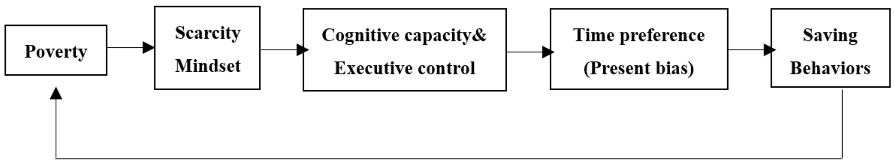


Figure 1: Theoretical analysis framework of poverty cycle.

## 3. The Implications of Anti-poverty Policy

Low-income groups will have present bias and sub-optimal behaviors due to limited mental bandwidth, and it is difficult for them to correct on their own strength. So external nudge is an effective way to get rid of inferior saving decisions, if these policies provide complete information, alleviate limited attention, and improve cognitive abilities and control.

Policies will generally be more successful if they remove the constraints imposed by limited mental bandwidth and present bias. The following will provide two policy recommendations about commitment programs and cognitive aids to support low-income groups' financial decisions.

### 3.1. Offer Commitment Programs to Facilitate Savings

Lock-on or commitment devices can effectively correct the behavioral biases of those people with cognitive biases, and at the same time, they will not produce negative externalities for those rational individuals. Ashraf, Karlan &Yin designed financial products for the Bank of the Philippines based on the commitment principle, and the experiment proved that it significantly stimulated the savings of residents [9]. In response to citizens' cognitively biased conduct, Thaler and Benartzi argued that the government should offer specific goods like pension plans to assist people in reducing behavioral bias and enhancing well-being of the society [10]. Therefore, the government play an important role in offering lock in or commitment programs to facilitate savings.

This kind of intervention measure with asymmetric effects is also called "asymmetric paternalism". O'Donoghue and Rabin first concluded that "prudent paternalism intervention" should be taken in areas where people are prone to make mistakes [11]. Thaler and Benartzi proposed a well-known plan called Save More Tomorrow. Those employees who joined the first company to adopt this plan raised their savings rates from 3.5% to 11.6% in a little more than two years (three raises), and very few of them left [12]. This is an effective example of asymmetric paternalism.

We could therefore force low-income groups to take part in a commitment project like saving more tomorrow by making them lock their money away where they cannot get it for a fixed period and automatically deposit a sum of money alike. At the same time, since consuming now allows immediate benefits yet saving provides for higher future benefits that are delayed, it's important to increase the instant rewards. A good way is that you can't withdraw your deposit, but you can get interest income immediately. In short, such a program of forced saving can accumulate capital for low-income people and ensure their basic living expenses.

### 3.2. Offer Cognitive Aids

Because low-income groups often face tight budgets and income volatility that deplete cognitive control and makes economic decision-making more difficult. So, people possibly overlook important information or leave themselves with less money to make financial decisions which truly make sense to their welfare. One simple cognitive tool that can lessen the effects of reduced cognitive ability or help overcoming constrained attention is appropriate reminders [13]. Reminders alter intertemporal choices and behaviors by establishing connections between potential future expenditures and current savings to mitigate attention failure. Simple actions, such as simply mentioning well-known information or offering timely reminders, can be effective tools to help save more. Also, savings deposit collection services designed specifically for low-income family can act as reminders and could increase savings to some extent.

Reminder messages have been provided via the text message, email, postcard, letter, phone, and in-person survey in certain field experiments, and it has been demonstrated that they significantly improve results [14]. Also, surveys work well for investing and saving habits because they serve as reminders or pull back one’s attention [15]. Karlan et al. tested the effectiveness of reminders by conducting tests with three different banks in Bolivia, Peru, and the Philippines. Each participant in the experiment opened a savings account at the bank. The control group did not receive a monthly reminder, while the experimental group did so by a text message or letter. Reminders enhanced the likelihood of meeting a savings goal by 3% as a result [16]. These findings provide empirical evidence for the value of reminders in household saving behaviors and other financial actions. But it is worth noting that reminders shouldn't be given too frequently because this could cross the line from helpful support to further exhausting scarce attention. In sum, cognitive support can also awaken and retain the saving awareness of low-income people.

## 4. Conclusion

From a theoretical standpoint, this paper proposes a general framework of “poverty-scarcity mindset-narrowed bandwidth-limited cognitive and control ability-present bias-irrational savings behavior-poverty trap”. In these circumstances, programs for saving that are intended to help the poor will be more successful if they remove the constraints imposed by scarce mental bandwidth and present bias. Accordingly, commitment programs and cognitive tools were put forward to encourage saving, lessen poverty, and enhance well-being.

Conclusions of this study are supported by a lot of empirical evidence, but the research framework still needs to be tested by data experiments further. Similarly, the design and implementation of the above policies need to be further refined. The effectiveness of these policies should also be evaluated rigorously. In any case, this study examines low-income people’s saving behavior and poverty cycle in depth using scarcity theory and time preference, with the goal of illuminating research on the saving decision-making process of irrational groups and relevant government policies.

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