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The Impact of the Double Reduction Policy on Household Educational Investment Behavior from the Perspective of Bounded Rationality: An Examination Based on the History of Economic Thought and Behavioral Economics

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Abstract: In the context of the implementation of the “Double Reduction” policy, household educational investment has not contracted as expected; instead, it has shown a trend of structural transformation and covert increase. This apparent paradox poses a direct challenge to the traditional rational actor assumption. From the perspective of the history of economic thought, this study systematically reviews the evolution of rational choice theory, bounded rationality, and behavioral economics, and examines their differing applicability to educational investment decisions. The study finds that under a framework of full rationality, a contraction in supply and an increase in costs should lead to a decline in household demand for educational investment. However, in practice, households have reallocated their investments through more concealed, premium, and alternative channels, displaying clear tendencies toward risk aversion and social comparison. To explain this divergence, this paper develops an analytical framework of “policy shock–cognitive mechanisms–behavioral outcomes” and argues that bounded rationality mechanisms—such as incomplete information, loss aversion, and herd effects—are key factors sustaining household educational investment. The findings suggest that household educational investment should not be simply characterized as irrational behavior, but rather understood as satisficing decision-making under conditions of uncertainty. The study extends the application of bounded rationality to education policy analysis and provides a behavioral economics perspective for educational governance.

Keywords: double reduction policy; household educational investment; rational actor assumption; bounded rationality; behavioral economics

Received: 14 May 2026

Revised: 30 June 2026

Accepted: 14 July 2026

Published: 20 July 2026



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1. Introduction

1.1. Research Background

In recent years, national policy guidance has emphasized reducing students' academic workload during compulsory education and limiting off-campus academic tutoring services, with the aim of supporting balanced educational development and optimizing family educational resource allocation. Following implementation, subject-based off-campus tutoring activities have been substantially scaled back, household expenditures on academic tutoring have declined, and students' after-school academic burdens have eased [1].

The policy framework was designed to constrain the supply of academic tutoring services and increase the operational costs for non-compliant providers, thereby moderating household demand for such services. However, empirical observation indicates that educational spending has not uniformly decreased but has instead undergone structural reallocation and increased in less visible forms. While the number of subject-based tutoring institutions has fallen markedly, expenditures on non-academic

enrichment programs, competitive examination preparation, and supervised after-school care have risen significantly. Some households have adjusted their educational investment downward in response, whereas others have sustained or intensified such investment through individualized instruction and discreet delivery modes [2].

Under the 'rational agent' assumption, heightened service costs and strengthened oversight would be expected to suppress investment levels. Yet observed patterns show a concurrent rise in costs and a shift in investment orientation. This divergence raises questions about the adequacy of conventional rational choice models in capturing household educational decision-making [2]. Concepts such as bounded rationality and behavioral psychological mechanisms may offer a more empirically grounded analytical lens.

Accordingly, this paper revisits the theoretical underpinnings of household educational investment decisions through the lens of evolving economic thought and develops an enhanced decision-making mechanism model situated within the context of recent educational policy adjustments [3].

1.2. Research Questions and Significance

Against the backdrop of the "Double Reduction" policy, household educational investment decisions face numerous new issues and challenges. With the comprehensive reduction of academic-focused off-campus tutoring, parents have limited access to resources, making it difficult to make scientifically sound and reasonable educational investment decisions.

Following the implementation of the policy, the direction and structure of family investment in education have undergone significant changes; however, it remains unclear whether these changes fully align with children's developmental needs. Furthermore, parents may be influenced by cognitive biases and information asymmetry during the decision-making process, potentially leading to suboptimal investment behavior. Such patterns not only affect the effectiveness of family educational investment but may also contribute to disparities in educational opportunity [3]. Compared to traditional economics—which relies on strict assumptions about rationality—behavioral economics incorporates psychological insights about human decision-making and is therefore better suited for analyzing real-world economic behavior. This study adopts a bounded rationality framework to examine how the "Double Reduction" policy shapes family educational investment decisions, revealing the underlying behavioral logic and motivations guiding parental choices. At the theoretical level, integrating bounded rationality into research on family educational investment extends the applicability of this concept within educational economics and invites critical reconsideration of the classical "rational agent" assumption. Practically, the findings aim to inform ongoing refinements to the "Double Reduction" policy and offer evidence-based perspectives for fostering balanced educational development and strengthening equity in decision-making capacity.

2. Literature Review and Theoretical Development

2.1. Relevant Concepts

2.1.1. The "Rational Agent" Assumption and Investment in Education

During the era of classical economics, foundational ideas regarding self-interest and market coordination were articulated, laying the intellectual groundwork for subsequent theories of rational choice. Later, neoclassical economics formalized the concept of rationality as optimal decision-making under given conditions through utility-maximization models. In the field of educational decision-making, this conceptual framework has been widely applied to interpret families' investment behavior concerning their children's education [4]. For example, when selecting educational resources, parents make decisions aimed at maximizing economic efficiency based on their children's academic performance, expected future returns, and available household resources.

Within the framework of human capital theory, education is understood as an investment. Individuals or families determine the optimal level of educational investment

by comparing associated costs with anticipated future benefits [5]. From this perspective, a household functions as a 'small factory' that balances current educational expenditures against projected long-term returns to identify the most appropriate level of investment.

Under this logic, if policy adjustments lead to higher educational costs or lower expected returns, households would be expected to scale back their investment accordingly. It follows, therefore, that in the context of regulatory measures limiting after-school tutoring services and increasing compliance requirements, household investment in education should decline [6]. However, observed behavior diverges from this theoretical expectation. Given the complexity of real-world social environments, such models face practical limitations. Parents differ significantly in their access to information, possess bounded capacity to process it, and often incorporate emotional, cultural, and social considerations into their decisions. Consequently, while this conceptual framework offers a useful analytical lens for studying household educational investment, its highly idealized assumptions limit its ability to fully capture the nuanced realities of parental decision-making.

2.1.2. Current Situation and the Rational Model

Following the implementation of the "Double Reduction" policy, the scale of the after-school academic tutoring market has been significantly reduced; however, household educational investment behavior has not simply reverted to a rational, contractionary trajectory [7]. At the micro level, some families have shifted to one-on-one tutoring, competition preparation, or high-end quality education programs; at the macro level, the structure of educational spending has become more hidden and stratified. Particularly in regions with intense pressure to gain admission to higher-level schools, household educational expenditures have not declined significantly.

This phenomenon challenges the "rational agent" assumption. The complexity of educational pathways and frequent policy adjustments increase uncertainty regarding future returns for families, making it difficult for them to accurately calculate expected returns. Educational decisions often correspond to social structures; parents focus not only on absolute returns but also on their children's relative standing within their peer group [8]. Furthermore, educational investment is highly risky and has a long payback period, making it difficult to fully explain using short-term cost-benefit models.

Consequently, real-world household educational investment decisions often deviate from the most ideal computational models, exhibiting characteristics such as emotional drive, risk aversion, and social comparison; the "bounded rationality" model thus offers greater explanatory power when analyzing shifts in household investment structures under the "Double Reduction" policy.

2.1.3. The Evolution of Theories on Bounded Rationality and Behavioral Economics

The 'rational agent' assumption began to undergo systematic reexamination in the mid-20th century. Herbert Simon introduced the concept of 'bounded rationality,' observing that due to environmental complexity, information limitations, and variations in cognitive capacity, decision-makers are generally unable to identify globally optimal solutions and instead pursue satisfactory outcomes. This theoretical advancement challenged the universality of perfect rationality as a foundational premise. Subsequently, behavioral economics expanded this insight by identifying consistent patterns of deviation from normative decision-making models.

However, existing research has predominantly emphasized empirical data analysis, with limited attention devoted to situating bounded rationality within the broader historical development of economic thought. A systematic reconstruction of the theoretical transition—from the 'rational agent' paradigm to bounded rationality—within the history of economic ideas is therefore warranted. Such an approach provides a necessary foundation for developing a refined explanatory framework for household educational investment decisions.

In studies of family educational decision-making, bounded rationality has increasingly served as a key analytical lens, and behavioral insights have been applied to

interpret phenomena such as heightened concern about educational outcomes, imitative enrollment patterns, and intensified academic competition. Evidence suggests that parental choices regarding education are frequently shaped by factors including concern over educational outcomes, tendencies toward conformity, and comparisons with peer groups—leading to decisions that diverge from predictions based on perfect rationality. Moreover, bounded rationality helps clarify how parents adapt their behavior in response to policy adjustments. For instance, following the implementation of the 'Double Reduction' policy, some parents continued enrolling their children in academic supplementary instruction, a pattern attributable to informational constraints or cognitive heuristics [9]. Thus, bounded rationality offers a more empirically grounded perspective for analyzing the mechanisms underlying household educational investment.

2.2. A Deepening Explanatory Approach from Behavioral Economics

Prospect Theory reveals that individuals' decision-making in risky situations does not follow the principle of expected utility maximization but instead exhibits core psychological characteristics such as loss aversion and the anchoring effect—that is, the pain people experience from a loss far exceeds the pleasure derived from an equivalent gain. Subsequently, behavioral economics was expanded into the realm of public policy through theories such as mental accounting and nudging, emphasizing that institutional design should take into account individuals' actual decision-making processes rather than assuming they are perfectly rational [9].

In educational contexts, parents often worry more about the potential losses resulting from their children falling behind in competition than about simply maximizing returns; the bandwagon effect and social reference mechanisms are particularly evident in educational decision-making. Parents' educational decisions are not formed in isolation but are gradually shaped through interactions within parent groups and within social evaluation systems. Group comparisons not only fuel educational concerns but also lead families to increase their educational investments even when returns are uncertain.

Behavioral economics also reveals the influence of the anchoring effect and overconfidence bias. Admission rates to prestigious universities, typical success stories, and various educational rankings often serve as key anchors for parents in assessing the value of educational investments, while high expectations regarding the probability of success often lead to a continuous increase in educational spending [10].

In summary, compared to the rational agent assumption, the frameworks of bounded rationality and behavioral economics better explain the persistence and transformation of household educational investment behavior following the implementation of the Double Reduction policy. This theoretical shift not only reflects the evolution of economic thought but also expands the academic horizons for evaluating the effectiveness of educational policies.

3. Analysis of Household Educational Investment Behavior from the Perspective of Bounded Rationality

3.1. Policy Shock and the Restructuring of the Education Market

The implementation of the "Double Reduction" policy was not the result of spontaneous market adjustment but rather a deliberate institutional intervention [6]. Through a series of key measures—including reducing the scale of supply for subject-based off-campus tutoring, strengthening oversight of training institutions, and restricting the unregulated entry of capital into the training sector—this policy significantly altered the operational landscape of the education and training sector.

From the perspective of institutional economics, this supply-side adjustment reflects a recalibration of the mechanisms governing educational resource allocation. Standardized training offerings in the market have declined, and pathways to accessing resources have become more fragmented and less transparent. At the same time, the scarcity of high-quality educational resources persists in the short term; during structural adjustment, such scarcity has taken on new patterns of stratification.

In practice, household investment in education has not decreased as predicted by the "rational actor" hypothesis, but has instead undergone reallocation through shifts in investment patterns [11]. This suggests that the policy did not directly constrain household investment, but first reshaped families' risk perceptions and expectation-formation processes. Consequently, assessing the effects of the "Double Reduction" policy requires moving beyond institutional-level supply-and-demand analysis to examine how it influences family decision-making through cognitive channels.

3.2. Cognitive Constraints and Risk Perception: The Mediating Mechanism of Bounded Rationality

A nationwide survey conducted in September 2021 found that 84.1% of parents viewed a well-rounded and high-quality education as the most effective means for their children to navigate future social competition. Additionally, 82.1% considered attendance at a high-performing elementary or middle school essential for their child's development. As a result, 54.6% indicated that parents should strive to provide optimal developmental conditions, ensuring their children remain at least comparable to peers. Within the theoretical framework of bounded rationality, individual decision-making is shaped by limitations such as incomplete information, finite cognitive processing capacity, and time constraints. For families, educational decisions involve substantial uncertainty: intricate admission procedures, evolving policy frameworks, and intensifying societal competition hinder accurate forecasting of long-term outcomes [9].

Information asymmetry limits parents' access to comprehensive data on admission likelihoods, policy trajectories, and educational returns, often leading them to rely on partial or fragmented evidence. This informational environment encourages risk-mitigating investment behaviors—increasing inputs to offset uncertainty. Concurrently, social comparison processes influence expectations: when peer households increase educational investment, an individual household may sustain or raise its own spending—not necessarily due to perceived marginal benefits, but to preserve relative positioning. This perception of relative disadvantage becomes more pronounced under conditions of bounded rationality.

Moreover, consistent with findings from prospect theory, families exhibit heightened sensitivity to potential setbacks—particularly the perceived risk of their child falling behind—placing greater weight on avoiding loss than on securing additional gains. In an era marked by abundant information and resources, caregivers frequently assess the scope and quality of their own informational and material assets against those of others, which may foster perceptions of insufficiency. They tend to view active participation in the acquisition and deployment of educational resources as necessary to secure stable developmental pathways for their children. Consequently, even when policies aim to alleviate financial pressure, households may sustain competitive positioning through non-monetary or alternative forms of investment.

Thus, policy interventions do not directly shift investment intentions; rather, they influence household decision-making by recalibrating perceptions of risk and reinforcing existing cognitive patterns.

3.3. The Shift and Intensification of Educational Investment

Under the influence of the aforementioned cognitive mechanisms, household educational investment exhibits structural shifts, moving from formal market-based channels to informal arrangements such as one-on-one tutoring, customized private instruction, and small-group sessions. This transition has not reduced overall expenditure but has elevated per-unit costs and heightened access barriers. Investment scope has broadened beyond subject-specific support to encompass competition preparation, holistic development programs, and internationally oriented curricula. Amid increasingly diversified pathways to higher education, families are allocating resources across multiple educational options to mitigate uncertainty—a pattern consistent with risk-mitigation strategies. Concurrently, disparities in investment levels have widened: high-income households draw upon accumulated advantages to secure premium alternative

educational offerings, while low- and middle-income households shoulder a comparatively larger share of educational spending, resulting in a structural increase in the financial pressure associated with educational consumption.

From the perspective of bounded rationality, this pattern reflects adaptive decision-making rather than impulsive behavior—specifically, a satisficing approach adopted under conditions of limited information and heightened perception of uncertainty.

4. Theoretical Reflections and Policy Implications from the Perspective of the History of Economic Thought

4.1. From the "Rational Agent" Assumption to Bounded Rationality

The evolution of economic theory is not a static, fixed process, but rather a dynamic process of refinement continuously driven by real-world economic problems. From classical to neoclassical economics, the "rational agent" assumption has long emphasized that individuals seek to maximize utility under conditions of complete information and stable preferences.

However, as the real economic environment has grown more complex and the institutional landscape has become increasingly volatile, the assumptions of perfect rationality have gradually revealed their limitations. The concept of bounded rationality acknowledges the limits imposed by cognitive capacity and information access, framing decision-making as context-dependent choice rather than abstract optimization. The issue of household investment in education against the backdrop of regulatory adjustments serves as a real-world illustration of this theoretical shift. Adhering to the framework of perfect rationality makes it difficult to explain why investment has not contracted in tandem with the reduction in policy-provided resources; in contrast, the perspective of bounded rationality reveals how psychological mechanisms—such as risk perception, social comparison, and loss aversion—shape decision-making pathways. In the realm of educational investment, the complexity of information faced by families far exceeds that of general consumer decisions. Educational returns are characterized by long-term horizons, uncertainty, and a high degree of dependence on the institutional environment, making it difficult for parents to perform rigorous discounted cash flow calculations. Therefore, bounded rationality provides a theoretical foundation for reexamining household decisions regarding educational investment.

From the perspective of the history of economic thought, this study does not reject the "rational agent" assumption outright but instead clarifies its explanatory boundaries within specific institutional contexts and complex decision-making scenarios, thereby systematically demonstrating the applicability and explanatory power of bounded rationality theory in the analysis of contemporary household educational decision-making.

4.2. A Reflection on the Micro-Level Behavioral Foundations of the "Double Reduction" Policy

From a macro perspective, the policy has achieved measurable outcomes in reshaping the landscape of extracurricular training institutions and moderating capital involvement. However, at the household level, a structural reallocation of educational investment has become evident. This indicates that policy effectiveness is shaped not only by formal institutional arrangements but also by the decision-making processes of families. Educational choices made by households extend beyond simple cost-benefit assessments; they reflect judgments formed under conditions of competitive pressure and perceived risk.

Governance focused solely on supply-side adjustments cannot address underlying concerns about educational opportunity. Absent substantive modifications to secondary school admission mechanisms and school differentiation frameworks, parental aspirations for high-performing schools remain persistent. When academic performance ceases to serve as the primary pathway for placement into preferred institutions, students are increasingly assigned to geographically proximate schools—many of which are

average or under-resourced. The resulting gap between aspiration and outcome motivates active school selection behavior, a pattern that has grown increasingly prevalent.

Moreover, educational competition exhibits strong interdependent effects: even when a single household reduces its investment, the broader competitive environment remains largely unchanged. In such contexts, families prioritize concerns about whether others will maintain or increase their efforts—a dynamic that sustains high levels of effort across the population. Consequently, parents draw upon available socioeconomic and cultural resources to secure advantageous educational placements, manifesting in diverse forms of strategic positioning—including residential location, financial investment, social networks, and academic achievement.

Policy design that overlooks behavioral tendencies such as loss aversion and conformity may redirect, rather than reduce, household educational investment. Following reductions in formal training expenditures, spending often migrates toward less visible or higher-cost alternatives. Thus, effective education governance requires more than market-oriented interventions; it must also address foundational institutional structures and support informed decision-making. Examples include refining admission evaluation criteria, enhancing transparency around instructional quality within schools, and improving the equitable distribution of educational resources—all of which can help mitigate concerns rooted in relative standing.

4.3. Limitations of the Study and Future Prospects

This study relies exclusively on a literature review and does not include empirical validation. Subsequent work could integrate questionnaire surveys or microdata to quantitatively examine the psychological mechanisms shaping household investment in education. Additionally, the structural dynamics of educational competition merit further systematic investigation.

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