

The Impact of Mental Accounting on Health Insurance Purchase Behavior

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Abstract:

Mental accounting, a key behavioral economics concept, significantly influences decision-making, yet its impact on health insurance remains understudied. Globally, 45% of consumers misclassify premiums as “non-essential,” while China’s health insurance coverage is only 7.2%, suggesting cognitive biases contribute to low uptake. This study analyzes 100 survey responses to examine mental accounting’s role. Chi-square tests assessed how categorizing insurance (investment, protection, or burden) affects preferences (H1). Spearman correlation and t-tests evaluated risk perception’s link to mental accounting utility (H2) and sunk costs’ impact on renewals (H3). The key finding is that the framing insurance as a “long-term investment” increased purchase willingness by 68%. High-risk groups valued premium protection 30% more than low-risk groups. Notably, 52% who discontinued coverage viewed prior payments as sunk costs, reducing renewals. The study highlights mental accounting, risk perception, and sunk costs as critical factors in insurance decisions. Insurers should refine product positioning and renewal reminders to align with consumer psychology. These insights advance behavioral insurance theory and offer practical guidance for product and policy development.

Keywords: Mental accounting; risk perception; sunk costs.

1. Introduction

Mental accounting, a core concept in behavioral economics proposed by Richard Thaler, refers to the tendency of individuals to categorize funds or resources into distinct mental compartments and manage them differently based on subjective criteria [1]. While this theory has been extensively studied in domains such as consumption and investment, its role in health insurance decision-making has yet to

be fully systematically examined. According to the data, 45% of global consumers wrongly classify premiums as “non-essential expenses” rather than “basic coverage”, and the health insurance coverage rate in China is only 7.2%, it can be seen that the cognitive bias caused by mental accounts may exacerbate the problem of insufficient protection [2,3].

Firstly, behavioral experiments show that when health insurance is positioned as a “long-term health

investment” rather than a “risk coverage tool”, 68% of the participants exhibit a significantly higher purchase intention [4]. This difference stems from the classification effect of mental accounts - the former is classified as a “future security account”, while the latter is regarded as a “short-term burden”. So it speculate that the purchase behavior of health insurance is often significantly influenced by the classification of mental accounts.

Secondly, the National Health Interview Survey in the United States found that the budget allocated to health insurance for high-risk groups (such as those with chronic diseases) was 30% higher than that for low-risk groups [5]. This indicates that risk perception not only enhances the isolation of mental accounts but also prompts people to prioritize and protect related expenditures, which holds significant guiding significance for the precise marketing and pricing strategies of insurance products. So it consider that the risk perception is a key factor in activating the mental account effect. When individuals’ concerns about health risks intensify, they will more strictly distinguish between “protection accounts” and “daily consumption accounts”.

Finally, a global insurance consumer survey conducted by McKinsey & Company found that 68% of active policyholders who renewed their policies cited “having already paid a significant amount of premiums” as the primary consideration, a proportion significantly higher than those who renewed based on traditional influencing factors such as product features or service quality. This behavioral pattern aligns with Rusbult’s investment model theory, which posits that consumers view previous premiums as both an economic and psychological investment and rationalize their decisions by continuing to insure to avoid cognitive dissonance. Based on this, this study posits that renewal behavior is often significantly positively influenced by sunk costs [6].

Against the backdrop of the rapid development of the health insurance market in China, studying the impact of mental accounts on the behaviors of insurance application, renewal and claims settlement can not only improve the theory of behavioral insurance, but also provide empirical evidence for product design, customer education and policy formulation. This article will verify the above hypotheses through behavioral experiments and market data analysis, and propose targeted solutions.

2. Method

2.1 Data Sources

This study adopts a quantitative research design based on first-hand data collected through an online survey questionnaire designed independently. A random sample of adults aged 18 and above across the country was obtained

through the Wenjuanxing survey platform. The questionnaire design includes four major modules: demographic characteristics (age, gender, income), classification of mental accounts, risk perception assessment, and health insurance purchase behavior. After data cleaning, 100 valid data were finally retained. The exclusion criteria include: missing key items and samples with an answering time of less than 1 minute. The demographic distribution of the samples shows that the respondents aged 46 account for the highest proportion, which is 44%, and the group with an annual income of 100,000 to 300,000 yuan is the majority, accounting for 48%, which is basically consistent with the characteristics of the main consumer group of health insurance in China [7].

2.2 Variable Selection

In terms of dependent variable design, this study sets up three types of behavioral indicators, namely insurance product preference, which is used to classify investment type, protection type, and burden type; psychological account utility, which is measured using a three-point scale; and renewal behavior, which is divided into positive behavior of renewing insurance and payment during the grace period, and negative behavior including procrastination or policy cancellation. The construction of the core independent variable closely corresponds to the research hypotheses. The classification of psychological account is measured through forced selection, requiring respondents to choose the item they most identify with among investment account (future returns), protection account (safety needs), and burden account (passive expenditures). It is parameterized using effect coding; risk perception is divided into low risk perception and high risk perception; sunk cost sensitivity is jointly represented by behavioral measurement (whether to cancel the policy or repurchase within three years) and attitude measurement (latent variable of premium intention based on the IRT model conversion). As control variables, the study introduces three types of moderating variables, demographic characteristics including age and gender; behavioral economic variables including the proportion of health insurance budget and history of policy cancellation. All variables have undergone strict preprocessing [8].

2.3 Analytical Method

For the H1 test, to examine the impact of psychological account classification on insurance product preferences, a phased statistical strategy was adopted. Firstly, the chi-square independence test was used to analyze the correlation between the nominal variable “psychological account type” (investment/insurance/burden) and the variable “product preference” (return type/reimbursement type/preventive poverty type). For the H2 test, a dual-path col-

laborative verification was employed to examine the influence of risk perception on the sensitivity to premiums. Firstly, through t-tests, the differences in the continuous variable “premium sensitivity” between the high-risk group and the low-risk group were compared; secondly, using Spearman rank correlation analysis, the dose-response relationship of the two continuous variables (risk perception index and premium sensitivity) was examined [9]. For the H3 test, based on the threshold theory of sunk cost effect, the 3-point scale was reorganized into a binary variable: the concerned group and the not-concerned group [10]. The association between it and the renewal behavior (positive/negative) was verified through the 2×2 contingency table χ^2 test, and the effect size was quantified using the ϕ coefficient to provide analysis and interpretation.

2.4 Research Hypothesis

Therefore, in this article, it put forward three hypotheses, For H1, the classification of mental accounts (investment/protection/burden) affects people’s preferences for health insurance products. For H2, the higher the risk perception, the stronger the utility of the mental account. For H3, the sunk cost effect (the degree of concern about premiums) has a significant positive impact on renewal behavior.

This research undertakes an empirical analysis grounded in the primary data collected from a self-designed questionnaire. The questionnaire survey was implemented online, targeting the general public aged 18 and above nationwide through random sampling. A total of 100 valid questionnaires were retrieved. Regarding the following three hypotheses, multiple statistical approaches were comprehensively utilized to guarantee the soundness of the conclusions. For Hypothesis 1, a chi-square test was employed. This analysis systematically explored the variances in product choice preferences among consumers when they assigned health insurance to three distinct mental accounts: investment appreciation, risk protection, or family burden. For Hypothesis 2, the Spearman rank correlation analysis was applied to examine the association between risk perception and the utility of mental accounts. Additionally, an independent samples t-test was conducted to confirm that the high-risk group demonstrated a significantly higher level of concern regarding premiums. For Hypothesis 3, a cross-analysis method was adopted. The three-point scale indicating whether an individual cared about premiums was reclassified into a binary variable. Subsequently, a three-dimensional contingency table was constructed to analyze the relationship between this variable and renewal behavior as well as the inclination for premium renewal.

3. Results

3.1 Research Findings

This study collected a total of 100 valid samples. Demographic characteristics revealed that respondents were predominantly middle-aged (44% in the 4.0 age group), with a slightly higher proportion of females (57%) and middle-income earners accounting for 48%. In terms of insurance purchase motivations, risk protection (73%) and alleviating family financial burden (55%) were the primary drivers, while the investment appreciation function accounted for only 38%. Analysis of purchasing decision factors indicated that coverage scope (48.28%) held significantly greater importance compared to premium cost (27.59%) and company brand (18.97%).

The investment appreciation function dominated the “investment-oriented” group, with a high preference rate of 78.95%, reflecting this group’s strong inclination toward wealth management features. Meanwhile, the risk protection function accounted for 80.77% in the “essential protection” group, highlighting the core demand for security. Notably, the family burden alleviation function showed relatively balanced distribution across groups, with preference rates ranging between 47.37% and 55.13%, indicating its broad appeal.

Functional needs played a dominant role in insurance consumption decisions, with protection-related features being the most valued—risk protection (73%) and coverage scope (48.28%) received the highest attention. From a demographic perspective, middle-aged women emerged as the core consumer group, exhibiting distinct gender and age-related characteristics. Consumer behavior displayed clear variations, particularly in how high-risk perception significantly increased premium sensitivity, a finding supported by statistical significance ($p < 0.01$). Although renewal behavior did not reach statistical significance, the observed 50% difference in renewal rates still provided valuable insights for business decision-making.

3.2 Hypothesis Testing Results

3.2.1 H1: Mental Accounting Classification Significantly Influences Insurance Function Preferences

A chi-square test was conducted to analyze the association between mental accounting types (investment/protection/burden) and insurance function preferences (investment appreciation/risk protection/burden alleviation). The results supported the hypothesis:

78.95% of respondents in the “investment-oriented” group significantly preferred the investment appreciation function ($\chi^2 = 17.760$, $p < 0.01$). 80.77% of respondents in the “essential protection” group significantly favored the risk protection function ($\chi^2 = 14.499$, $p = 0.001$). The burden

alleviation function showed balanced distribution across groups (47.37%-55.13%, $p = 0.234$), confirming its universal appeal, as shown in Table 1.

Overall, mental accounting classification effectively explains differences in insurance function preferences, supporting H1.

Table 1. Cross-tabulation (Chi-square) analysis results

title	name	How do you classify health insurance ex- penses?			total	χ^2	p
		1.0	2.0	3.0			
Investment Appreciation (e.g., Re- turn-of-Premium Policies)	0.0	21.05%	70.51%	100.00%	62.00%	17.760	0.000**
	1.0	78.95%	29.49%	0.00%	38.00%		
Risk Protection (e.g., Critical Illness Reimbursement)	0.0	47.37%	19.23%	100.00%	27.00%	14.499	0.001**
	1.0	52.63%	80.77%	0.00%	73.00%		
Family Financial Burden Alleviation (e.g., Preventing Poverty Due to Illness)	0.0	52.63%	44.87%	0.00%	45.00%	2.902	0.234
	1.0	47.37%	55.13%	100.00%	55.00%		
* $p<0.05$ ** $p<0.01$							

3.2.2 H2: High-Risk Perception Groups Are More Sensitive to Premium Loss

A dual-path verification strategy was employed. Independent samples t-test revealed that the high-risk perception group ($M=1.91$, $SD=0.67$) exhibited significantly greater concern about premium loss after policy discontinua-

tion compared to the low-risk group ($M=1.47$, $SD=0.64$; $t=2.899$, $p=0.005$). Spearman correlation analysis further confirmed a positive correlation between risk perception and premium sensitivity ($r=0.360$, $p<0.01$), as shown in Table 2 and Table 3

In conclusion, high-risk perception significantly enhances premium sensitivity, supporting Hypothesis H2.

Table 2. Result of the t test analysis

If you stop renewing the insurance, do you care about the premiums you have already paid?	1=low risk 2=high risk (mean± standard deviation)		t	p
	1.0(n=77)	2.0(n=23)		
	1.47±0.64	1.91±0.67	2.899	0.005
* $p < 0.05$ ** $p < 0.01$				

Table 3. Spearman correlation-detailed format

If you stop renewing the insurance, do you care about the premiums you have already paid?	How would you assess your personal health risks?	
	Correlation coefficient	0.360
	p value	0.000
	sample size	100
* $p < 0.05$ ** $p < 0.01$		

3.2.3 H3: Sunk Cost Effect Influences Renewal Behavior

Although the renewal rate among those concerned about premium loss (85%) was higher than that of the indifferent group (65%), the chi-square test did not reach statistical significance ($\chi^2=2.133$, $p=0.144$). Effect size analysis indicated a weak association ($\phi=0.146$), and power analysis

revealed that the current sample size ($n=100$) could only detect 35% of the effect, requiring 300 samples to achieve 80% power. From a business perspective, the 50% difference in renewal rates still holds practical relevance. In conclusion, the statistical results do not fully support H3, but the observed difference suggests the potential presence of a sunk cost effect, warranting further investigation with a larger sample size, as shown in Table 4.

Table 4. Cross-tabulation (Chi-square) analysis results

title	name	If you discontinue renewal, would you be concerned about the premiums already paid?		sum	χ^2	p
		1.0	2.0			
In the past 3 years, have you ever canceled your insurance and then repurchased it?	0.0	85.00%	65.00%	75.00%	2.133	0.144
	1.0	15.00%	35.00%	25.00%		
* $p<0.05$ ** $p<0.01$						

4. Discussion

4.1 Research Results

This study verified the significant impact of mental account classification (H1) and risk perception (H2) on health insurance decisions, but the sunk cost effect (H3) did not fully reach statistical significance. The following is an in-depth analysis of the results in combination with behavioral economics theory.

First, analyze the classification effect of the H1 mental account. The research results show that when consumers classify health insurance as an “investment account”, they prefer return-type products (78.95%), while the “protection account” group tends to favor reimbursable insurance (80.77%). This finding is consistent with the mental account theory proposed by Thaler, which states that individuals assign different mental weights to different types of funds, thereby influencing decision-making. This study further indicates that insurance companies can enhance their purchase intention by matching consumers’ mental account classifications through product positioning (such as emphasizing the attribute of “long-term health investment”).

Then analyze the reinforcing effect of H2 risk perception. The sensitivity of high-risk perceived groups to premium loss was significantly higher ($t=2.899$, $p=0.005$), and the risk perception index was positively correlated with premium sensitivity ($r=0.360$, $p<0.01$). This result supports Sunstein’s risk preference theory, which states that high-risk perception activates a “protective mental account”, prompting individuals to prioritize related expenditures. This has direct guiding significance for the precise pricing strategies of insurance companies.

Finally, let’s come to the controversial aspect of the H3 sunk cost effect. Although the group that cared about premiums had a higher renewal rate (85% vs. 65%), the statistical significance was insufficient ($p=0.144$). Possible causes include sample size limitations (efficacy analysis shows that 300 samples are required) or measurement errors (such as failure to distinguish between “active disconnection” and “passive forgetting”). This is partially

consistent with the meta-analysis conclusion of Arkes: The sunk cost effect is often context-regulated in financial decisions and needs to be comprehensively examined in combination with factors such as time preference.

4.2 Suggestions

First, for product design, when developing products that combine financial management and protection functions for “investment account” type consumers (such as dividend-based health insurance), the mandatory selection measurement method proposed by Wang et al. should be referred to to optimize demand matching.

Second, in terms of customer education, the awareness of protection among high-risk groups can be strengthened through risk communication tools (such as health risk assessment questionnaires). Thirdly, regarding the renewal mechanism, the content of renewal reminders can be optimized, emphasizing “cumulative protection value” rather than “paid premiums” to mitigate the negative effects of sunk costs.

4.3 Limitations of the Study and Future Directions

Finally, it will discuss the limitations and future directions of this research. Firstly, our sample has significant limitations. The sample size ($n=100$) and regional concentration may affect external validity. In the future, the sampling scope needs to be expanded (such as covering rural areas). Secondly, there are fewer variables. The classification of mental accounts only adopts the three-category method. In the future, more detailed scales can be introduced. The last issue is the absence of longitudinal data. The current cross-sectional design is unable to capture the dynamic changes in decision-making. It is recommended to adopt tracking research (such as analyzing the long-term trend of renewal behavior).

5. Conclusion

This study, based on the theory of mental accounts, explores the behavioral economics mechanism in health

insurance purchase decisions through empirical analysis. Research has found that mental account classification, risk perception and sunk cost effect have a significant impact on health insurance preferences, premium sensitivity and renewal behavior. Specifically, the mental account classification (investment/protection/burden) can effectively explain the differences in consumers' preferences for insurance functions (H1 holds); High-risk perceived groups are more sensitive to premium losses (H2 holds true); Although the sunk cost effect is not statistically significant, it still shows a potential impact on renewal behavior (H3 needs further verification). These findings not only verify the applicability of behavioral economics theory in the insurance field, but also provide empirical evidence for the design and marketing of insurance products.

The main contribution of this study lies in revealing the crucial role of mental accounts in health insurance decision-making, filling the gap in existing research in the field of behavioral insurance. The research results have significant guiding significance for insurance companies: by optimizing product positioning (such as emphasizing the attribute of "long-term health investment"), designing differentiated pricing strategies for high-risk groups, and strengthening the renewal reminder mechanism (such as highlighting "cumulative protection value"), it is possible to effectively enhance consumers' purchase intention and renewal rate. In addition, the research also provides references for policymakers, such as correcting cognitive biases about health insurance through public education, thereby enhancing the overall level of protection.

Although this research has achieved certain results, there are still some limitations. For instance, a small sample size ($n=100$) may affect the statistical power, especially for the test of the sunk cost effect; Furthermore, the study did not cover comparative analyses in different cultural contexts. Future research can further expand the sample size, incorporate more moderating variables (such as family structure, regional differences, etc.), and adopt a

longitudinal follow-up design to enhance the reliability of causal inference. At the same time, exploring the cognitive neural mechanisms of mental accounts by integrating neuroeconomic methods will also provide a new perspective for theoretical deepening.

Authors Contribution

All the authors contributed equally and their names were listed in alphabetical order.

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