Research on A-Share Industry Sector Changes Based on Prospect Theory——Starting from the Asymmetric Reaction Caused by the Change of Repo Interest Rate

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Abstract. This paper discusses the impact mechanism and transmission path of short-term liquidity pressure on the allocation intensity of A-share industry. In view of the inevitable pricing passivation of the traditional long-term interest rate index in the increasingly complex environment of the equity market, this paper establishes Depository Repurchase Rate 007 (DR007) as the core explanatory variable, and selects the semiconductor (long-term) and bank (short-term) industries with the opposite characteristics of "equity duration" as the observation objects of allocation intensity. By constructing the regression equation, the explanatory variables are introduced into analysis. At the same time, the empirical analysis based on the prospect theory shows that DR007 has stronger pricing sensitivity and explanatory power than the traditional risk-free interest rate. The study found that investors showed significant asymmetric position adjustment behavior in the "loss range" caused by liquidity contraction, and loss aversion amplified the intensity of capital switching from high duration to low duration industries, leading general market investors to make more drastic position adjustments in the face of slight interest rate changes, causing frequent capital flows and exchanges between different industry sectors.

Keywords: DR007; Industry Allocation Intensity, Duration of Equity, Prospect Theory, Asymmetric Reaction

1 Introduction

1.1 Research Background

In the equity market pricing system, liquidity is not only a macro variable, but also a reflection of investors' psychological expectations. Compared with the traditional long-term risk-free interest rate (10-year Treasury bond yield), the short-term change of DR007 (Depository Repurchase Rate 007) directly locks in the financing cost of institutions and the sentiment fluctuations of retail investors. Exploring the impact of DR007 on industry allocation can not only capture the risk transmission logic under extreme liquidity fluctuations, but also provide investors with a more market sensitive asset allocation framework in a complex and volatile market environment. Although the classical theory regards the Treasury bond yield as the pricing benchmark, in the

© The Author(s) 2026
L. C. Yoong (ed.), *Proceedings of the 2026 2nd International Conference on Financial Innovation and Marketing Management (FIMM 2026)*, Advances in Economics, Business and Management Research 408,
https://doi.org/10.2991/978-94-6239-801-6_45

empirical study of the industry sector, the long-term interest rate is often difficult to explain the drastic industry style switching due to its limited volatility and lagging response to emergencies behind this, investors' perception of the cost of capital often shows significant irrational tendencies [1]. As an important liquidity indicator of the market, the abnormal fluctuations of DR007 that deviate from the benchmark often precede the fundamental data. Especially in the A-share market structure dominated by small and medium-sized investors, the marginal tightening of liquidity is often amplified through the perception of profit and loss in the psychological account. However, most of the existing studies focus on the total effect of liquidity, and less on how high-frequency cost indicators such as DR007 drive the frequent exchange of funds between semiconductor (high term/long-term expectation) and Banking (low term/spot cash) and other completely opposite industry sectors through the asymmetry of "profit and loss range"[2].

1.2 Research Content

This paper uses micro-data from A-share main board indicators as a sample and establishes DR007 as the core explanatory variable, aiming to clarify the inherent driving mechanism of short-term liquidity pressure on industry allocation intensity. By constructing a relative allocation sequence for the semiconductor and banking sectors, this paper introduces prospect theory and focuses on examining whether there are significant differences in portfolio adjustment efforts between the "pain zone" triggered by liquidity tightening (DR007 soaring) and the "comfort zone" brought about by liquidity easing (DR007 falling) [3]. The intention is to reveal that liquidity shocks do not uniformly affect all industries, but rather trigger mispricing and irrational operations in specific industries through investors' behavioral biases.

1.3 Marginal Contributions

In terms of index dimension contribution, it broke through the traditional research direction of long-term interest rate and confirmed that DR007 is also one of the important pricing indicators to reveal the explanatory power of A-share industry rotation.

The research combines "the pain of general retail investors on the cost of capital" with the prospect theory, improves the micro transmission model of liquidity impact on industry allocation, and widens the application scenario of behavioral finance.

By quantifying the strategic perspective, the study specifically splits the asymmetric effect of DR007, providing more operable ideas and support for the construction of market liquidity risk early warning strategies.

2 Literature Review

2.1 Concept Definition

Industry Allocation Intensity. As the core index to measure the efficiency of asset rotation and risk management, the importance of industry allocation intensity is reflected in the average proportion of non-systematic risk in the total stock risk of up to 30%. The evolution of this allocation pattern is deeply constrained by the economic cycle fluctuations defined by the output gap and inflation level. In the cycle of recovery, overheating, stagflation and recession, various industries show significant income heterogeneity based on the difference in sensitivity to the macro environment [4].

From the perspective of equity duration, this heterogeneity essentially stems from the difference in the return time of asset cash flow: the cash flow of the semiconductor industry is concentrated in the long term, which has an obvious "long-term" attribute, resulting in its pricing mechanism being highly sensitive to changes in the discount rate and macro expectations; The banking industry, on the other hand, has built "short-term" assets with low sensitivity by virtue of robust spot cash flow and high dividend distribution, playing a key defensive role in the event of economic fluctuations or tight liquidity. Therefore, the industry allocation intensity not only reflects the profit tendency of funds in different cycle stages, but also reflects the dynamic game between the two long-term logics of "long-term growth" and "immediate return"[5].

Liquidity Risk. The essence of liquidity risk stems from the deep term mismatch in the financial system, that is, financial institutions convert short-term liquidity liabilities into long-term illiquid assets through the liquidity creation function. While performing the credit intermediary function, it inevitably exacerbates the imbalance in the time dimension of the balance sheet [6]. As the core indicator to measure the level of interbank liquidity, DR007 directly reflects the marginal capital pressure in the process of liquidity creation: when the scale expansion of deposit and loan business leads to the rise of maturity mismatch risk, the urgent demand of institutions for short-term positions will be released in real time through the abnormal fluctuation of DR007, which becomes the key micro signal to capture the Liquidity Risk Spillover [7].

Therefore, liquidity risk is no longer only a financial indicator of a single institution, but also transmits the term mismatch pressure on the bank side to the whole market through DR007, a price anchor, which directly affects the valuation logic of asset prices and investors' behavior decisions. This transmission mechanism profoundly reveals the internal resonance logic between micro liquidity creation, term mismatch risk and macro market capital price, making it the core observation window for predicting the tightening of systemic liquidity and its impact on industry allocation [8].

2.2 Theoretical Basis

As the key framework of behavioral finance, prospect theory challenges the assumption of absolute rationality of investors and utility maximization, and emphasizes the limited

rationality of investors in uncertain decisions [9]. The core of this theory is that investors make decisions based not on absolute wealth levels but on "reference points", and show asymmetric risk preference under the unique value function: that is, they tend to avoid risk in the income range, while they show significant risk pursuit in the loss range.

In the financial empirical research, the prospect theory deeply analyzes the irrational volatility and heterogeneous expected behavior in the market. Because the psychological negative utility caused by losses is much greater than the positive utility (loss aversion) caused by returns of the same scale, investors often show significant behavioral bias in the face of market shocks [10,11]. This asymmetric psychological perception not only leads to the deviation of asset prices from fundamentals, but also explains how investors produce asymmetric position adjustment behavior through the gain and loss trade-off of mental accounts when the liquidity environment changes [12].

2.3 Core Assumptions

The internal logic between DR007 (independent variable) and industry allocation intensity (dependent variable) can be explored from three dimensions: pricing, chips and psychology

Firstly, in the pricing dimension, the leverage effect of semiconductor valuation by the change of discount rate is significant; Banks were weakly affected. The rise of DR007 directly led to a more drastic decline in the valuation of the semiconductor sector, forcing funds to flow to dividend assets with low sensitivity [13].

Secondly, in the chip dimension, DR007 maps the capital cost pressure of the market. When costs soar, institutional investors' risk appetite shrinks, and funds tend to withdraw from growth sectors that rely on high premiums and turn to defensive sectors with high cash flow [14].

Finally, in the psychological dimension, based on the relevant content of prospect theory in behavioral finance, the psychological impact of DR007 fluctuations on investors is asymmetric. The "psychological discomfort" caused by liquidity tightening in the pharmaceutical sector is much stronger than the sense of gain brought by liquidity improvement [15].

Based on this, this paper puts forward the following assumptions:

H1 is proposed from the benchmark relationship, that is, the short-term liquidity pressure index DR007 has a significant negative driving effect on the allocation intensity of the A-share industry, and H2 is proposed from the asymmetry, that is, compared with the liquidity easing stage, DR007 has a stronger impact on the allocation intensity of the industry in the liquidity tightening (loss range), showing a significant behavioral asymmetry.

3 Research Design

3.1 Data Selection

The data selected are daily data from the A-share main board market's "Changjiang Securities Semiconductor Index (002100.CJ)", "Shanghai Banking Stock Index

(000134.SH)", and the macro market's DR007, covering the period from January 1, 2021, to December 31, 2025.

3.2 Variable Definition

The dependent variable (y) represents the relative allocation intensity of the industries:

$$y = \ln\left(\frac{Price_{High_Duration}}{Price_{Low_Duration}}\right) \tag{1}$$

The explanatory variable (x) is DR007 volatility; using yesterday's value as the reference point for today:

$$Reference_Point_t = r_{t-1} \tag{2}$$

If the current value exceeds that of the previous day, it is a loss signal; otherwise, it is a profit signal. This meets the definition of fluctuation as x =△r.

In the study, macroeconomic factors such as overall market valuation, market volatility (similar to VIX), output gap (GAP), and inflation rate (CPI) were controlled to remain constant

3.3 Model Construction

To verify the "loss aversion" effect in prospect theory, this study divides the fluctuations of DR007 into "upside (stress zone)" and "downside (easing zone)", and constructs the following benchmark model:

$$y_t = \alpha + \beta_1 \cdot \Delta r_{up} + \beta_2 \cdot \Delta r_{down} + \epsilon \tag{3}$$

Where △r _up refers to the positive fluctuation of DR007, and △r _down refers to the negative fluctuation of DR007; β_1 and β_2 refer to the response intensity of industry allocation intensity in the upward and downward ranges, respectively.

3.4 Model Expectations

When DR007 rises (pressure zone), investors may initially react sluggishly due to "loss aversion". but once the pressure rises beyond a certain threshold, the selling intensity |β_1| will be greater than the position increase intensity |β_2| when DR0017 goes down; In the result, the reaction is|β_1|>|β_2|.

4 Empirical Research

4.1 Regression Results

According to the relevant variables and data sources defined in the study design, OLS regression was conducted using Stata software:

Table 1. Regression coefficients of semiconductors and banks

Items	Coefficients
Δr_{up}	0.209***
	(2.88)
Δr_{down}	-0.146*
	(-1.94)
cons	2.150***
	(316.96)
N	1211
R^2	0.008
Adj. R^2	0.01

(*, * *, * * * are significant at the significant levels of 10%, 5% and 1%, respectively)

4.2 Result Description

For hypothesis H1 (benchmark relationship).According to the data in the table:β_1 =0.209，β_2 =-0.146, it shows that every time x (DR007 fluctuation) increases by one unit, y (industry allocation intensity) will decrease accordingly; On the contrary, when x decreases by one unit, y will rise accordingly.

This negative correlation verifies the "equity duration" theory: when the rise of DR007 represents the increase of short-term liquidity pressure, the market will reduce the allocation of long-term assets (semiconductors) sensitive to interest rates and shift toward short-term assets such as banking stocks.

The above analysis shows that the relevant data in the table directly prove that DR007 has a significant negative guiding effect on the allocation intensity of the A-share industry.

For hypothesis H2 (asymmetry).Based on the data presented in Table 1, it can be found that β_1 and β_2 have significant differences:

Where β_1(△DR007 > 0, uplink interval) is 0.209. The results shows that when liquidity tightens and investors face potential losses, the range of position adjustment for withdrawing from the semiconductor sector is significantly expanded.

While β_2(△DR007 < 0, downlink interval) is -0.146. It shows that when liquidity is loose, investors' willingness to increase allocation is not as urgent as when tightening.

From the perspective of behavioral finance, this feature is the direct projection of prospect theory (loss aversion) on data, which provides supporting evidence for H2.

4.3 Robustness Test

In order to prevent the conclusion obtained in Table 2 from the risk of contingency, a robustness test is conducted

In terms of data, the daily data of " CSI Innovation Drug Index (931152.csi)", " CSI Shenwan Coal Index (000820.csi)" and the macro market DR007 in the A-share main board market from January 1, 2021, to December 31, 2025 are selected. Using the same regression analysis model and method, the data above were analyzed using regression techniques:

Table 2. Regression coefficients of medicine and coal

Items	Coefficients
Δr_{up}	0.860***
	(5.40)
Δr_{down}	-0.705***
	(-4.27)
cons	-0.664***
	(-44.71)
N	1211
R2	0.032
Adj. R2	0.03

(*, * *, * * * are significant at the significant levels of 10%, 5% and 1%, respectively)

According to the data in the table: β_1= 0.86, β_2 = -0.702; This also shows that at a high significance level, each increase of x (DR007 fluctuation) by one unit, y (industry allocation intensity) will decrease accordingly, which can effectively prove the rationality of H1 hypothesis.

Similarly, the significant difference in β_1 and β_2 also shows that when liquidity tightens and investors face potential losses, the position adjustment action of withdrawing from the pharmaceutical sector is extremely fierce; On the contrary, investors' willingness to increase allocation is not as urgent as when tightening, which provides strong empirical support for the H2 hypothesis

Therefore, it can be proved that the regression analysis results meet the robustness test.

5 Conclusion

5.1 Main Research Conclusions

Through empirical research, this paper discusses the impact of short-term liquidity pressure index DR007 on the allocation intensity of A-share industry and its internal mechanism, and draws the following core conclusions:

First, liquidity pressure is an important factor driving industry rotation (verification H1). The regression results show that there is a significant negative driving relationship between DR007 and industry allocation intensity (semiconductor/bank). This confirms that in the short-term liquidity tightening environment, market funds will spontaneously flow from highly sensitive "long-term" assets (semiconductors) to "short-term" assets (banks) with stable cash flow and defensive attributes. Equity duration difference is the underlying logic of industry configuration switching.

Secondly, there is a significant asymmetry in investor behavior (verification H2). The regression analysis further reveals that the impact of DR007 on industry configuration is asymmetric. In the "loss range" caused by tight liquidity, the fluctuation intensity of industrial allocation intensity is significantly greater than that of loose liquidity. This finding strongly supports the loss aversion hypothesis in the prospect theory, that

is, the "pain" caused by liquidity shocks will amplify investors' risk aversion behavior, leading to excessive adjustment in the high-term sector.

5.2 Countermeasures and Suggestions

Based on the above conclusions, this paper puts forward the following suggestions to optimize investment decisions and market supervision measures:

Investors can try to balance the long-term and short-term allocation weights to reduce risk. Investors should use DR007 as a reference index when allocating industries. At the stage of tightening liquidity expectations, being alert to the asymmetric decline risk of long-term growth sector is necessary, and the loss caused by the upward discount rate shall be hedged by appropriately increasing the allocation of high dividend and short-term industries.

Market regulators should strengthen the guidance of short-term liquidity to the equity market. While maintaining reasonable and sufficient liquidity, the regulatory authorities should pay attention to the impact of abnormal fluctuations in DR007 on the style shear of the stock market. In particular, regulators should prevent investors from selling positions in large quantities due to "loss aversion" under the expectation of liquidity tightening, and alleviate irrational market fluctuations through expectation management.

For enterprise management, it is necessary to pay attention to the support of cash flow to market value. Enterprises in high growth industries should optimize their financial structure, shorten the "equity duration" by increasing dividends or improving the speed of short-term cash flow recovery, so as to enhance their resilience in the liquidity tightening cycle.

References

1. Zhang, H. P., & Cao, C. Y.: The impact of tail risk on capital market effect—The mediating effect from the perspective of investor sentiment and belief. Journal of Management, **38**(05), 84–102 (2025)
2. Yu, J. M., Jin, X., & Liu, Y. L.: Research on the multi-scale dependence structure and dynamic evolution of China's stock market industry under emergency crises—Taking the COVID-19 pandemic as the analysis background. Industrial Technology and Economics, **42**(05), 70–79 (2023)
3. Shang, Y., & Xu, W. H.: Research on asset allocation of stock market industry based on the economic cycle. Economic Issues, **03**, 25–34 (2020)
4. Hu, Z. H., & Liu, Q.: Behavioral finance interpretation of market volatility anomalies under heterogeneous subjects—Based on computational finance. Economic Trends, **07**, 90–108 (2022)
5. Wang, Q.: A quantitative analysis method and its empirical study on the allocation capacity of the fund industry. Business Observation, **11**(19), 108–112 (2025)
6. Liu, F. J., & Ye, S. J.: Bank digital transformation, liquidity creation and term mismatch risk. Financial Economics Research, **41**(01), 51–65 (2026)

7. Wang, L., Lin, W. J., Chen, T. Q., et al.: Research on liquidity risk contagion mechanism based on inter-enterprise networks. Finance and Accounting Communication, **06**, 140–145 (2025)
8. Zhang, Y. B., & Li, G. J.: Research on liquidity risk measurement of financial market systems and its impact on treasury bond yields. Dongyue Tribune, **46**(11), 158–169 (2025)
9. Hou, Y. F.: General information, investor behavior and asset pricing anomalies. Wuhan University. Wuhan (2024)
10. Wang, X. T., & Chen, Z. M.: Research on new product pre-sale strategy based on consumer rationality and loss aversion. Logistics Technology, **48**(23), 1–5 (2025)
11. Zhang, H., Li, Z. F., & Huang, Y. Y.: Heterogeneous expectations, investor behavior differences and house price changes—Based on the perspective of real estate behavioral finance. Management Review, **32**(05), 42–52 (2020)
12. Feng, J. Y.: Loss aversion and future stock returns. Guangxi University. Nanning (2025)
13. Yan, Z.: Research on asset pricing based on prospect theory. University of Chinese Academy of Social Sciences. Beijing (2025)
14. Tanzina, H., & Pallabi, S.: Exploring the influence of behavioral aspects on stock investment decision-making: A study on Bangladeshi individual investors. PSU Research Review, **8**(2), 467–483 (2024)
15. Dahl, J. R.: Editorial: From corporate unethical pro-organizational behavior and pro-self-behavior to responsible leadership, integrity and ethics of social finance. International Journal of Ethics and Systems, **41**(2), 281–283 (2025)

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