

# ***Research on Asset Growth Anomaly in China's A-Share Market: Existence and Causes***

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**Abstract.** Against the backdrop of China's A-share market transitioning from an emerging to a more mature stage over the past decade, characterized by increasing institutional participation yet persistent retail investor dominance, understanding market anomalies remains critical for both academic research and investment practice. Asset growth anomaly, a well-documented phenomenon in global markets where high asset growth firms underperform their low-growth counterparts, has garnered limited systematic scrutiny in China's unique institutional setting. This paper fills the gap by utilizing Fama-MacBeth cross-sectional regression on a decade of listed company data to examine the anomaly's existence and drivers. Findings reveal a significant negative correlation between asset growth rates and future stock returns during the period, with mispricing identified as the root cause—evidenced by return reversals around earnings announcements and stronger anomaly effects in high idiosyncratic volatility portfolios.

**Keywords:** Asset Growth Anomaly, Fama-MacBeth Regression, Mispricing, Arbitrage Limits, Chinese A-Shares

## **1. Introduction**

The asset growth anomaly refers to the phenomenon where companies with rapid asset expansion exhibit significantly lower stock returns compared to those with slower asset growth. This anomaly was first discovered in the US stock market, with subsequent research indicating its prevalence across multiple global markets [1]. For instance, in the US stock market, portfolios of companies with the highest asset growth rates underperform those with the lowest by approximately 20% annually, and this discrepancy remains significant over a five-year period. This phenomenon contradicts the expectation in traditional finance that "high growth should be accompanied by high returns". The currently dominant explanatory theories include mispricing theory, limits to arbitrage, and risk premium theory.

The mispricing theory argues that the asset growth anomaly arises from market participants' misjudgment of company value, primarily manifested in two dimensions: First, investor overreaction and momentum reversal [2]. In reality, a company's rapid expansion may lead to diseconomies of scale, declining investment efficiency, or cash flow constraints, but the market fails to promptly correct this expectations. When subsequent earnings underperform these inflated

expectations, stock prices experience a reversal, manifesting as low returns. Baker, Stein, and Wurgler found that equity-dependent firms are more inclined to issue stock for financing when their stock prices are overvalued, this "market timing" behavior exacerbates stock price overvaluation, ultimately leading to low long-term returns [1]. Second, managerial irrationality and agency problems. Jensen pointed out that equity overvaluation may induce managers to invest in projects with negative net present value (NPV) to cater to market expectations, further amplifying the persistence of the asset growth anomaly [3]. Titman et al. found that firms engaging in overinvestment exhibit significantly lower future stock returns compared to those with conservative investment strategies—an outcome reflecting investors' delayed recognition of managers' inefficient investment practices [4].

The risk premium theory argues that the asset growth anomaly is compensation for risk factors not captured by traditional models, with its core mechanism unfolding as follows: Fama and French expanded their classic three-factor model by incorporating profitability (RMW) and investment growth (CMA) factors, among which the CMA factor specifically captures the underperformance of aggressively investing firms [5]. In reality, companies experiencing rapid asset expansion often bear higher operational risks, and these risks are not fully priced in the CAPM framework. Evidence from developed European and U.S. markets confirms that firms with high asset growth volatility deliver significantly lower stock returns than their low-volatility counterparts, a pattern consistent with the risk premium logic.

There is academic debate over which theory dominates the emergence of the asset growth anomaly, or whether both act jointly. Furthermore, while research on the asset growth anomaly is relatively common in developed markets in Europe and the US, its existence and causes remain controversial in the capital markets of emerging developing countries due to various factors. Early studies suggested that the anomaly was insignificant in China's fledgling stock market [6]. Consequently, this paper focuses on China's A-share market in the post-2008 era—following the full circulation reform of split shares—to examine the presence of the asset growth anomaly and explore its causal mechanisms.

## 2. Research design

### 2.1. Data and variable construction

This paper selects financial data from Chinese A-share listed companies over the decade from 2013 to 2023 as the sample. Sample screening adheres to the following principles:

- Exclude ST and \*ST companies=
- Exclude companies with missing relevant data during the research period;
- Exclude financial and insurance companies.

To address outliers, this paper adopts the Winsorization method, truncating all variables at the 1st percentile (i.e., setting values below the 1st percentile to the 1st percentile value). Regarding variable construction, the basic model in this paper includes two core variables: asset growth rate (AGR) and stock return (Ret), along with control variables such as book-to-market ratio (BM), firm size (Size), and the previous 12-month return (Momentum).

The definitions of basic variables are as follows table 1:

Table 1. Variable definitions and construction

| Variable             | Name                     | Definition                                                                      |
|----------------------|--------------------------|---------------------------------------------------------------------------------|
| AGR                  | Asset Growth Rate        | $AGR_t = \frac{TotalAssets_t - TotalAssets_{t-1}}{TotalAssets_{t-1}} \quad (1)$ |
| Ret <sub>i,t+1</sub> | Future Stock Return      | Holding return for stock i in year t+1                                          |
| BM                   | Book-to-Market Ratio     | Net Asset Per Share / Stock Price Per Share                                     |
| Size                 | Firm Size                | Stock Price × Total Number of Outstanding Shares                                |
| Momentum             | Momentum Factor          | Return over Past 12 Months                                                      |
| IVOL                 | Idiosyncratic Volatility | Standard Deviation of FF5 Model Residuals                                       |

## 2.2. Empirical method

This paper mainly conducts a two-stage test:

### 2.2.1. Existence test

Construct the following regression model: If  $\beta$  is significantly negative, it supports the existence of the anomaly.

$$Ret_{i,t+1} = \alpha_t + \beta_t \cdot AGR_{i,t} + \gamma_t \cdot Controls_{i,t} + \epsilon_{i,t} \quad (2)$$

### 2.2.2. Cause test

Mispricing Channel: Group by AGR and construct the difference in returns between earnings announcement days and non-announcement days.

Arbitrage Limits Channel: Test the strength of the anomaly by grouping IVOL, referencing the method of Xu et al. [7].

If the anomaly is primarily driven by mispricing, evidence of investor expectation revision and evidence that arbitrage costs hinder price correction should be observed. If primarily driven by risk compensation, the anomaly should be absorbed by risk factors and show little difference across groups with varying arbitrage costs.

## 3. Empirical results

### 3.1. Anomaly existence test

The Fama-MacBeth regression results are shown in the table 2. It can be seen from the table that the AGR coefficient is significantly negative at the 1% level (  $\beta = -0.0310$  ), indicating that companies with high asset growth have lower future returns; Furthermore, the regression results remain robust after controlling for BM, Size, and Momentum, excluding explanations from known pricing factors.

Table 2. Regression results of anomaly existence test

|          | (1)                   | (2)                  |
|----------|-----------------------|----------------------|
| AGR      | -0.0310***<br>(-3.27) | -0.0254**<br>(-2.81) |
| BM       |                       | 0.141*<br>(1.76)     |
| Size     |                       | -0.001**<br>(-2.35)  |
| Momentum |                       | 0.376***<br>(5.25)   |
| Constant | 0.187***<br>(3.41)    | 0.203***<br>(3.22)   |
| N        | 23120                 | 22749                |
| R2       | 0.032                 | 0.061                |

\*Note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1, t-statistics adjusted by Newey-West in parentheses, same below.\*

### 3.2. Anomaly cause test

#### 3.2.1. Mispricing channel: earnings announcement effect

The mispricing theory posits that investors tend to be overly optimistic about companies with high asset growth, pushing their stock prices upward. When these companies release actual earnings reports, the market corrects previous misperceptions, causing significant price reversals during the announcement window.

At the end of each June, all sample companies are sorted into 10 decile groups based on the AGR of the previous fiscal year, with Group 1 being companies with the lowest AGR and Group 10 with the highest AGR. For each AGR group, the difference in returns between earnings announcement days and non-announcement days (Diff\_Ret) is constructed, with the window period being three days (-1, +1) centered on the announcement date, and the average is taken. As shown in the table 3, low-AGR portfolios generate significantly positive excess returns on earnings announcement days, whereas high-AGR portfolios exhibit negative returns. This pattern indicates that investors' overreaction to growth-related information is corrected on the announcement day.

Table 3. Earnings announcement test

|        | AGR Decile | Diff_Ret  | t-value |
|--------|------------|-----------|---------|
| Low    | (1)        | 0.19%***  | (5.35)  |
|        | (2)        | 0.12%***  | (4.92)  |
|        | (3)        | 0.16%*    | (2.03)  |
|        | (4)        | 0.13%*    | (2.01)  |
|        | (5)        | 0.08%**   | (2.51)  |
|        | (6)        | 0.03%     | (1.02)  |
|        | (7)        | 0.05%     | (1.16)  |
|        | (8)        | -0.06%*** | (-4.34) |
|        | (9)        | -0.05%*   | (-1.99) |
| High   | (10)       | -0.16%*** | (-6.05) |
| Spread | (10) - (1) | -0.35%*** | (-4.83) |

### 3.2.2. Arbitrage limits channel: idiosyncratic volatility grouping

The limits to arbitrage theory suggests that even if mispricing occurs, arbitrageurs may be unable to effectively arbitrage due to costs, risks, or constraints, allowing the mispricing to persist. IVOL is a key proxy variable for measuring arbitrage limits and costs. Stocks with high IVOL typically have poorer liquidity, more severe information asymmetry, higher transaction costs, and greater fundamental risk, making arbitrage more difficult and risky.

At the end of June each year, all sample companies are divided into two groups based on the median of idiosyncratic volatility (IVOL): a Low IVOL group and a High IVOL group. Within each group, Fama-MacBeth regressions are conducted independently. The regression results are shown in the table 4. It can be seen that the anomaly strength is significantly stronger in the High IVOL group than in the Low IVOL group, indicating that this pricing deviation persists longer and has a greater impact, leading to a significant strengthening of the anomaly. These results support the view that limits to arbitrage exacerbate mispricing. Cooper et al. found that China's institutional context has strengthened the anomaly post-split-share structure reform, aligning with global market research [8].

Table 4. Arbitrage limits test

|          | IVOL Grouping      |                      |
|----------|--------------------|----------------------|
|          | Low                | High                 |
| AGR      | -0.0211<br>(-0.59) | -0.0383**<br>(-2.77) |
| Controls | Yes                | Yes                  |
| N        | 10994              | 10994                |
| R2       | 0.058              | 0.041                |

## 4. Conclusion and implications

Based on data from the Chinese A-share market spanning 2013 to 2023, this paper systematically tests the existence and causes of the asset growth anomaly. The study finds a significantly negative correlation between AGR and future stock returns. Through Fama-MacBeth regressions and grouping tests, it confirms that the anomaly is primarily driven by market mispricing: investors' excessive optimism towards companies with high asset growth inflates short-term stock prices, but as subsequent earnings fall short of expectations, stock prices exhibit significant reversals during the earnings announcement window. Simultaneously, limits to arbitrage further amplify this mispricing—the anomaly is far more pronounced in high idiosyncratic volatility portfolios than in low volatility ones, indicating that market frictions impede arbitrage forces from correcting pricing deviations.

This research carries dual implications for theory and practice: Theoretically, it offers new evidence from a behavioral finance perspective regarding the inefficiency of emerging markets, highlighting investors' tendency to over-extrapolate signals from asset expansion and the moderating role of arbitrage constraints. Practically, it alerts investors to the risks of valuation bubbles in high-growth firms, urging caution against chasing short-term expansion-driven stocks. For regulators, requirements for disclosing investment efficiency information of listed companies should be strengthened, especially enhancing long-term performance tracking and disclosure for companies with frequent mergers and acquisitions or surging assets, to mitigate pricing deviations caused by information asymmetry.

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