

Original Paper

Research on the Impact of Capital Market Opening on Idiosyncratic Stock Price Volatility

Qian Liu & Qizhen Luan

Harbin University of Commerce, Harbin, Heilongjiang, 150028, China

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Abstract

Based on data from the Shanghai and Shenzhen Stock Connect programs spanning 2016 to 2024, this paper takes the inclusion of A-shares in the MSCI index as an exogenous policy shock and employs a Difference-in-Differences approach to examine the impact of capital market opening on idiosyncratic stock price volatility. The results show that MSCI inclusion significantly reduces the idiosyncratic volatility of constituent stocks, with this effect being more pronounced in state-owned enterprises and exhibiting a distinct regional gradient of "central > eastern > western" China. Mechanism tests indicate that improved information transparency serves as the core transmission channel. This study provides new empirical evidence for understanding the micro-level stabilizing effects of emerging market liberalization.

Keywords

Capital Market Opening, MSCI Index, Idiosyncratic Stock Price Volatility, Difference-in-Differences

1. Introduction

Capital market opening is a core issue in the process of global financial integration and a key measure in China's efforts to build a high-standard socialist market economy. As a major emerging market economy, China has consistently adhered to the principle of "progressive, risk-controllable" opening in its capital market, gradually advancing from early local trials to comprehensive, institutional opening. The core objective is to optimize resource allocation through cross-border capital flows, force domestic market rules to align with international standards, and enhance the resilience and efficiency of the financial system.

From a global perspective, one of the key manifestations of capital market opening is the integration of local assets into global index systems. Inclusion in international indices serves essentially as a "market-based certification" of a capital market's openness. It signifies that the investability and

governance level of the local market have gained recognition from international capital, while also providing a standardized channel for two-way cross-border capital flows. For China, the inclusion of A-shares in indices like MSCI and FTSE Russell is not an isolated market event but a landmark achievement signifying that its capital market opening has entered a deepening phase. It is the concentrated embodiment of a series of opening-up initiatives, including the expansion of Stock Connect programs, the optimization of the QFII/RQFII systems, and the internationalization of regulatory rules. This process has not only brought in incremental foreign capital but, more importantly, through the "voting by feet" mechanism of international investors, has propelled the A-share market to converge with international standards in areas such as information disclosure, corporate governance, and trading mechanisms, profoundly reshaping the market ecosystem.

Idiosyncratic stock price volatility, a core indicator reflecting firm-specific risk, has changes that are directly linked to market pricing efficiency and stable operation. In the context of capital market opening, factors such as cross-border capital flows, diversification of the investor base, and improvements in the information environment can alter the characteristics of idiosyncratic volatility by influencing the pricing logic of individual stocks. Currently, China's capital market is at a critical stage of "institutional opening". As the quintessential concrete event of this opening, the inclusion of A-shares in the MSCI index—and its impact pathways, effect intensity, and boundary conditions on idiosyncratic volatility—has yet to be fully clarified. Therefore, using A-shares' inclusion in the MSCI index as a quasi-natural experiment, this paper focuses on this typical scenario combining "passive opening" with "institutional opening" to systematically investigate the impact of capital market opening on idiosyncratic volatility. This endeavor can not only provide Chinese evidence for understanding the micro-level effects of emerging market liberalization but also offer practical references for regulators promoting opening-up policies, for listed companies adapting to the international environment, and for investors participating rationally in the market, holding significant theoretical value and practical relevance.

2. Literature Review

Capital market opening and idiosyncratic stock price volatility have emerged as prominent research topics in financial economics in recent years. This section systematically reviews the relevant literature and provides a critical assessment of existing studies to clarify the research focus of this paper.

2.1 *Research on Capital Market Opening*

Research on the economic consequences of capital market opening primarily follows two main threads: macroeconomic growth and financial stability, and micro-level corporate behavior and market efficiency.

At the macro level, studies generally concur that capital market opening fosters economic growth. Research by Stulz (1999), Henry (2000), and Bekaert et al. (2001, 2005) demonstrates that opening promotes growth by reducing the cost of capital and attracting international capital flows. Domestic

scholars such as Dai Pengyi et al. (2021) and Hu Haifeng et al. (2023) also find that opening enhances corporate total factor productivity and facilitates coordinated regional development. However, regarding financial stability, the findings are more nuanced. On one hand, opening aids in risk diversification; on the other hand, it may exacerbate risk contagion (Dornbusch, 2000; King & Wadhvani, 1990), particularly in emerging markets with underdeveloped financial infrastructure (Batu et al., 2018).

At the micro level, research focuses on the impact of opening on corporate governance, information environment, financing, innovation, and market operations. Concerning corporate governance, Aggarwal et al. (2011) and Ferreira and Matos (2008) find that foreign institutional investors contribute to improved corporate governance. Domestic research by Liu Cheng and Wang Renzeng (2020) also verifies the enhancing effect of the Shanghai-Hong Kong Stock Connect on governance standards. Regarding the information environment, studies by Bae et al. (2012) and Boone and White (2015) support the notion that opening reduces information asymmetry. On financing constraints, Pang Jiaren et al. (2020) find that opening helps lower the cost of equity capital, though it may also lead to a structural increase in the cost of debt financing (Geng Yingtao et al., 2024). In terms of corporate innovation, Luong et al. (2017) and Zhu Lin and Yi Zhihong (2020) find that opening promotes innovation, whereas Wang Ping and Qin Zhihong (2020) identify an inhibiting effect, suggesting that conclusions may be context-dependent.

At the market operation level, most studies indicate that opening enhances market quality. Li Qinyang and Chen Ting (2022) find that the Stock Connect mechanisms improve the liquidity of underlying stocks. Regarding market stability, Zhong Kai and Sun Changling (2018) find that opening reduces stock price volatility by improving information transparency, although Xu Congbao et al. (2016) note that short-term volatility may intensify during the initial policy implementation phase.

2.2 Research on A-share Inclusion in the MSCI Index

The inclusion of A-shares in the MSCI index represents a landmark event in China's capital market opening. Wei Zhen (2020) points out that the increase in the inclusion factor significantly enhanced international participation and liquidity in the A-share market. Feng Tianchu and Qiu Baoyin (2020) find that MSCI inclusion facilitates the incorporation of firm-specific information into stock prices, thereby improving information efficiency. Research by Zhang Xu et al. (2021) shows that MSCI inclusion significantly reduces idiosyncratic volatility risk, with the mechanism operating through improved pricing efficiency and enhanced information transparency. In the ESG domain, both Zheng Jianming and Xu Xinyan (2025) and Song Xianzhong et al. (2024) confirm that MSCI inclusion significantly promotes corporate ESG performance.

2.3 Research on Idiosyncratic Stock Price Volatility

Research on idiosyncratic stock price volatility primarily centers on its pricing effects and formation mechanisms.

Regarding pricing effects, Ang et al. (2006) pioneered the "idiosyncratic volatility puzzle,"

documenting a negative correlation between idiosyncratic volatility and future stock returns, which has sparked extensive debate. Miller's (1977) theory of short-sale constraints provides a foundational explanation for this phenomenon.

Regarding formation mechanisms, research primarily proceeds along information and behavioral dimensions. From the information perspective, improvements in the information environment can significantly reduce idiosyncratic volatility (Bae et al., 2012; Brockman et al., 2009). Domestic scholars, including Zhong Kai et al. (2018) and Li Qinyang and Chen Ting (2022), also find that capital market opening suppresses idiosyncratic stock price volatility by enhancing information transparency. From the investor behavior perspective, Foucault et al. (2011) find that institutional investors' trading behavior significantly influences idiosyncratic volatility. He Gang et al. (2021), however, find that in the ChiNext market, the initial phase of opening may exacerbate noise trading, leading to increased idiosyncratic volatility. Cross-country research also indicates that the idiosyncratic volatility effect is influenced by investor protection and market development levels (Griffin et al., 2010), while emerging markets often exhibit higher stock price synchronicity (Morck, Yeung and Yu, 2000).

3. Theoretical Analysis and Research Hypotheses

This paper takes the inclusion of A-shares in the MSCI index as a quasi-natural experiment of capital market opening, and systematically analyzes the impact mechanism of capital market opening on idiosyncratic stock price volatility by integrating theoretical foundations such as the Efficient Market Hypothesis, Market Segmentation Hypothesis, Information Asymmetry Theory, and Noise Trading Theory. Idiosyncratic stock price volatility refers to the firm-specific component of individual stock price fluctuations that cannot be explained by systematic factors such as market movements, reflecting the firm-level information environment and investor behavior characteristics. The following analysis elaborates on the mechanisms from both direct and indirect dimensions and proposes corresponding research hypotheses.

3.1 Direct Impact: A-share Inclusion in the MSCI Index and Idiosyncratic Stock Price Volatility

As a core event in capital market opening, the inclusion of A-shares in the MSCI index directly affects idiosyncratic stock price volatility by reshaping micro-market mechanisms. Passive funds tracking the MSCI index are mandated to allocate holdings in constituent stocks according to predetermined weights. The "rule-based, long-term oriented" characteristics of such funds provide sustained and stable liquidity supply to the market, enhance trading depth, and effectively mitigate price shocks caused by insufficient liquidity, thereby directly reducing idiosyncratic stock price volatility. Meanwhile, MSCI inclusion introduces foreign institutional investors guided by long-term value investing principles, whose decisions are based on firm fundamentals rather than short-term sentiment. Their trading behavior exhibits stability and counter-cyclical adjustment attributes, enabling them to correct valuation deviations when stock prices diverge from fundamentals and hedge against irrational fluctuations. The introduction of professional analytical capabilities also reduces cognitive biases

among investors, anchoring price movements more closely to firm fundamentals. Furthermore, MSCI inclusion directly establishes channels for information and capital connectivity between domestic and international markets, breaking the original state of market segmentation. International investors can directly access information and participate in trading, while domestic investors can obtain global valuation references through foreign capital data. This direct cross-border information flow reduces cognitive biases arising from "information islands" and suppresses idiosyncratic volatility caused by overreaction to localized information. Finally, the status of being an MSCI constituent serves as an authoritative international endorsement of corporate quality, directly signaling to the market that the firm meets standards in terms of liquidity and governance. This reduces investors' uncertainty expectations regarding firm value, mitigates irrational trading caused by divergent judgments, and further compresses the space for noise trading. Based on the above analysis, this paper proposes the core research hypothesis:

H1: The inclusion of A-shares in the MSCI index significantly suppresses idiosyncratic stock price volatility.

3.2 Indirect Impact: The Mediating Mechanism of Information Transparency

Regarding indirect transmission pathways, the improvement of the information environment serves as the core mediating mechanism. Information Asymmetry Theory posits that uneven information distribution is a key root cause of stock price deviations from fundamentals and the generation of idiosyncratic volatility. Following the inclusion of A-shares in the MSCI index, this issue is alleviated through the following pathways: On one hand, foreign institutional investors have higher demands regarding the completeness, timeliness, and accuracy of information disclosure, creating substantial external governance pressure that prompts firms to proactively enhance their information disclosure systems and reduce information concealment or delayed disclosure at the source. On the other hand, the global visibility of MSCI constituent stocks significantly increases, attracting more international analysts to conduct follow-up research. Their coverage extends beyond traditional financial data to include deeper firm-specific information such as industry competitive dynamics and technological progress. The publication of professional research reports accelerates the global dissemination of firm-specific information, significantly narrowing the information gap among different investors. The improvement in the information environment ensures that stock price fluctuations are more closely tied to changes in firm fundamentals rather than irrational expectation gaps caused by information asymmetry, thereby indirectly suppressing idiosyncratic stock price volatility. Based on this, the following hypothesis is proposed:

H2: The inclusion of A-shares in the MSCI index suppresses idiosyncratic stock price volatility by improving information transparency.

4. Research Design

4.1 Sample Selection

This paper selects A-share listed companies within the scope of Shanghai and Shenzhen Stock Connect from 2016 to 2024 as the initial research sample, and screens according to the following criteria: (1) The treatment group consists of companies included in the MSCI index in 2018 and never removed by the end of 2024, while the control group consists of companies never included in the MSCI index during the same period; (2) Only companies listed before January 1, 2016 are retained; (3) Financial industry firms, ST/*ST firms, and samples with missing data are excluded. The final sample comprises balanced panel data with 87 treatment group firms and 311 control group firms.

4.2 Variable Definitions

4.2.1 Dependent Variable: Idiosyncratic Stock Price Volatility (ivol3)

Idiosyncratic stock price volatility refers to the component of stock price fluctuations driven by firm-specific risks, reflecting the idiosyncratic impact of firm-level micro characteristics on stock prices. This paper measures it using the Fama-French three-factor model:

$$ivol3_{i,t} = \alpha + \beta_1 iDID_{i,t} + \beta_2 Size_{i,t} + \beta_3 ROE_{i,t} + \beta_4 BM_{i,t} + \beta_5 PB_{i,t} + \beta_6 CF_{i,t} + \beta_7 ListAge_{i,t} + \beta_8 Inst_{i,t} + \mu_i + \lambda_t + \varepsilon_{i,t}$$

Where $R_{i,t}$ is the weekly return of stock i , $R_{f,t}$ is the weekly risk-free rate, $R_{m,t}$ is the weekly market return, and SMB and HML are the size factor and value factor, respectively. The regression residual $\varepsilon_{i,t}$ represents the idiosyncratic return fluctuation of the individual stock.

Measurement method: Using the calendar year as the observation window, the three-factor model is regressed annually for each stock to obtain a series of weekly residuals, and the annual standard deviation is calculated. Samples with less than 26 valid trading weeks in a year are excluded, and the results are winsorized at the 1st and 99th percentiles, ultimately yielding the annual idiosyncratic volatility measure ivol3.

4.2.2 Independent Variable: DID

This paper employs the Difference-in-Differences method to evaluate the policy effect. Variables are defined as follows:

Treatment Group Dummy Variable (Treat): Stocks first included in the MSCI index in June 2018 and continuously retained until the end of 2024 are designated as the treatment group (Treat=1). Stocks within the Shanghai and Shenzhen Stock Connect scope that were never included in the MSCI index during the same period serve as the control group (Treat=0).

Time Dummy Variable (Post): The year 2018 and subsequent years are set as Post=1, while preceding years are set as Post=0.

Core Independent Variable (DID): The interaction term of Treat and Post (DID=Treat×Post), whose coefficient captures the net effect of the policy on idiosyncratic stock price volatility.

4.2.3 Control Variables

Referring to Zhong Kai (2018), the following control variables are selected: Firm Size (Size), Return on Equity (ROE), Book-to-Market Ratio (BM), Price-to-Book Ratio (PB), Cash Flow Ratio (CF),

Listing Age (ListAge), and Institutional Investor Shareholding Ratio (Inst).

4.2.4 Mediating Variables

Analyst Attention (AnaAttention) and Research Report Attention (ReportAttention) are selected as proxy variables for information transparency:

Analyst Attention: The number of analyst teams following the company within a year. A higher number of teams indicates more thorough information discovery and greater transparency.

Research Report Attention: The number of research reports following the company within a year. A higher number of reports indicates higher dissemination efficiency of firm-specific information and a lower degree of information asymmetry.

These two variables are jointly used to test the mediating mechanism of "A-share MSCI inclusion → Improved information transparency → Suppressed idiosyncratic stock price volatility."

Based on the variable definitions above, this paper constructs a two-way fixed effects regression model (including both firm fixed effects and time fixed effects) as follows:

$$ivol3_{i,t} = \alpha + \beta_1 DID_{i,t} + \beta_2 Size_{i,t} + \beta_3 ROE_{i,t} + \beta_4 BM_{i,t} + \beta_5 PB_{i,t} + \beta_6 CF_{i,t} + \beta_7 ListAge_{i,t} + \beta_8 Inst_{i,t} + \mu_i + \lambda_t + \varepsilon_{i,t}$$

Where subscript i represents the firm and t represents the year. The dependent variable $ivol3_{i,t}$ denotes the idiosyncratic stock price volatility of firm i in year t (measured by the annual standard deviation of residuals from the three-factor model). The core independent variable $DID_{i,t}$ is the difference-in-differences interaction term ($Treat_i \times Post_t$), and its coefficient β_1 is the primary focus of this study, capturing the net effect of A-share inclusion in the MSCI index on the idiosyncratic volatility of treatment group firms. Coefficients β_2 through β_8 correspond to the control variables: firm size, return on equity, book-to-market ratio, price-to-book ratio, operating cash flow, listing age, and institutional ownership, respectively. μ_i represents firm fixed effects, controlling for time-invariant firm-specific characteristics (such as industry attributes and ownership nature). λ_t represents time fixed effects, absorbing time-varying macro-level common shocks (such as overall market conditions and policy changes). α is the constant term, and $\varepsilon_{i,t}$ is the random error term.

By incorporating two-way fixed effects, the model effectively eliminates the interference of unobserved factors at both the firm and time levels on idiosyncratic stock price volatility, thereby enhancing the identification accuracy of the causal effect of the core explanatory variable.

5. Empirical Results Analysis

5.1 Baseline Regression Results

Table 1 reports the main regression results of the impact of A-share inclusion in the MSCI index on idiosyncratic stock price volatility ($ivol3$). By gradually adding control variables and fixed effects, the net effect of the core explanatory variable DID is verified in a stepwise manner, with the results being generally robust and consistent with theoretical expectations.

The first column presents regression results without control variables and without fixing year and firm effects. The DID coefficient is -0.0021, significant at the 1% level (t-value = -2.7221), preliminarily

indicating that even without excluding other interfering factors, A-share inclusion in the MSCI index can significantly suppress the idiosyncratic stock price volatility of treatment group stocks. Meanwhile, the R^2 in this column is only 0.0021, suggesting that the single DID variable has weak explanatory power for idiosyncratic volatility, necessitating the further introduction of control variables and fixed effects to enhance model validity.

The second column adds control variables such as firm size (Size) and return on equity (ROE) while controlling for year fixed effects. The absolute value of the DID coefficient expands to -0.0074, remaining significant at the 1% level (t-value = -6.2049), and the model R^2 increases to 0.2201, indicating significantly enhanced explanatory power. Examining the control variables, the coefficient of Size is 0.0021, significant at the 1% level, suggesting that when firm individual effects are not controlled, larger firms exhibit higher idiosyncratic volatility (possibly influenced by unobserved individual characteristics). The coefficients of ROE (-0.0144*), BM (-0.0333*), ListAge (-0.0021), and Inst (-0.0058*) are all significantly negative, consistent with the economic intuition that "stronger profitability, more prominent value attributes, longer listing years, and higher institutional ownership are associated with lower idiosyncratic stock price volatility."

The third column further controls for firm individual effects based on the second column (two-way fixed effects model). Although the DID coefficient slightly decreases to -0.0056, it remains significant at the 1% level (t-value = -4.0151), and the model R^2 further increases to 0.2752. This indicates that after introducing firm fixed effects, the model effectively eliminates interference from time-invariant firm heterogeneity characteristics (such as ownership nature and industry attributes), strengthening the robustness of the core conclusion. Notably, the coefficient of Size in this column becomes -0.0000 and is no longer significant, suggesting that the positive correlation between Size and idiosyncratic volatility observed in the second column actually stemmed from omitted variable bias due to not controlling for firm fixed effects. After controlling for individual effects, the impact of firm size on idiosyncratic volatility becomes insignificant.

Considering the three columns of regression results collectively, regardless of whether control variables are added or whether year and firm fixed effects are controlled, the coefficient of the core explanatory variable DID remains consistently and significantly negative. Moreover, the model's explanatory power gradually improves with the inclusion of control variables and fixed effects, fully demonstrating that A-share inclusion in the MSCI index can significantly suppress the idiosyncratic stock price volatility of treatment group stocks. This conclusion exhibits strong robustness and provides empirical support for the theoretical logic that "capital market opening suppresses firm-specific risks by introducing sophisticated investors and reducing information asymmetry." The analysis of the main regression results aligns with Hypothesis 1, indicating that A-share inclusion in the MSCI index suppresses idiosyncratic stock price volatility.

Table 1. Basic Regression Results

	(1)	(2)	(3)
DID	-0.0021*** (-2.7221)	-0.0074*** (-6.2049)	-0.0056*** (-4.0151)
Size		0.0021*** (3.8703)	-0.0000 (-0.0341)
ROE		-0.0144*** (-3.8030)	-0.0108*** (-2.6397)
BM		-0.0333*** (-13.2953)	-0.0576*** (-17.7000)
PB		0.0001 (0.3184)	0.0003 (1.0181)
CF		-0.0075 (-1.3728)	-0.0011 (-0.1950)
ListAge		-0.0021** (-2.0945)	-0.0084** (-2.1961)
Inst		-0.0058*** (-2.8362)	-0.0122** (-2.4328)
_cons	0.0420*** (129.6033)	0.0202 (1.6365)	0.1035*** (3.2122)
Year Fixed Effects	No	Yes	Yes
Firm Fixed Effects	No	No	Yes
N	3582	3582	3582
R ²	0.0021	0.2201	0.2752

Note. *** p<0.01, ** p<0.05, * p<0.1; t-statistics clustered at the firm level are reported in parentheses.

5.2 Robustness Test

5.2.1 Replacement of the Measurement Indicator for Idiosyncratic Stock Price Volatility

Table 2 reports the robustness test results after replacing the measurement method of the dependent variable, aiming to verify whether the impact of capital market opening on idiosyncratic stock price volatility is dependent on the choice of indicator. In this table, Column (1) uses the standard deviation of residuals from the Fama-French three-factor model (ivol3) as the dependent variable, while Column (2) employs the standard deviation of residuals from the Fama-French five-factor model (which includes profitability and investment factors) (ivol5) as an alternative indicator. The core explanatory variable in both columns is the difference-in-differences interaction term (DID). The models uniformly control for firm characteristic variables as well as year and firm fixed effects, with t-statistics clustered

at the firm level used to determine coefficient significance.

Examining the core explanatory variable, the coefficients of DID in the two columns are -0.0056 and -0.0051, respectively, both significantly negative at the 1% level, with an absolute difference of less than 0.001. This is entirely consistent with the baseline regression conclusion that "capital market opening significantly reduces idiosyncratic stock price volatility." These results indicate that, regardless of whether profitability and investment factors are included to strip out systematic risk, the suppressing effect of capital market opening (A-share inclusion in the MSCI index) on idiosyncratic volatility remains stable and exhibits essentially consistent magnitude. This demonstrates that the core conclusion is not influenced by the measurement method of idiosyncratic volatility, and its robustness is fully verified.

Table 2. Robustness Test Regression Results

	(1)	(2)
	ivol3	ivol5
DID	-0.0056*** (-4.0151)	-0.0051*** (-3.6637)
Size	-0.0000 (-0.0341)	0.0002 (0.1679)
ROE	-0.0108*** (-2.6397)	-0.0094** (-2.4590)
BM	-0.0576*** (-17.7000)	-0.0575*** (-17.7432)
PB	0.0003 (1.0181)	0.0002 (0.5045)
CF	-0.0011 (-0.1950)	-0.0027 (-0.4769)
ListAge	-0.0084** (-2.1961)	-0.0083** (-2.2325)
Inst	-0.0122** (-2.4328)	-0.0117** (-2.3667)
_cons	0.1035*** (3.2122)	0.0966*** (3.0816)
Year Fixed Effects	Yes	Yes
Firm Fixed Effects	Yes	Yes
N	3582	3582
Within R ²	0.2752	0.2786

Note. *** p<0.01, ** p<0.05, * p<0.1; t-statistics clustered at the firm level are reported in parentheses.

5.2.2 Placebo Test

To verify the reliability of the baseline regression results and rule out interference from unobservable time-varying confounding factors or randomness on causal inference, this study conducted a placebo test. The core idea of the test is as follows: if the significant effect found in the baseline regression indeed stems from the policy shock of A-share inclusion in the MSCI index, rather than from other potential factors or chance, then fictitious, non-genuine "treatment groups" should not produce similar significant effects.

Figures 1 through 3 present the results of the placebo test. Figure 1 shows that the distribution of placebo coefficients obtained through 500 random simulations exhibits a symmetric distribution centered around zero, with its kernel density curve displaying typical normal distribution characteristics, a mean of $-2.3e-05$, and a standard deviation of 0.00146. Figure 2 further indicates that the distribution of placebo p-values also conforms to a normal distribution with a mean of 0.49629 and a standard deviation of 0.29476, with the vast majority of p-values exceeding the 0.1 significance level.

Most compelling are the results in Figure 3, which compares the kernel density distribution of the placebo coefficients with the actual policy effect. It can be clearly observed that the true policy effect coefficient obtained in the baseline regression (-0.0056) significantly deviates from the distribution interval of the placebo coefficients, located at the extreme left tail of the distribution curve. Concurrently, the p-value corresponding to this coefficient is extremely low, far below the 0.01 significance level.

This series of results indicates that randomly generated treatment groups cannot produce significant effects similar to the actual policy, thereby ruling out the possibility that unobservable factors or chance drive the main effect. The results of the placebo test strongly support the reliability of the baseline regression conclusion, confirming a genuine causal relationship between A-share inclusion in the MSCI index and the reduction in idiosyncratic stock price volatility.

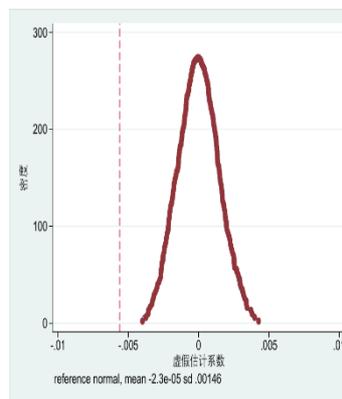


Figure 1. Distribution of Placebo Coefficients

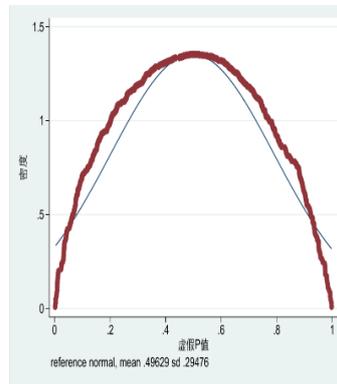


Figure 2. Distribution of Placebo P-values

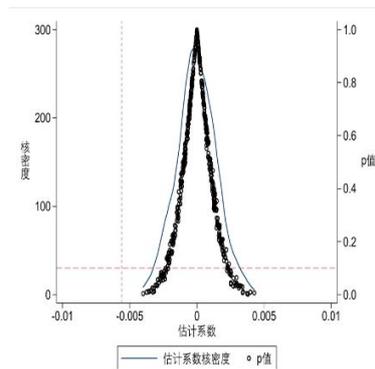


Figure 3. Kernel Density Distribution of Coefficients

5.3 Mediation Effect Test

Drawing on previous research, this paper selects analyst attention (AnaAttention) and research report attention (ReportAttention) as mediating variables to measure corporate information transparency. Existing studies indicate that a higher number of analysts following a company and more intensive coverage by securities firms' research reports lead to more sufficient information supply, which can significantly reduce information asymmetry among investors. This paper selects analyst attention and research report attention to verify whether A-share inclusion in the MSCI index suppresses idiosyncratic stock price volatility by improving the information environment. Considering the considerable controversy in academia regarding the traditional "three-step" mediation effect testing method (Jiang Ting, 2022), this paper adopts the "two-step" approach for mechanism testing, which provides evidence for the mediation mechanism by identifying the significance of the core pathway.

It should be noted that this paper does not employ the traditional "three-step" mediation effect test (i.e., Baron & Kenny, 1986), primarily based on the following considerations: In recent years, academia has raised numerous concerns regarding the validity of the three-step method, particularly in terms of causal identification and estimation bias in mediation effects (e.g., Imai et al., 2011; Zhao et al., 2010). The three-step method requires a significant correlation between the mediating variable and the dependent variable, and that the main effect weakens or disappears after the mediating variable is

introduced. However, this method is prone to bias in the presence of confounding variables or reverse causality. Jiang Ting (2022) points out that directly applying the mediation effect testing methods from psychological research to economic causal inference studies has significant limitations and suggests using the "two-step" approach for mechanism testing. This approach only examines the impact of the explanatory variable on the mechanism variable, while the effect of the mechanism variable on the dependent variable is supported by theory or existing literature, thereby enhancing the logical rigor and robustness of the causal chain. Therefore, this paper draws on the "two-step" approach proposed by Jiang Ting (2022) to construct a mechanism testing model, aiming to enhance the credibility of the research conclusions.

In the mediation effect test, this paper first verifies the impact of A-share inclusion in the MSCI index on the mediating variables. The results in columns (2) and (3) of Table 3 show that the DID coefficients are 4.9850 ($t=5.3544$) and 12.2132 ($t=4.3631$), respectively, both significantly positive at the 1% level, indicating that A-share inclusion in the MSCI index significantly increases the number of analyst followings and research report attention. That is, the event of MSCI inclusion effectively improves corporate information transparency.

Secondly, the main regression results of this paper (column (1) of Table 3) show that the coefficient of DID on idiosyncratic stock price volatility is -0.0056 ($t=-4.0151$), significantly negative at the 1% level, indicating that A-share inclusion in the MSCI index significantly suppresses idiosyncratic stock price volatility. Combining the results of the two-step approach, it can be inferred that the improvement in information transparency is an important mechanism pathway through which the policy affects stock price volatility.

Table 3. Mediation Effect Test Results

	(1)	(2)	(3)
	Main Regression	AnaAttention	ReportAttention
DID	-0.0056*** (-4.0151)	4.9850*** (5.3544)	12.2132*** (4.3631)
Size	-0.0000 (-0.0341)	3.6657*** (5.1919)	6.0664*** (2.9714)
ROE	-0.0108*** (-2.6397)	11.6792*** (6.5115)	34.4148*** (6.6928)
BM	-0.0576*** (-17.7000)	-13.1524*** (-8.2100)	-29.6051*** (-6.2267)
PB	0.0003 (1.0181)	0.8156*** (5.7728)	2.5200*** (5.1808)
CF	-0.0011	-0.1839	8.0283

	(-0.1950)	(-0.0786)	(0.9758)
ListAge	-0.0084**	-4.1503**	-12.7188**
	(-2.1961)	(-2.3865)	(-2.4928)
Inst	-0.0122**	10.9621***	29.2765***
	(-2.4328)	(3.6349)	(3.6821)
_cons	0.1035***	-66.4221***	-96.1251**
	(3.2122)	(-4.1820)	(-2.0615)
Year Fixed Effects	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes
N	3582	3582	3582
Adj. R ²	0.2719	0.2854	0.2437

Note. *** p<0.01, ** p<0.05, * p<0.1; t-statistics clustered at the firm level are reported in parentheses.

5.4 Heterogeneity Analysis

5.4.1 Ownership Heterogeneity Analysis

From the perspective of ownership heterogeneity (Table 4), the suppressing effect of the policy on firms' idiosyncratic stock price volatility (ivol3) exhibits significant differences. In the state-owned enterprise sample (Column 2), the DID coefficient is -0.0066, significant at the 1% level (t=-3.8351). Not only is the absolute value of the coefficient larger than that of the full sample (Column 1, -0.0056), but the significance also remains stable, indicating that MSCI inclusion has a stronger effect on improving stock price stability for state-owned enterprises. In contrast, in the non-state-owned enterprise sample (Column 3), the DID coefficient decreases to -0.0046, significant only at the 10% level (t=-1.9679), with both the effect magnitude and significance notably weaker than those for state-owned enterprises.

This difference may stem from the special positioning of state-owned enterprises in the market. On one hand, state-owned enterprises are typically larger in scale, operate more stably, and have stronger correlations with the macroeconomy, making them more likely to attract attention and recognition from international investors. After MSCI inclusion, the information discovery effect and trading structure optimization brought by foreign capital inflow are more pronounced. On the other hand, state-owned enterprises generally possess higher information transparency and more standardized corporate governance structures. These firm characteristics enable them to respond more sensitively and fully to recognition from international capital markets. The MSCI inclusion decision is based on a set of internationally accepted market standards, reflecting international investors' recognition of China's economic system and certain high-quality enterprises. Due to their inherent characteristics, state-owned enterprises may better meet these international standards, thereby more effectively translating the positive signal of this inclusion into improved stock price stability.

Furthermore, the model fit (R²) for both sample groups (state-owned enterprises R²=0.2530,

non-state-owned enterprises $R^2=0.3216$) is within reasonable ranges, and the models have controlled for relevant variables and two-way fixed effects, enhancing the credibility of the findings. This discovery provides empirical evidence for understanding the differential impact of capital market opening on firms with different ownership types. It also suggests that in the process of advancing A-share internationalization, attention should be paid to the differences in market reactions stemming from firms' ownership characteristics, and resource allocation should be targeted accordingly to enhance the effectiveness of opening.

Table 4. Ownership Heterogeneity Analysis

	(1)	(2)	(3)
	Main Regression	SOEs	Non-SOEs
DID	-0.0056*** (-4.0151)	-0.0066*** (-3.8351)	-0.0046* (-1.9679)
_cons	0.1035*** (3.2122)	0.0498 (0.9963)	0.1276*** (2.9453)
Control Variables	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes
N	3582	2099	1483
R^2	0.2752	0.2530	0.3216
Adj. R^2	0.2719	0.2473	0.3142

Note. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; t-statistics clustered at the firm level are reported in parentheses.

5.4.2 Regional Heterogeneity Analysis

Table 5 below reports the results of heterogeneity analysis based on geographical regions. The research indicates that the suppressing effect of A-share inclusion in the MSCI index on idiosyncratic stock price volatility exhibits significant regional imbalance, with the policy effect displaying a gradient characteristic of "strongest in central China, followed by eastern China, and insignificant in western China."

In the eastern region sample (Column 1), the DID coefficient is -0.0049, significant at the 1% statistical level ($t=-2.7809$). As China's most economically developed and capital market mature region, the eastern region already has relatively high foreign investor participation, and the "marginal increment of foreign capital" brought by A-share MSCI inclusion is relatively limited. Nevertheless, the policy still produces a significant suppressing effect on idiosyncratic stock price volatility. This stems from the generally higher information disclosure quality and more standardized corporate governance structures of eastern enterprises. Foreign capital inflow further strengthens market consensus on firm value, thereby compressing idiosyncratic stock price volatility.

In the central region sample (Column 2), the DID coefficient expands to -0.0109, significant at the 1% statistical level ($t=-3.8739$). This result indicates that the suppressing effect of A-share MSCI inclusion on idiosyncratic stock price volatility for enterprises in the central region is stronger than that in the eastern region. The central region is in an economic development "transition zone," where enterprises lag behind the eastern region in terms of information transparency and foreign investor attention. The foreign capital inflow brought by A-share MSCI inclusion not only supplements market liquidity but also effectively improves the information environment and governance level of central region enterprises through foreign investors' information discovery and monitoring roles. Therefore, the marginal improvement magnitude of the policy effect is greater.

In the western region sample (Column 3), the DID coefficient is -0.0030 and fails the significance test ($t=-0.8905$). This reflects that the suppressing effect of A-share MSCI inclusion on idiosyncratic stock price volatility for enterprises in the western region is not significant. The reasons are as follows: the western region's economic development is relatively lagging, with smaller enterprise scales, lower industry concentration, and extremely low foreign investor participation, making it difficult for foreign capital resources brought by A-share MSCI inclusion to effectively reach these enterprises. Simultaneously, the standardization of information disclosure and maturity of corporate governance in western region enterprises are relatively insufficient. After foreign capital inflow, the improvement effect on the information environment and governance level is limited, making it difficult for the policy to significantly impact idiosyncratic stock price volatility.

Regarding model robustness, all regional regressions control for year fixed effects, firm fixed effects, and relevant control variables, with adjusted R^2 values within reasonable ranges (eastern 0.2556, central 0.2848, western 0.3695), indicating that the model specifications are reliable.

Table 5. Regional Heterogeneity Analysis

	(1) East	(2) Mid	(3) West
DID	-0.0049*** (-2.7809)	-0.0109*** (-3.8739)	-0.0030 (-0.8905)
_cons	0.1108** (2.5352)	0.0783 (1.2602)	0.0818 (1.1046)
Control Variables	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes
N	2376	657	549
R^2	0.2606	0.3023	0.3879
Adj. R^2	0.2556	0.2848	0.3695

Note. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; t-statistics clustered at the firm level are reported in parentheses.

6. Research Findings and Policy Recommendations

6.1 Research Findings

Using A-shares listed on the Shanghai and Shenzhen Stock Connect from 2016 to 2024 as the sample, and taking the inclusion of A-shares in the MSCI index as a quasi-natural experiment, this study employs the Difference-in-Differences method to empirically examine the impact of capital market opening on idiosyncratic stock price volatility, drawing the following core conclusions:

First, capital market opening has a significant suppressing effect on idiosyncratic stock price volatility. The main regression results show that after the inclusion of A-shares in the MSCI index, the idiosyncratic stock price volatility of the treatment group is significantly lower than that of the control group. This conclusion remains robust after placebo tests, replacement of volatility measurement indicators, and other robustness checks, verifying the market stabilization effect of capital market opening.

Second, information transparency serves as the core transmission mechanism. Mechanism tests indicate that capital market opening significantly increases the number of analyst followings and research report attention, improves the quality of information disclosure by listed companies, and reduces information asymmetry among investors, thereby suppressing idiosyncratic stock price volatility. This aligns with the logical chain of "opening → information optimization → volatility suppression."

Third, the suppressing effect exhibits significant heterogeneity characteristics. Regarding ownership structure, the policy effect is stronger for state-owned enterprises than for non-state-owned enterprises. At the regional level, it displays a gradient characteristic of "strongest in central China, followed by eastern China, and insignificant in western China," reflecting the moderating role of firm characteristics and regional development differences on the policy effect.

6.2 Policy Recommendations

This study confirms that the inclusion of A-shares in the MSCI index significantly suppresses idiosyncratic stock price volatility by improving information transparency, with this effect being more pronounced in state-owned enterprises and firms in the eastern and central regions. Based on the above conclusions, this paper proposes the following recommendations from the perspectives of regulators, listed companies, and investors.

6.3 Recommendations for Regulators

First, steadily expand the scope of opening and optimize the structure of foreign capital. Continue to increase the weight of A-shares in international indices, gradually expand the inclusion of high-quality enterprises, and focus on attracting long-term allocation-oriented foreign capital such as sovereign funds and pension funds. Simplify the foreign capital access process, optimize the efficiency of cross-border fund settlement, and support foreign institutions' participation in the A-share derivatives market for risk hedging. Establish a dynamic assessment mechanism for the pace of opening, monitoring indicators such as cross-border capital flow volatility and market liquidity, to ensure that the opening process matches the market's absorptive capacity.

Second, strengthen information disclosure regulation and enhance market transparency. Using the information disclosure requirements of the MSCI index as a benchmark, improve the information disclosure rules for listed companies, and clarify disclosure standards for key information such as financial data, corporate governance, and ESG. Develop differentiated disclosure guidelines based on industry characteristics, encouraging high-tech enterprises to provide detailed disclosures on R&D progress and guiding non-high-tech enterprises to enhance transparency in operational data. Establish a cross-border information disclosure regulatory cooperation mechanism and increase penalties for information disclosure violations, thereby suppressing idiosyncratic volatility caused by information opacity at its source.

Third, improve cross-border capital flow monitoring and implement differentiated regulation. Construct a macro-meso-micro multi-level cross-border capital flow monitoring system and establish an early warning mechanism for foreign shareholdings in key enterprises. In response to the regional gradient characteristics revealed by empirical findings, simplify the foreign capital participation process for enterprises in the western region and encourage institutions to increase research coverage. Launch specialized information disclosure guidance programs for enterprises with high financing constraints. Establish a rapid response mechanism for abnormal foreign capital flows to prevent international financial market volatility from transmitting to the A-share market through cross-border channels.

Fourth, improve the investor protection system and maintain market order. Enhance the cross-border investor protection mechanism by establishing multilingual complaint and rights protection channels and a cross-border dispute resolution platform. Strengthen the supervision of cross-border investment activities and strictly crack down on illegal and non-compliant behaviors such as insider trading and market manipulation. Continuously conduct investor education activities to disseminate knowledge regarding capital market opening rules and risk prevention, enhancing domestic investors' adaptability to the open environment.

6.4 Recommendations for Listed Companies

First, optimize corporate governance and align with international standards. State-owned enterprises should consolidate their governance advantages and enhance decision-making transparency and market-oriented operations. Non-state-owned enterprises need to accelerate the improvement of modern enterprise systems, introduce external independent directors, and enhance internal control and compliance levels. Proactively align with MSCI ESG rating standards, establish a normalized ESG management system, and enhance attractiveness to international institutional investors through regular ESG report releases.

Second, improve information transparency and perfect communication mechanisms. Drawing on the practical experience of Conch Cement, establish a three-in-one information communication mechanism comprising "routine disclosure + special interpretation + interactive communication." In routine disclosures, provide detailed explanations of operational data. For special interpretations, address key matters such as R&D progress and major contracts. In terms of interactive communication, proactively

respond to concerns of domestic and foreign investors through performance briefings and investor Q&A platforms. Establish regular communication channels with mainstream securities firms and international research institutions, encouraging analysts to publish objective and professional research reports.

Third, formulate differentiated development strategies based on firm-specific characteristics. Non-high-tech industry enterprises should leverage their advantages of stable operations and strengthen core competitiveness. High-tech industry enterprises need to focus on core technology R&D, clarify technical roadmaps and profit expectations, and establish R&D risk warning mechanisms. Enterprises with high financing constraints should prioritize improving their financial condition by broadening financing channels and strengthening cash flow management, laying a financial foundation for adapting to the open environment.

Fourth, strengthen cross-border cooperation and learn from international experience. Encourage qualified enterprises to integrate into the global industrial chain through technology introduction, joint ventures, and overseas mergers and acquisitions. Learn from the management experience and risk control models of internationally advanced enterprises, and establish financial management systems adapted to cross-border capital flows. Proactively prepare financial statements using International Financial Reporting Standards to reduce information interpretation costs for international investors.

6.5 Recommendations for Investors

First, cultivate value investing thinking and reduce noise trading. Domestic individual investors should abandon short-term speculative mindsets, focus on core indicators such as corporate profitability, cash flow status, and corporate governance, and avoid irrational behaviors such as chasing rises and selling falls. Institutional investors need to strengthen their professional research capabilities, intensify the exploration of firm-specific information, and play a role in professional pricing and market stabilization.

Second, enhance cross-border investment literacy and optimize asset allocation. Proactively learn about capital market opening rules and international market valuation methods. Based on empirical conclusions, appropriately increase allocation proportions for state-owned enterprises, non-high-tech industries, enterprises with low financing constraints, and firms in the eastern and central regions. For enterprises in the western region, high-tech industries, and those with high financing constraints, fully assess idiosyncratic risks, control allocation proportions, and reduce risk exposure through diversified investments.

Third, pay attention to information transparency and optimize investment decisions. Treat information transparency as an important reference for investment decisions, focusing on dimensions such as the number of analyst followings, quality of research report coverage, and completeness of ESG disclosure. Reduce investment risks through cross-validation of information from multiple channels. Rationally view foreign capital trading behavior, avoid blindly following trends, and make independent judgments based on enterprises' actual value.

Fourth, strengthen risk management awareness and enhance resilience to volatility. Develop a reasonable risk preference framework based on personal financial circumstances, avoiding excessive pursuit of returns while neglecting risks. Rationally use derivative instruments such as stock index futures and options to hedge market risks and reduce the impact of idiosyncratic volatility on investment portfolios. Establish a dynamic portfolio adjustment mechanism, regularly assess changes in the fundamentals of held enterprises, and adjust allocation proportions in a timely manner.

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