World Journal of Economics and Business Research
Print ISSN: 2960-0073
Online ISSN: 2960-0081
DOI: https://doi.org/10.61784/wjebr3118

THE IMPACT OF RMB EXCHANGE RATE ON THE CHINESE STOCK MARKET: AN EMPIRICAL EXAMINATION BASED ON THE VAR MODEL

BaoGui Wu*, Shuang Wang, TianCheng Li
School of Business, University of Sanya, Sanya 572000, Hainan, China.
**Corresponding Author: BaoGui Wu*

Abstract: Based on monthly data from August 2015 to December 2025, this study selects the RMB/USD central parity rate and the CSI 300 Index to construct a vector autoregression (VAR) model, empirically examining the direction and magnitude of the RMB exchange rate's impact on the Chinese stock market. The results indicate that: first, there is no long-run cointegration relationship between the RMB exchange rate and the CSI 300 Index, suggesting the absence of a stable equilibrium linkage between the two; second, RMB exchange rate movements exert a short-term negative effect on CSI 300 returns, meaning that RMB depreciation is associated with declining stock market returns, exhibiting a "seesaw" pattern, yet this effect is short-lived and decays rapidly; third, Granger causality tests reveal no significant causal direction between the two variables; fourth, variance decomposition demonstrates that over 86% of the variation in the CSI 300 Index is explained by its own factors, with exchange rate shocks contributing only approximately 14%. These findings collectively suggest that while the RMB exchange rate does affect the Chinese stock market in the short run, the effect is weak and transient, and stock market movements are primarily driven by internal factors, with the exchange rate not serving as a dominant force behind A-share trends. Accordingly, policy recommendations are proposed, including deepening exchange rate marketization reform, enhancing cross-border capital flow monitoring, and cultivating long-term institutional investors.
Keywords: RMB exchange rate; Stock market; VAR model; Empirical examination

1 INTRODUCTION

The relationship between the RMB exchange rate and the stock market is a critical issue influencing market stability and investment expectations in an open financial environment. Since the "8·11 Exchange Rate Reform" in 2015, the RMB/USD exchange rate has progressively shifted from a relatively rigid, one-sided management regime toward a more market-driven, two-way fluctuation pattern. Concurrently, the continued opening-up of China's capital markets — with institutional arrangements such as the Shanghai-Hong Kong Stock Connect, Shenzhen-Hong Kong Stock Connect, and QFII/RQFII programs being steadily refined, and A-shares successively included in the MSCI and FTSE Russell indices — has rendered the channels for foreign capital participation in the A-share market increasingly accessible. Against this backdrop, RMB exchange rate movements are no longer merely an internal matter for the foreign exchange market; they may also influence stock market performance through channels such as cross-border capital flows, market expectations, corporate earnings, and risk appetite.

Regarding the direction of the linkage between the RMB exchange rate and the stock market, two representative theoretical predictions exist in the academic literature. The flow-oriented model proposed by Dornbusch and Fischer posits that exchange rate movements are transmitted to stock prices through their effects on international trade and corporate profitability, with the direction of the linkage depending on a country's trade structure [1]. The stock-oriented model advanced by Branson and Henderson, by contrast, approaches the issue from an asset portfolio perspective, arguing that stock price movements influence exchange rates through wealth effects and capital flows — rising stock prices attract foreign capital inflows that drive currency appreciation, resulting in a co-movement pattern [2]. Zhang et al. and Chen and Yang find that RMB appreciation significantly boosts A-share prices through the cross-border capital flow channel [3,4]. Deng and Yang, however, argue that RMB depreciation may support the stock market by improving export-oriented firms' profitability and aligning with accommodative monetary conditions [5]. Wang and Liu further observe that the linkage between the two is time-varying, exhibiting differences across economic cycles and Federal Reserve policy regimes [6].

Existing studies, however, have predominantly focused on determining the direction of the linkage — whether it follows a "seesaw" or a "co-movement" pattern — while systematic assessment of the magnitude of the impact remains relatively insufficient. If the exchange rate's effect on the stock market is weak and short-lived, then regardless of the direction identified, its policy implications and value as an investment reference warrant reconsideration. Based on monthly data from August 2015 to December 2025, this study constructs a VAR model using the RMB/USD central parity rate and the CSI 300 Index, examining not only the direction of the linkage but, more importantly, assessing the magnitude and persistence of the exchange rate's impact on the stock market. In doing so, it seeks to answer a question of greater policy relevance: how large is the impact of the RMB exchange rate on the Chinese stock market?

2 RESEARCH DESIGN

2.1 Data and Variables

This study employs monthly data from August 2015 (the "8·11 Exchange Rate Reform") through December 2025 as the research sample, comprising 125 observations. The core variables are the RMB/USD central parity rate (EX) and the monthly closing price of the CSI 300 Index (HS300), sourced from the official website of the People's Bank of China and the Tonghuashun iFinD database, respectively. The CSI 300 Index is selected over the Shanghai Composite Index because it covers 300 large-cap, high-liquidity stocks across both the Shanghai and Shenzhen markets, thereby better reflecting the overall performance of A-share core assets and exhibiting a stronger connection with the RMB exchange rate and cross-border capital flows.

To mitigate heteroskedasticity and facilitate the interpretation of variable fluctuations, natural logarithms of EX and HS300 are taken, denoted as LNEX and LNHS300, respectively. First-order log-differenced variables, DLNEX and DLNHS300, are then constructed to represent the monthly rate of change in the RMB/USD exchange rate and the monthly return of the CSI 300 Index, respectively. It should be noted that EX is expressed in direct quotation terms, where an increase signifies RMB depreciation and a decrease signifies RMB appreciation. Therefore, a negative correlation between DLNEX and DLNHS300 implies that RMB depreciation is accompanied by declining stock prices and appreciation by rising stock prices — corresponding to "co-movement" in market parlance; conversely, a positive correlation corresponds to the "seesaw" effect. Simple correlation analysis yields a coefficient of −0.35 between DLNEX and DLNHS300, providing preliminary evidence that CSI 300 returns tend to decline when the RMB depreciates.

2.2 Model Specification

The vector autoregression (VAR) model, introduced by Sims (1980), incorporates lagged values of all endogenous variables in the system as explanatory variables and can effectively capture dynamic interrelationships among multiple variables[7], making it a classical model for studying financial variable linkages [8]. The VAR model constructed in this study is expressed as follows:

$$Y_t = \alpha + \beta_1 Y_{t-1} + \cdots + \beta_p Y_{t-p} + \gamma_1 X_t + \cdots + \gamma_q X_{t-q} + \varepsilon_t \quad (1)$$

Where Y_t is a 7-dimensional vector of endogenous variables (containing LNHSA, LNEX, M2, R007, LNFUND, PMI, and VIX), and X_t is a vector of exogenous variables. p and q denote lag orders, ε_t is a vector of stochastic disturbances, β and γ are parameter matrices to be estimated, and t indexes the time period, taking values t = 1, 2, …, 125.

An examination of the log-level series reveals that both LNEX and LNHS300 exhibit certain trends and periodic fluctuations over the sample period, suggesting that using level variables directly in the model may lead to spurious regression. Accordingly, this study first conducts unit root tests and cointegration tests before determining the optimal VAR model specification based on lag order selection criteria.

3 EMPIRICAL RESULTS

3.1 Unit Root Tests

Prior to estimating the VAR model, stationarity tests must be performed on the time series. This study employs the Augmented Dickey-Fuller (ADF) test to examine LNEX, LNHS300, and their first-differenced variables DLNEX and DLNHS300 for unit roots. The results are reported in Table 1. The ADF statistics for LNEX and LNHS300 are −2.171 and −1.726, respectively, neither of which rejects the unit root null hypothesis at the 5% significance level, indicating that the level series are non-stationary. After first differencing, the ADF statistics for DLNEX and DLNHS300 are −3.856 and −3.852, respectively, both with p-values of 0.002, significant at the 1% level, confirming that the first-differenced series are stationary. Subsequent analysis therefore employs DLNEX and DLNHS300 for VAR model estimation.

Table 1 ADF Unit Root Test Results

Variable	ADF Statistic	5% Critical Value	P-value	Conclusion
LNEX	−2.171	−2.889	0.217	Non-stationary
LNHS300	−1.726	−2.889	0.418	Non-stationary
DLNEX	−3.856	−2.889	0.002	Stationary
DLNHS300	−3.852	−2.889	0.002	Stationary

Note: D(·) denotes the first difference of the variable.

3.2 Cointegration Test

The Johansen cointegration test is applied to LNEX and LNHS300 to determine whether a long-run equilibrium relationship exists between them. As shown in Table 2, under the null hypothesis r = 0, the trace statistic is 5.0145, which falls below the 5% critical value of 15.41, failing to reject the null hypothesis of no cointegration. This indicates that no significant long-run cointegration relationship exists between the RMB exchange rate and the CSI 300 Index, and their linkage is more appropriately characterized as a dynamic association at the short-run fluctuation level rather than a stable binding at the long-run trend level.

Table 2 Johansen Cointegration Test Results

Null Hypothesis	Trace Statistic	5% Critical Value	Conclusion
r = 0	5.0145	15.41	Do not reject
r ≤ 1	0.5156	3.76	Do not reject

Note: * indicates the cointegration rank selected by Stata based on the trace statistic.

3.3 Optimal Lag Order

The choice of lag order in a VAR model affects the estimation results. An insufficient lag order may omit dynamic interactions among variables, while an excessive lag order sacrifices degrees of freedom and may lead to overfitting. This study employs the LR, FPE, AIC, HQIC, and SBIC criteria to determine the optimal lag order for the VAR model comprising DLNEX and DLNHS300. As shown in Table 3, both the HQIC and SBIC criteria select a lag order of one; accordingly, VAR(1) is adopted as the benchmark model in this study.

Table 3 Optimal Lag Order Selection

Lag	LL	LR	FPE	AIC	HQIC	SBIC
0	639.188	—	3.9e-08	−11.3783	−11.3587	−11.3298
1	649.812	21.249	3.5e-08	−11.4966	−11.4376*	−11.351*
2	652.445	5.267	3.6e-08	−11.4722	−11.3738	−11.2295

Note: * indicates the optimal lag order selected by the corresponding criterion.

3.4 VAR Model Stability Test

Prior to conducting Granger causality tests, impulse response analysis, and variance decomposition, it is necessary to verify whether the VAR model satisfies the stability condition. If all eigenvalues of the VAR model lie within the unit circle, the model is deemed stable, and subsequent dynamic analysis results are interpretable. The stability test results for the VAR(1) model are reported in Table 4. The two eigenvalues of the VAR(1) model have moduli of 0.223075 and 0.071496, both less than one and lying within the unit circle, confirming that the model satisfies the stability condition. Accordingly, Granger causality tests, impulse response analysis, and variance decomposition can proceed on this basis.

Table 4 VAR(1) Model Stability Test Results

Eigenvalue	Modulus	Stability Assessment
0.2230753	0.223075	Inside the unit circle
−0.07149644	0.071496	Inside the unit circle

3.5 Granger Causality Test

The Granger causality test results are presented in Table 5. DLNEX does not Granger-cause DLNHS300 ($p = 0.109$), and DLNHS300 does not Granger-cause DLNEX ($p = 0.819$), indicating no significant Granger causality between the two variables. It is worth noting, however, that the p-value for the exchange rate's Granger causality on the stock market is 0.109, which, while not reaching the 5% significance level, approaches the 10% threshold, suggesting that the predictive power of the exchange rate for stock market movements may approach significance with a larger sample or longer time series.

Table 5 Granger Causality Test Results

Null Hypothesis	F-Statistic	P-value	Conclusion
DLNEX does not Granger-cause DLNHS300	2.609	0.109	Do not reject
DLNHS300 does not Granger-cause DLNEX	0.053	0.819	Do not reject

Note: Significance level is 5%.

3.6 Impulse Response Analysis

The impulse response function characterizes the dynamic effect of a one-standard-deviation shock on the system. The results show that the contemporaneous impact of an RMB depreciation shock on the CSI 300 Index is −0.0067, meaning that an increase in the RMB/USD exchange rate (depreciation) elicits a negative response from the CSI 300 Index in the short run. This negative response then decays rapidly, diminishing to −0.0012 in period 1, −0.0003 in period 2, and approaching zero from period 3 onward. This indicates that while the negative effect of RMB depreciation on the stock market is present, it is short in duration and fast in decay, constituting a typical short-run effect. The transmission logic is as follows: RMB depreciation triggers expectations of capital outflows and concerns about RMB-denominated asset valuation, lowering market risk appetite and thereby exerting short-term downward pressure on the stock market; however, depreciation may also improve earnings expectations for export-oriented firms, partially offsetting the negative effect and rendering the overall impact transient and limited.

3.7 Variance Decomposition

The variance decomposition results are reported in Table 6. In period 1, the CSI 300's own shock accounts for 85.95% of its forecast error variance, while the RMB exchange rate shock contributes 14.05%. By period 10, the own-shock contribution stabilizes at 86.24%, and the exchange rate shock contribution stabilizes at 13.76%. The variance decomposition results clearly demonstrate that fluctuations in the CSI 300 Index are predominantly driven by its own inertia and internal factors, with the RMB exchange rate offering limited explanatory power. This finding is consistent with the impulse response analysis — the exchange rate's impact on the stock market is not only transient but also quantitatively insufficient to constitute a primary explanatory factor.

Table 6 Variance Decomposition Results

Period	Exchange Rate Shock Contribution (%)	Own Shock Contribution (%)
1	14.05	85.95
2	13.77	86.23
3	13.76	86.24
5	13.76	86.24
10	13.76	86.24

Note: Based on 10-period variance decomposition of the VAR(1) model.

4 CONCLUSIONS AND RECOMMENDATIONS

4.1 Research Conclusions

Based on monthly data from August 2015 to December 2025, this study constructs a VAR model to empirically examine the impact of the RMB exchange rate on the Chinese stock market, yielding the following conclusions:

First, there is no long-run cointegration relationship between the RMB exchange rate and the CSI 300 Index. The two lack a stable equilibrium linkage, and the long-run trends of the exchange rate and the stock market do not move in tandem; their linkage is more appropriately characterized as a dynamic association at the short-run fluctuation level.

Second, RMB exchange rate movements exert a short-term negative effect on CSI 300 returns. Impulse response analysis reveals that an RMB depreciation shock depresses stock market returns in the short run, exhibiting a "seesaw" pattern. The transmission logic is that RMB depreciation triggers expectations of capital outflows and concerns about RMB-denominated asset valuation, lowering market risk appetite and thereby exerting short-term downward pressure on the stock market.

Third, the exchange rate's impact on the stock market is weak and transient. Granger causality tests indicate no significant causal direction between the two variables ($p = 0.109$), impulse responses show that the negative effect decays to zero within two to three periods, and variance decomposition reveals that exchange rate shocks contribute only approximately 14% to CSI 300 fluctuations, with over 86% explained by the stock market's own factors. The above evidence consistently indicates that the RMB exchange rate is not a dominant force behind A-share market trends.

4.2 Policy Recommendations

First, deepen exchange rate marketization reform and enhance the two-way flexibility of the RMB. Direct intervention in day-to-day exchange rate fluctuations should be reduced, with policy focus shifted toward preventing abnormal volatility and stabilizing market expectations. Enhanced exchange rate flexibility would narrow the scope for large-scale, short-term speculative capital flows, thereby also mitigating the spillover of exchange rate volatility into the stock market.

Second, improve cross-border capital flow monitoring and macroprudential management. Capital flows through channels such as the Shanghai-Shenzhen-Hong Kong Stock Connect and QFII/RQFII programs should be continuously tracked, and countercyclical regulatory instruments should be deployed as appropriate during periods of significant exchange rate volatility to smooth abnormal short-term capital movements and prevent a negative feedback loop between RMB depreciation and declining risk appetite.

Third, cultivate long-term institutional investors to enhance the stock market's intrinsic stability. Social security funds, insurance capital, and other medium- to long-term funds should be encouraged to increase their equity allocation ratios, thereby optimizing the investor structure. As the share of long-term capital increases, the A-share market's resilience to exchange rate fluctuations will be significantly strengthened.

COMPETING INTERESTS

The authors have no relevant financial or non-financial interests to disclose.

REFERENCES

[1] Dornbusch R, Fischer S. Exchange Rates and the Current Account. The American Economic Review, 1980, 70(5): 960-971.
[2] Branson W H, Henderson D W. The Specification and Influence of Asset Markets. Handbook of International Economics, 1985(2): 749-805.
[3] Zhang B, Feng S, Li X, et al. On the Relationship between Exchange Rates and Stock Prices: An Empirical Study Based on the Post-Reform Data. Economic Research Journal, 2008, 43(9): 70-81.
[4] Chen C, Yang Z. RMB Exchange Rate Changes and Stock Market Volatility: A TVP-SV-VAR Model Based on the Multiple-Arbitrage Perspective. Journal of Financial Research, 2017(10): 1-16.
[5] Deng S, Yang Z. The Relationship between China's Stock Market and Foreign Exchange Market after the Exchange Rate Regime Reform: An Empirical Study Based on the RMB Nominal Exchange Rate and the Shanghai Composite Index. Journal of Financial Research, 2008(1): 29-41.
[6] Wang A, Liu H. On the Dynamic Linkage between RMB Exchange Rate and Stock Market. Studies of International Finance, 2020(11): 65-75.
[7] Sims C A. Macroeconomics and Reality. Econometrica, 1980, 48(1): 1-48.
[8] Wu Xiaofei, Zhu Shuzhen, Wang Suxue. Research on Information Spillover Effect of the RMB Exchange Rate and Stock Market Based on R-Vine Copula. Complexity, 2020. DOI: 10.1155/2020/2492181.