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Renminbi Internationalization and Export Quality: Evidence from RCEP Countries

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ABSTRACT
Against the backdrop of profound restructuring in global value chains, the practice of adhering to US dollar settlements for cross-border trade under the Regional Comprehensive Economic Partnership (RCEP) has evolved into an institutional predicament [1]. Renminbi (RMB) internationalization, however, offers a dual deconstruction mechanism through institutional breakthroughs and technological empowerment. This study conducts an empirical analysis using panel data on exports from RCEP partner countries to China during the period 2016–2022. Building upon the Two-Way Fixed Effects (TWFE) model and mechanism testing models, it explores the impact of RMB internationalization on the quality of exports within the RCEP region. The findings conclude that RMB internationalization exerts a significant positive effect on the export quality of RCEP countries. This effect is primarily realized through reducing transaction costs and enhancing exchange rate stability.

KEYWORDS
Renminbi internationalization; Regional Comprehensive Economic Partnership (RCEP); Regional trade; International trade

1 Introduction

In the context of the restructuring of the global value chain, RCEP is the world's largest free trade area agreement signed by 15 countries including the 10 ASEAN countries, accounting for 29.1% of global foreign trade, but its cross-border trade is settled in US dollars, which has formed an institutional dilemma[1]. The single dominance of the US dollar makes the exchange rate fluctuation have a significant impact on the market; U.S. dollar settlement allows enterprises to use part of the liquidity of funds for hedging and reduce the amount of funds invested in quality; Commodity USD pricing exposes the industry to an exchange rate risk premium. Under the RCEP framework, members are encouraged to settle in their own currencies, and Renminbi (RMB) settlement has a significant impact on transaction volume[1]. Using Fuzzy Set Qualitative Comparative Analysis, we find that institutional construction reduces the restrictions on the international adoption of RMB[2]. This indicates that the export complexity index of enterprises settled in RMB will continue to increase; Second, the real-time clearing feature of the e-CNY cross-border payment system shortens the trade financing cycle, and the quality margin released will increase the R&D intensity of enterprises and improve product quality through digital facilities. Based on the panel data of RCEP member countries from 2015 to 2022, this paper uses the fixed-effect model to establish a theoretical model of "monetary system-technology transmission-quality upgrading", and empirically analyzes the path and heterogeneity effect of RMB internationalization on export quality. This paper finds that the internationalization of RMB has a significant effect on the export quality of RCEP countries, which is achieved by reducing transaction costs and enhancing exchange rate stability.

2 Literature review

Much of the research on the trade effects of the RMB's internationalization today is about its impact on trade volumes. For example, Liu Fang (2025) found that it can promote Southeast Asia's imports from China and suppress exports, while at the same time improving the trade deficit through bilateral local currency settlement[3]. Qi Tong (2023) mentions the opportunity of "de-dollarization" and the need to balance the US and non-US dollar economies [4]. Only Dai Jinping and Zhen Xiaoyu (2022) found that RMB internationalization indirectly improves the export quality of enterprises through the alleviation of financing constraints, but the mechanism path has not yet been deepened [5]. In the study of export quality, Wang et al. (2024) found that there are country-specific differences in the regulation of agricultural trade by institutional quality [6]. Yu Bo (2020) focuses on the linear relationship between RMB settlement and export scale, and analyzes the turning mechanism in recent years [7].

Liu Fang (2025) uses the long-panel FGLS model to control for heteroskedasticity and autocorrelation between groups [3]; Wang et al. (2024) combined TWFE and moderating effect models to reveal the heterogeneous role of institutional quality [6]. However, there is a lack of empirical evidence on the path of RMB internationalization affecting export quality. This project studies the significance of the relationship between RMB internationalization and export quality, and theoretically incorporates the dimensions of enterprise heterogeneity and product quality into the study of RMB internationalization, so as to supplement the gap in the interpretation of the "money-quality" relationship in traditional

theories. In practice, it provides a basis for China to promote the internationalization of RMB in the scope of RCEP.

3 Research methods

Based on the framework of new trade theory, this study constructs a theoretical model of "monetary system-technology transmission-quality upgrading", measures the export quality and RMB internationalization indicators, and analyzes the impact of RMB internationalization on the export quality of RCEP countries to China. Because RCEP countries have a cost of multi-country currency exchange when trading with China, and the value of the RMB is stable, settlement in RMB can reduce exchange costs, reduce dependence on US dollars, and stabilize trade income. Therefore, the assumption (H1) is proposed: the internationalization of the RMB will improve the quality of RCEP countries' exports to China by reducing transaction costs and enhancing exchange rate stability. And explain (H2): By reducing the exchange cost and settlement risk of cross-border trade, the internationalization of RMB can promote corporate financing, promote the import of high-tech products, improve R&D and production efficiency through technology transmission, and promote product quality upgrading. That is, to improve the quality of exports through technological upgrading and financial deepening.

In order to analyze how the internationalization of RMB affects the improvement of the quality of RCEP countries' exports to China, the following empirical designs are proposed:

3.1 Model Building and variable definition

3.1.1 Model building

Benchmark model: Based on the results of Wooldridge test, Modified Wald test and Hausman test, the TWFE model is used:

$$ExportQuality_{it} = \alpha + \beta_1 RMB\_Intl_{it} \times HighIncome_i + \beta_3 Controls_{it} + \mu_i + \gamma_t + \epsilon_{it}$$

Where i denotes the country and t denotes the year. $ExportQuality_{it}$ is the dependent variable, representing export quality. RMB_Intl_{it} is the core independent variable (RMB internationalization level). $RMB\_Intl_{it} \times HighIncome_i$ is the heterogeneity interaction term, used to distinguish the differential effects between high-income countries and low- and middle-income countries. $Controls_{it}$ denotes the set of control variables. μ_i represents country fixed effects, γ_t represents time fixed effects , and ϵ_{it} is the error term.

Mechanism test model: In order to clarify the mode of action of RMB internationalization on the upgrading of the export quality of RCEP countries. In this paper, mediating variables are introduced to perform the two-path joint effect test: Defining the technology upgrade pathway using the import sophistication of intermediate goods:

$$TechUpgrade_{it} = \alpha_1 + \beta_1 RMB\_Intl_{it} + \delta_1 Controls_{it} + \mu_i + \gamma_t + \epsilon_{1it}$$

Comprehensive Effect Test (Mediation Test):

$$ExportQuality_{it} = \alpha_2 + \beta_2 RMB\_Intl_{it} + \beta_3 TechUpgrade_{it} + \delta_2 Controls_{it} + \mu_i + \gamma_t + \epsilon_{2it}$$

If β_2 is statistically significant and the absolute value of its coefficient is smaller than β_1, in the baseline model, then technology upgrade acts as a partial mediator. If β_2 is statistically insignificant, then technology upgrade acts as a full mediator.

Defining the financial deepening pathway using the reduction in corporate financing costs (an inverse indicator):

$$FinDeepening_{it} = \alpha_3 + \beta_4 RMB\_Intl_{it} + \delta_3 Controls_{it} + \mu_i + \gamma_t + \epsilon_{3it}$$

Comprehensive Effect Test (Mediation Test):

$$ExportQuality_{it} = \alpha_4 + \beta_5 RMB\_Intl_{it} + \beta_6 FinDeepening_{it} + \delta_4 Controls_{it} + \mu_i + \gamma_t + \epsilon_{4it}$$

If β_5 is statistically significant and the absolute value of its coefficient is smaller than β_1 in the baseline model, then financial deepening acts as a partial mediator. If β_5 is statistically insignificant, then financial deepening acts as a full mediator.

Joint Effect Analysis of the Dual Pathways:

$$ExportQuality_{it} = \alpha + \beta_2 RMB\_Intl_{it} + \beta_8 TechUpgrade_{it} + \beta_9 FinDeepening_{it} + \delta Controls_{it} + \mu_i + \gamma_t + \epsilon_{it}$$

If β_8 is significantly positive, it further confirms that technology upgrading can promote export quality upgrading. If β_9 is significantly positive, it further confirms that financial deepening can promote export quality upgrading.

Table 1 Descriptive statistics results of each variables

Variable	Obs.	Mean	Std. dev.	Min	Max
ExportQuality	96	0.8523	0.3217	0.2135	1.4826
RMB_Intl	96	0.4238	0.1756	0.1124	0.8269
ln_PerGDP	96	9.2148	0.8523	7.0237	10.9821
ln_GDP	96	25.3826	1.6238	22.1539	28.7321
ExchangeRateVol	96	8.7315	3.2518	2.1537	18.2484
TradeOpenness	96	0.9627	0.4126	0.3218	2.1532
RD_Intensity	96	0.0179	0.0118	0.0021	0.0423
FinDeepening	96	0.6824	0.2315	0.2836	1.1527
TechUpgrade	96	52.7318	16.2835	18.3726	89.2346

Table 2 Main effect regression results

Variables	(1) ExportQuality	(2) Controls
RMB_Intl	0.0476*	0.0512*
	(1.75)	(1.80)
ln_PerGDP		0.6835**
		(2.42)
ln_GDP		-0.2037
		(-1.15)
ExchangeRateVol		-0.0072*
		(-1.68)
TradeOpenness		1.0352**
		(2.28)
RD_Intensity		0.0624
		(1.45)
λ_t	Yes	Yes
μ_i	Yes	Yes
N	96	96
r2_w	0.67	0.73
F - statistic	24.38***	31.52***

t statistics in parentheses* p < 0.1, ** p < 0.05, *** p < 0.01

3.1.2 Variable definitions

(1) Explanatory variables

ExportQuality means that the technical complexity at the product level is calculated based on global trade data using the method of Hausmann (2007), and then the export complexity index at the country-year level is obtained by weighting the average of export value.

Table 3 Robustness test results

Variables	Partial sample rejection	Replace the explanatory variable
	(1)	(2)
	RMB_Intl	RMB_Intl
ExportQuality	-	0.0493***
		(0.0167)
Excluded 2020	0.0551**	-
	(0.0235)	
Manufacturing products only	0.0497*	-
	(0.0263)	
$\boldsymbol{\lambda_t}$	Yes	Yes
$\boldsymbol{\mu_i}$	Yes	Yes
Controls	Yes	Yes
N	96	96

t statistics in parentheses* p < 0.1, ** p < 0.05, *** p < 0.01

(2) Core explanatory variables

Internationalization of the RMB（RMB_Intl）. Due to the scarcity of data, an alternative indicator is used to explain the cross-border settlement of RMB as a proportion of the total trade of RCEP countries with China.

(3) Mediation variables

TechUpgrade : The technical complexity of using intermediate imports. FinDeepening：The reduction of corporate financing costs is used as a contrarian indicator to measure.

(4) Adjust the variables

The level of income of the country（HighIncome）：For dummy variables, 1 for high-income countries and 0 for

otherwise.

(5) Control variables

Economies of scale（ln_GDP）: The size of a country's economy reflects market capacity and resource endowment. Measured as a logarithm of gross domestic product (GDP). Per capita income（ln_PerGDP）. Per capita income represents the stage of a country's economic development. Measured as a logarithm of GDP per capita. Exchange Rate Volatility（ExchangeRateVol）: Exchange rate fluctuations affect trade costs and price competitiveness. Measured by the standard deviation of the annual exchange rate. TradeOpenness reflects market access and competitive pressures. It is measured by the total import and export value as a proportion of GDP. Proportion of R&D investment（RD_Intensity）. R&D investment directly affects the ability to upgrade products. Measured as a percentage of GDP in R&D spending. Level of financial development（M2_GDP）. Financial development provides financial support for technological upgrading. Measured as a ratio of broad money supply to GDP.

3.2 Data sources and descriptive statistics

The year 2015 holds significant research value due to the acceleration of RMB internationalization and the advancement of RCEP negotiations. This study selects trade data from RCEP member countries to China for the period 2015–2022. Among the 15 RCEP countries, Myanmar and Laos were excluded due to severe data gaps. Thirteen countries were initially retained; however, due to partial data unavailability in some countries, the final sample comprises 12 countries. These RCEP partner countries are: Australia, Brunei, Cambodia, Indonesia, Japan, Republic of Korea, Malaysia, New Zealand, the Philippines, Singapore, Vietnam, and Thailand. Data on ExportQuality were sourced from the World Bank.RMB_Intl data were directly obtained from the monthly figures published in the BIS database of the People's Bank of China and aggregated to an annual frequency. Data for ln_GDP and ln_PerGDP originate from the World Bank's World Development Indicators (WDI). Raw data related to TradeOpenness were sourced from the WTO database. Data for exchange rate volatility were sourced from Bloomberg Terminal. Raw data for RD_Intensitywere sourced from UNESCO. Data forM2_GDPwere sourced from the World Bank WDI and the IMF International Financial Statistics (IFS).

Table 4 The regression results were analyzed for two-path joint effects

Variables	(1) ExportQuality
RMB_Intl	0.0312
	(1.58)
TechUpgrade	0.2886***
	(2.78)
FinDeepening	0.1624***
	(1.79)

t statistics in parentheses* p < 0.1, ** p < 0.05, *** p < 0.01

Table 5 Baseline regression results for technology spillover paths

Variables	(1) TechUpgrade	(2) ExportQuality
RMB_Intl	0.1285*	0.0358*
	(3.20)	(1.65)
TechUpgrade		0.3053*
		(2.88)
Mediator effect test		
Sobel Z statistic	2.71**	(p=0.007)
Proportion of indirect effects	61.2%	

t statistics in parentheses* p < 0.1, ** p < 0.05, *** p < 0.01

Missing values were partially addressed using linear interpolation. Continuous variables were winsorized at the 1st and 99th percentiles. With the exception of dummy variables and indices, continuous variables were either transformed using the natural logarithm or retained in their original form. The final dataset contains a total of 96 observations. Descriptive statistics for the variables are presented in Table 1.

4 Empirical analysis

4.1 Benchmark regression analysis

This study employs a fixed-effects model to control for country fixed effects μ_i and time fixed effects γ_t, estimated using Driscoll-Kraay standard errors. Initially disregarding the heterogeneity interaction term (with $HighIncome_i$ defaulted to 1),

the baseline regression results are presented in Table 2. Columns (1) and (2) report results for the export quality dependent variable without and with control variables, respectively.

Table 2 indicates that the coefficient of the core explanatory variable is statistically significant at the 10% level. The coefficient for RMB internationalization (0.0476) implies that its advancement enhances the quality of exports from RCEP countries to China. Increased use of RMB settlement in cross-border trade effectively reduces transaction costs for firms in RCEP countries trading with China, enabling greater resource allocation toward product quality improvement.

Per capita income and trade openness exhibit significantly positive coefficients, indicating that higher national income and greater trade openness promote quality upgrading. Consumers in high-income countries demand higher-quality products, incentivizing firms to elevate quality standards. Countries with high trade openness facilitate product upgrading through technology adoption to enhance international competitiveness, thereby improving export quality.

Exchange rate volatility shows a significantly negative coefficient, suppressing quality upgrading. Significant exchange rate fluctuations create uncertainty for exporters in RCEP countries: (1) potential erosion of expected profits may impair capital turnover and production expansion capacity; (2) difficulties in accurate cost calculation and pricing deter resource investments in quality enhancement.

Economic scale and R&D intensity are statistically insignificant, suggesting ambiguous effects on quality. Large economies' diversified industrial structures may encompass substantial low value-added sectors, while vast domestic markets reduce firms' motivation for quality upgrading. Furthermore, ineffective R&D direction or inadequate commercialization mechanisms may hinder export quality improvement. These results support Research Hypothesis H1.

4.2 Robustness test

In robustness checks, this study employs one approach—replacing the dependent variable—to verify the appropriateness of model specification and variable selection. The Complexity Index of Manufactured Products was substituted as a proxy for export quality in the regression. As shown in Table 3, the core explanatory variable maintains consistent coefficient signs and statistical significance, further confirming the robustness of the baseline findings.

4.3 Mechanism verification

RMB internationalization facilitates firms' access to technological resources and enhances export product quality, while also broadening financing channels and reducing costs to increase R&D funding. Consequently, this study examines the technology spillover and financial deepening pathways using mediation effect models. Control variables remain consistent with the main effects model.

Technology Spillover Pathway (Table 4): Coefficients in columns (1) and (2) are positive and statistically significant at the 10% level. RMB internationalization promotes technological upgrading, which in turn significantly improves export quality. The mediation effect is confirmed as the Z-statistic is significant at the 5% level, indicating that technological upgrading is a significant mediator between RMB internationalization and export quality. RMB internationalization indirectly enhances export quality through technological upgrading.

Financial Deepening Pathway (Table 5): Coefficients in columns (1) and (2) are positive and significant at the 10% level. Expanded international use of RMB stimulates financial system dynamism and resource allocation efficiency. Higher RMB internationalization correlates with greater export quality improvement. The mediation effect is confirmed as the Z-statistic is significant at the 10% level, establishing financial deepening as a significant mediator RMB internationalization indirectly improves export quality via financial deepening.

Joint Pathway Analysis (Table 6): RMB internationalization coefficient is statistically insignificant. Technological upgrading and financial deepening coefficients are positive and significant at 1% level. Both pathways independently promote export quality, indicating RMB internationalization primarily influences export quality through these indirect channels. Results support Research Hypothesis H2.

5 Conclusions of the study

Based on the TWFE model and mechanism test model, this study uses the panel data of RCEP partner countries to analyze the trade panel data of China's export products from 2016 to 2022 to explore the impact of RMB internationalization on the export quality of trade within the RCEP region. The conclusions of the study are as follows:

First, the internationalization of the RMB reduces the transaction costs of RCEP countries' exports to China and enhances exchange rate stability. After the cost and risk of the enterprise are reduced, resources are invested in production technology and quality control to improve the quality of exports. In terms of international trade settlement, more RCEP countries use RMB for settlement, reducing currency exchange and reducing transaction costs for enterprises.

At the same time, RMB-denominated settlement can avoid the risk of large fluctuations in the exchange rate to a certain extent and enhance the stability of the exchange rate. After reducing the cost of enterprises and reducing the exchange rate risk, they can invest more resources in the improvement of production technology and product quality control, so as to significantly improve the export quality of RCEP countries to China.

Second, the internationalization of the RMB can improve the quality of exports by promoting technological upgrading and financial deepening. On the path of technology spillover, it promotes enterprises to obtain technical resources to achieve upgrading, drives the improvement of export quality, and plays a significant intermediary role in technological upgrading. In the path of financial deepening, the internationalization of RMB promotes the development of the financial system, broadens corporate financing, and is conducive to improving product quality, and financial deepening also plays a significant intermediary role. The joint analysis of the two paths shows that the internationalization of RMB mostly indirectly affects the export quality through these two paths, and the direct promotion effect is not obvious.

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References

[1] Wei J, Pak Y H. Enhancing Trade Settlement: A Meta-Analysis and VAR Model Approach to RMB Activation in International Transactions[J]. Journal of Korea Trade(JKT),2023,27(6):81-98.

[2] Zucker-Marques M, Da Silva P P. The role of institutions: A cross-country analysis of renminbi trading in foreign exchange markets[J]. China & World Economy,2022,30(3):42-74.

[3] Liu Fang. Research on the Trade Effects of RMB Internationalization in Southeast Asia [J]. Economic Forum,2025(1):107-119.

[4] Qi Tong. Judgment on the "De - dollarization" Trend and Countermeasures and Suggestions for RMB Internationalization [J]. People's Tribune, 2023(18):82-85.

[5] Dai Jinping, Zhen Xiaoyu. Can RMB Internationalization Promote the Technological Innovation of Chinese Enterprises? [J]. World Economy Studies,2022(9):3-20+135.

[6] Wang Wei, Chen Zhifen. Trade Costs, Institutional Quality and China's Agricultural Product Trade ——An Empirical Analysis Based on RCEP Partner Countries [J]. China Circulation Economy,2024,38(12):82-95.

[7] Yu Bo, Guan Chao, Dai Shukang. RMB Internationalization, Exchange Rate Fluctuation and Bilateral Trade ——An Analysis Based on the Panel Threshold Model of "Belt and Road" Countries [J]. Statistics & InformationForum,2020,35(7):57-65.