Research on the Impact of the Belt and Road Initiative on the Internationalization of Renminbi

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Abstract. The Belt and Road Initiative, central to China's broad opening-up strategy, offers a key opportunity for RMB internationalization. Using panel data from 47 countries (2009-2022) and the difference-in-differences method, the study reveals that the initiative significantly boosts RMB internationalization. The paper suggests deepening Belt and Road cooperation to further advance RMB internationalization.

Keywords: "Belt and Road" Initiative, RMB internationalization, policy effect assessment, differential method, Differences-in-Differences.

1 Introduction

Since the establishment of offshore RMB accounts in 2004, the RMB's internationalization has advanced significantly. Key milestones include the 2009 cross-border settlement pilot, RMB's inclusion in the SDR basket, and becoming the fourth largest payment currency. The 2015 Belt and Road Initiative further boosted RMB demand and reserve function. [1] The Belt and Road involves more than 140 countries, and Beijing has clarified the goals and methods of the Belt and Road, including promoting the economic development of the participating countries, and all projects are carried out in accordance with the "five priority cooperation projects" of the mutually beneficial partnership between China and the Belt and Road participating countries. [2][3]In the context of the current era of continuing to promote high-level opening-up and build a community with a shared future for mankind, will the Belt and Road Initiative, as a major national strategic deployment, help promote the internationalization of the RMB? How to promote RMB internationalization? It has important theoretical value and practical significance to clarify the above problems.

2 Research Design

2.1 Sample Selection and Data Sources

This paper uses annual data from 47 out of 64 Belt and Road countries between 2009 and 2022. It divides them into an experimental group of 19 Belt and Road countries and

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a control group of 28 countries not part of the initiative. As shown in Table 1.

To avoid the effects of the 2008 financial crisis, this paper uses data from 2009 to 2022, sourced from the World Bank, BIS, IMF, and UN Comtrade.

Table 1. National selection

group	country
Experimental group	United Arab Emirates, Bulgaria, Bahrain, Czech Republic, Hungary, India, Nicene India, Israel, Malaysia, Philippines, Poland, Romania, Russia, Saudi Arabia, Singapore, Slovakia, Slovenia, Thailand, Turkey
control group	Australia, Austria, Belgium, Brazil, Canada, Switzerland, Chile, Colombia, Germany, Denmark, Spain, Finland, France, United Kingdom, Greece, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, Netherlands, Norway, New Zealand, Peru, Portugal, Sweden, United States

2.2 Measuring the Internationalization of the RMB

Based on the studies of Lin, L., Wang, S. (2016)[4] and Peng, H., Tan, X., (2017)[5], this paper uses three primary and five secondary indicators to measure currency internationalization. The formula is as follows:

$$Index_{RMB} = \sum \lambda_{i,t} x_{i,t} \times 100 \quad (1)$$

Among them, $\lambda_{i,t}$ represents the weight, $x_{i,t}$is an indicator of currency internationalization at all levels. All indicators are percentages, with a maximum index value of 100, indicating the RMB as the world's sole currency. The first tier gives equal weight to the three functions of money (trading, reserve, investment and payment). For secondary indicators, it uses foreign exchange trading volume for trading, IMF reserve currency proportion for reserve, and interest rate derivatives and international bond data for investment/payment. The investment/payment function is weighted as follows: interest rate derivatives (1/15), international bond outstanding (7/15), and international bond issuance (7/15), then multiplied weight (1/3). Finally, the level of currency internationalization is calculated. Missing RMB internationalization data in the IMF COFER database is estimated based on reserve proportions from Yang, C., 's (2018)[6] method: 10% for 2000, 20% for 2001-2012, and 30% for 2013-2015.Annual data is converted to quarterly data to ensure consistency.

2.3 Selection and Description of Variables

Explained Variables. Based on the above research, the difference between the internationalization index of each country's currency and the internationalization index of RMB is calculated, and the internationalization level gap is formed as the explained variable.

Core Explanatory Variable. This paper chooses the cross term (DID) of the time dummy variable (post) of the Belt and Road Initiative and the policy dummy variable (treat) of the Belt and Road Initiative as the core explanatory variable. The coefficient β_3 of DID is a differential estimator, representing the positive and negative effects of the initiative.

Control Variable. Economic power is measured by GDP per capita (lngdp) and global GDP share (gdp). Trade and investment scale are assessed by foreign trade surplus share (tsg) and net outward FDI (ofdi). Take a page out of Songke's book[7], currency stability is indicated by inflation (inf), and institutional confidence by military expenditure to GDP (ml) and government quality (gov). Economic freedom is gauged by the Economic Freedom Index (ecofree). The lagged Currency Internationalization Index (lshare) accounts for inertia.

2.4 Measurement Model Setting

In order to test the policy effect, the benchmark regression model is set as follows:

$$\mathrm{Share}_{i,t} = \beta_0 + \beta_1 \mathrm{T}_{i,t} + \beta_2 \mathrm{Treat}_{i,t} + \beta_3 \mathrm{DID}_{i,t} + \beta_4 \sum \mathrm{Control}_{i,t} + \varepsilon_{i,t} \quad (2)$$

In this study,$\mathrm{Share}_{i,t}$ is the degree of RMB internationalization. $\mathrm{Treat}_{i,t}$ is a policy dummy variable, $\mathrm{Treat}_{i,t}$ is a policy dummy variable: 1 for countries along the Belt and Road Initiative (BRI), and 0 for those not along the BRI, $\mathrm{T}_{i,t}$ is a time dummy variable: 1 for data after the policy implementation in 2015, and 0 before. $\mathrm{DID}_{i,t}$ is the interaction term between the policy and time dummy variables, equal to 1 for BRI countries after 2015 and 0 otherwise. The policy implementation year 2015 is the policy impact year. The analysis covers data from 2009 to 2022. Missing values are filled using interpolation and averaging methods. To mitigate outlier effects, control variables are trimmed at the 1% level. $\varepsilon_{i,t}$ is the random disturbance term,$\beta_0$is the intercept term.

3 Analysis of Empirical Results

3.1 Parallel Trend Test

As shown in Figure 1: The parallel trend test indicates that before the policy, RMB internationalization trends were similar for both groups, with the 95% confidence interval including 0. After the policy's implementation, the interval no longer included 0, showing a significant trend difference. This suggests that changes in RMB internationalization are attributed to the "Belt and Road" policy rather than other systemic factors.

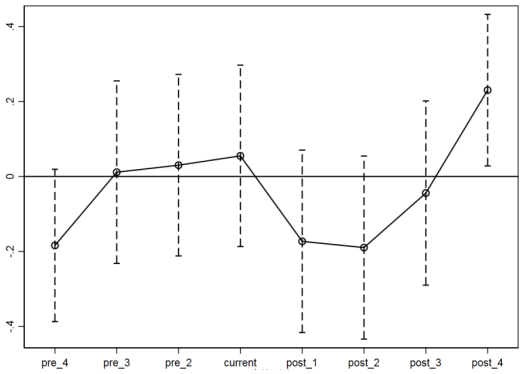

Fig. 1. Parallel trend test

3.2 Analysis of Benchmark Regression Results

Table 2 shows the baseline regression results: Without fixed effects (column (1)): The coefficient for the Belt and Road Initiative is 0.5143, significant at the 1% level, indicating a strong positive impact on RMB internationalization. With individual fixed effects (column (2)): The coefficient is 0.2684, also significant, reinforcing the positive effect of the initiative. With both individual and time fixed effects (column (3)): The coefficient is 0.1252, significant, suggesting the Belt and Road Initiative significantly boosts RMB internationalization. The results of all control variables were in line with actual expectations. These estimates suggest that the Belt and Road Initiative could significantly boost the internationalization of the RMB.

Table 2. Baseline regression

	(1)	(2)	(3)
VARIABLES	Share	Share	Share
DID	0.5143***	0.2684***	0.1252***
	(7.9024)	(4.9018)	(2.6040)
lngdp	-0.1970***	0.3534	-0.3292
	(-3.5595)	(0.9591)	(-1.1166)
gdp	0.0201**	-0.1302***	1.0070***
	(2.3346)	(-4.1639)	(6.9089)
tsg	0.1956	0.0480	-0.1263
	(0.6599)	(0.1172)	(-0.4334)
ofdi	-2.4067***	-0.4802	0.3609
	(-5.0890)	(-1.1895)	(0.6234)
inf	0.0253***	0.0203**	0.0022
	(2.9855)	(2.5111)	(0.2637)
ml	0.0520***	-0.2658***	-0.1102**
	(2.6851)	(-3.5436)	(-2.5281)
gov	-0.1051	-0.2750	-0.1118

	(-1.3418)	(-1.4836)	(-0.7425)
ecofree	0.0142***	-0.0128**	0.0006
	(3.2445)	(-2.0689)	(0.0818)
lshare	0.9884***	0.8087***	0.6289***
	(116.5806)	(12.3182)	(10.3117)
Constant	0.6099***	-0.6738	15.2065***
	(4.8729)	(-0.8759)	(7.0402)
Individual fixed	NO	YES	YES
Time fixed	NO	NO	YES
N	658	658	658
R2	0.976	0.991	0.994

3.3 Robustness Test

To ensure the robustness of the baseline results, the paper conducts several tests. As shown in Table 3: First, referring to the research of Wang, L., Zhu, L., (2019)[8], using PSM-DID and Logit model covariates, the tests (columns (1) and (2)) confirm that the Belt and Road Initiative significantly promotes RMB internationalization. Second, adding previous policy data to the baseline regression (Column (3)) still shows a significant impact of the policy on RMB internationalization. Third, excluding data from the epidemic year (Column (4)) confirms that the Belt and Road Initiative continues to boost RMB internationalization significantly.

Table 3. Robustness test

	(1)	(2)	(3)	(4)
VARIABLES	Share	Share	Share	Share
DID	0.0985**	0.1196***	0.1457***	0.1186**
	(2.4990)	(2.9312)	(2.7702)	(2.3380)
			0.1050	
			(1.5693)	
Constant	8.7628***	10.7939***	15.2491***	14.2461***
	(4.6757)	(6.7230)	(7.0782)	(6.3908)
Individual fixed	YES	YES	YES	YES
Time fixed	YES	YES	YES	YES
N	588	607	658	611
R2	0.993	0.993	0.994	0.994

4 Conclusions and Recommendations

4.1 Research Conclusions

Based on the data of 47 countries from 2009 to 2022, this paper uses the difference-difference method for analysis, and verifies the reliability of the conclusions through the robustness test. The empirical results show that the "Belt and Road" initi-

ative has significantly promoted the development of the internationalization of RMB. Due to the strategic synergy between the construction of the "Belt and Road" and the internationalization of RMB, the promotion of the "Belt and Road" construction will create important strategic opportunities and breakthrough paths for the internationalization of RMB.

4.2 Policy Recommendations

Based on the above research conclusions, the following policy recommendations are made: To promote the internationalization of RMB under the "Belt and Road" vision, it is necessary to accelerate the internationalization of the financial system through the construction of financial facilities, restructure the global industrial chain and value chain to promote balanced development, and inject new vitality into the world economy with unimpeded trade. [9][10] More specifically, first, establish a RMB pricing market and create an international pricing system with RMB-denominated commodities. Second, optimize the investment environment in Belt and Road countries, reduce risks, enhance returns, attract more RMB inflows, and promote RMB settlement in trade. Third, open financial markets, support enterprises and financial institutions in global expansion, strengthen capital market connections, and ensure project stability to boost RMB's international trust and competitiveness.

References

1. Wang W., A 10-year review of financial cooperation under the Belt and Road Initiative. China Finance, 2023, (13): 29-31.
2. Caskey Gregory W., The political economy of China's Belt and Road Initiative [J]. Journal of Institutional Economics, 2024, 20 (31): e31-e31.
3. Arkorful E V., Basiru I., Kwade P C., et al. China’s One-Belt-One-Road (OBOR) Policy Initiative: The Internationalization of the Renminbi [J]. International Affairs and Global Strategy, 2018, 65:1-10.
4. Lin, L., Wang, S., Empirical analysis of influencing factors of RMB internationalization in the process of "One Belt, One Road" [J]. International Finance Research, 2016(02):75-83.
5. Peng, H., Tan, X., Research on RMB Internationalization: Degree measurement and influencing factors analysis [J]. Economic Research Journal, 2017(2):125-139.
6. Yang, C., Research on measurement method of RMB internationalization based on cluster principal component analysis [J]. Contemporary Finance Research, 2018 (05):57-67.
7. Song K., Hou J., Xia L., et al. The Belt and Road Initiative and RMB Internationalization: Empirical evidence from RMB real transaction data.] Management World, 2022, 38 (09): 49-67.
8. Wang, L., Zhu, L., Trade openness and fiscal expenditure cyclicality: evidence from PSM-DID natural experiment [J]. Economic Trends, 2019(08):40-55.
9. Li Z., Coordinated Development of RMB Internationalization from the perspective of "One Belt and One Road" [J]. Fujian Finance, 2024, (02): 8-14.
10. Lu C., Yang L., Yuan Y., High-quality Co-construction of the "Belt and Road" Steadily promotes the internationalization of RMB: Based on the perspective of Building a new dual-cycle development pattern [J]. International Trade, 2022, (05): 89-96.