RMB use as an international currency: An empirical exploration of economic, financial and institutional factors

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Abstract

- We aim to explore the key drivers of foreign country's volume of RMB transactions in both spot and derivative markets, which should be inclusive of a) merchandize trade settlement and b) investment-related behaviors (e.g., interest rate hedging).

- Our results show that only those **real factors**, which affect a country's demand for RMB (e.g., trade and investment) or availability of RMB fund (e.g., bilateral swap lines and forex reserves), have significant impact on the RMB transaction volume.

- The other variables, which have no direct association or contribution to RMB transactions (e.g., membership status of the Belt and Road Initiative, bilateral loans from China) turn out to be relatively muted in the regression results.

- Overall, we found that the RMB's international use is more related to the actual demand for RMB transactions and the access to offshore RMB funds, while the diplomatic effort by China, such as the promotion of BRI and development loans to low-income countries, may not be as rewarding as expected for the RMB internationalization.

Motivation

- The RMB internationalization has been a key strategy of the Chinese government and has seen more achievements in recent years, especially since 2022 as more countries are turning to the RMB in cross-border transactions due to their drawing-down of dollar reserves amid the shocks of energy price surge and the Fed's rate hikes.

- Although the Chinese government has implemented more than a few policy measures in the past decade (such as launching the BRI, signing BSL agreements, and setting up QFII), their effect on the RMB internationalization remains a puzzle.

- To offer a panorama of the key drivers of RMB's international use and to examine whether the Chinese government's policy efforts work, we conduct an empirical study on a data panel of 53 countries with observations from 5 years.

Methodology – Variables (1/2)

- **Dependent variable:**

  Turnover of RMB spot and derivative transactions, from the Bank for International Settlements' Triennial Survey which collects the OTC FX trade turnover in April of each surveyed year. Compared to the widely used SWIFT data of RMB payment share,

  1) This data is inclusive of **a) merchandize trade settlement** and **b) investment-related behaviors** (e.g., interest rate hedging), so it is more comprehensive;

  2) This data is provided with raw value figures, which allows more discretion in modelling strategy

- **Independent variables:**

1. Economic variables – **trade in goods** with China, **direct investment** with China
2. Institutional variables – **BSL** amount, number of **QFII**, status of **BRI** member, **neighboring** countries' RMB transaction turnover
3. External financing variables – **loans** from China, **forex reserves**, **SDR** quota at the IMF

Methodology – Variables (2/2)

	Variable	Definition	Unit	Obs
Dependent variable	RMB share	RMB's share in a country's total forex trade turnover	%	256
	RMB value	A country's RMB trade turnover	USD million	256
Economic variables	Exports	A country's exports to China	USD million	265
	Imports	A country's imports from China	USD million	265
	Outward FDI	A country's direct investment outflow to China	USD million	155
	Inward FDI	A country's direct investment inflow from China	USD million	155
Institutional factors	BSL	A country's bilateral swap lines with China as a share of the country's GDP	% of GDP	265
	QFII	The number of a country's Qualified Foreign Institutional Investors	Number	265
	BRI	Whether a country is in BRI	0, 1	265
	Neighbor	The average RMB turnover share of a country's all neighbouring countries by land or sea	%	242
External financing factors	Loans	A country's loans and trade credits borrowed from China	% of GDP	212
	Forex reserves	A country's liquid forex reserves	% of GDP	250
	SDR	A country's SDR quota at the IMF	% of GDP	245

Methodology – Equation (1/2)

Formula:

$$Y_{i,t} = \beta_0 + X_{i,t}^T \times \overrightarrow{\beta_1} + \phi_i + \epsilon_{i,t}$$

$Y_{i,t}$: the dependent variable, either the value or share of RMB transaction turnover

$X_{i,t}^T$: the transposed vector of objected variables, either economic, institutional or external financing

ϕ_i: the cross-sectional fixed effect term, if applies

$\epsilon_{i,t}$: the error term

Methodology – Equation (2/2)

Notes:

1. The baseline model is for RMB transaction share. By using share, we rule out a) the effect of difference in economies' size and b) the inherent increase of forex trade turnover as a result of economic growth.

2. However, we used RMB transaction value for the economic factor model. This is because the inward and outward FDI and the host country's imports manifest very high correlation in the form of percentage of GDP which causes multi-collinearity. We thus use country fixed effect to control for the bias a) specified in Note 1.

3. Considering the high correlation between economic variables and some other factors, we run regressions for them separately. This should not affect the robustness of the results since our goal is to examine the significance rather than to determine the coefficients.

Results (1/4)

		Specification		
Category	Variables	(1)	(2)	(3)
Economic factors	Exports	-0.039		
	Imports	0.202***		
	Inward FDI	0.399***		
	Outward FDI	1.771***		
Institutional factors	BSL		0.232***	
	QFII		0.105***	
	BRI		0.061	
	Neighbor		0.141*	
External financing factors	Loans			0.466
	Forex Reserves			0.151***
	SDR			0.046**

Significance	
p<0.1	*
p<0.05	**
p<0.01	***

Results (2/4)

Findings:

1. Economic variables are all significant except the host country's exports to China. The difference between exports and imports may point to the asymmetry in the use of RMB which probably tilts to cross-border payment rather than receipt for foreign countries.

2. Regarding the non-economic factors, it is worth noticing that the signed bilateral swap line, the QFII, and forex reserves and SDR quotas have significant impact on the international use of RMB, while the BRI membership and China's financial assistance (bilateral loans) have not.

3. This may shed light on the assumption that **real factors**, i.e., factors that affect a country's demand for RMB (e.g., trade and investment) or availability of RMB fund (e.g., bilateral swap lines, QFII, and forex reserves), are the key drivers of the RMB transaction volume, while the other factors which are more related to China's image and soft power, i.e., promotion of BRI and development loans to LICs, are less helpful to the internationalization of RMB.

Results (3/4)

Robustness check:

1. To examine our assumption about real factors, we introduce another regression model for robustness-checking.

2. As we had decided to run regressions separately to avoid multi-collinearity, we now adopt a different strategy by adding up all variables with same units in the same category, i.e., real or not.

3. For the variables with unique units, we keep them in the formula as is.

Results (4/4)

		Specification
Category	Variables	(4)
Real factors	QFII (number)	0.076***
	Other real factors (% of GDP)	0.028***
Other factors	BRI (0 or 1)	-0.129
	Loans (% of GDP)	3.749

Significance	
$p<0.1$	*
$p<0.05$	**
$p<0.01$	***

Conclusion

1. The RMB internationalization has witnessed massive progress in the past decade, and our empirical model suggests that the key drivers are the real factors that either stimulate the demand for RMB transactions or expand the source of RMB fund.

2. The Chinese government has implemented quite a few policy measures in the past decade, but not all of them are very helpful to the RMB internationalization. Policy efforts in oversea development assistance have turned out to be relatively ineffective.

3. Our model and results may provide a lesson for the policy makers that future policies should concentrate more on the real side. Meaning, stimulating the demand for RMB transactions (by strengthening the economic ties) and expanding the offshore RMB fund pool (by increasing the supply of offshore RMB) will be key.