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Renminbi Internationalization in the New Normal: Progress, Determinants and Policy Discussions

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Abstract

In the present paper we explore the internationalization of the renminbi with reference to the experiences of other monetary powers, and discuss its determinants, prospects and implications for China's development in the "new normal." Specifically, after summarizing the major progress made thus far, we conduct a regression analysis, showing that economic size and financial conditions are significant determinants of the international currency status, while inertia and other unobserved factors also play important roles. These empirical findings enable us to undertake a scenario analysis focusing on the renminbi's potential to become a global reserve currency. Based on this quantitative research, we then revisit China's policy initiatives designed to promote its currency overseas. In our view, the internationalization of the renminbi, along with financial deepening and liberalization, should be regarded as a means to achieve China's goal of reaching a more sustainable and balanced model of development.

Key words: financial development, international currency, panel data, renminbi
JEL codes: F33, G15, O16

I. Introduction

In the wake of the global financial crisis of 2008 and the subsequent Great Recession, debate about reshaping the international monetary architecture, especially about the emergence of a multi-currency system, has been reignited. It is in this context that China, as an increasingly important player both in international trade and financial

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markets, has continued to promote the international presence of its national currency, the renminbi (RMB, or Chinese yuan). Since recently, China has been transitioning to a new period of economic and social development, sometimes called the "new normal," in which the country's actual output growth and long-run potential are both slowing down.[1] The economy as a whole, however, shows signs of becoming more sustainable and balanced due to a series of structural adjustments in favor of domestic demand, innovation and the service sector. Meanwhile, noticeable changes have been reflected in China's financial conditions, such as the slowdown and even the reversal of China's accumulation of foreign exchange reserves, the ongoing capital account liberalization, the further development of multi-layered capital markets, the inclusion of the yuan in the Special Drawing Rights (SDR) basket, the end of the one-way appreciation expectation of the yuan exchange rate against the dollar, and more frequent two-way cross-border capital flows. All these new trends are emerging at the same time as the focus of China's strategy of globalization has moved from expanding trade and attracting foreign investment to deeper and multi-dimensional integration into the global economic and financial system. In this context, the internationalization of the RMB, previously viewed as a short-term policy response to promote trade and reduce the dependence on assets denominated in foreign currencies, now serves as a major component of China's long-term strategies geared toward financial sophistication, industrial upgrading, sustainable development and structural transformation.

Bearing in mind elementary monetary economics, the internationalization of the RMB implies that the currency will be more widely used in cross-border trade settlement and invoicing as well as financial transactions, and held in currency reserves. As suggested by conventional wisdom, greater monetary power would help China to curb foreign exchange risk, deal with currency mismatching in external financing, gain seignorage, and exploit competitive advantages of China's financial institutions vis-à-vis foreign competitors. Besides these benefits, the RMB internationalization might also "add momentum to reforms" (Ma et al., 2012). Indeed, it is widely argued that China's financial system suffers from serious problems, including a lack of non-state and foreign competitors, excessive regulations and imperfect market structures (see Allen et al., 2005 and Song et al., 2011). In this regard, the benefit from the deepening of financial reforms could be a primary motivating factor for China to promote the international use of its currency.

Nonetheless, there are heavy costs associated with this strategy. Because the

[1]As a matter of fact, China's GDP slowed to 7.3 percent in 2014, and further down to 6.9 percent in 2015, whereas the average growth rate over 1978–2013 was 9.9 percent.

convertibility of the national currency, free cross-border capital mobility and opening up of domestic financial markets are essentially intrinsic to an international currency, the possible emergence of the RMB on the global stage is likely to expose China's economy, especially its immature financial sector, to a significant amount of external risk. At this juncture, painful lessons could be learned from the 1997–1998 Asian financial turmoil, especially from the collapse of the Thai baht, in which the uncontrolled speculative capital flows played a role. Indeed, to some extent, the restrictions on capital movement and the partial convertibility of the RMB contributed to China weathering the Asian crisis and even the 2008 financial tsunami rather well. From a theoretical perspective, the RMB internationalization and the associated capital account liberalization might also seriously challenge the independence of China's monetary policy, as suggested through the well-known "impossible trinity." Combining all these factors together, the RMB internationalization requires that China strike a balance between short-term concerns about financial instability and the effectiveness of monetary policies, and the long-term goal of enhancing the country's status in the global financial and economic system.

The implications of the expansion of the RMB for the world are also mixed. The reshaping of the international monetary system in favor of China will definitely weaken the roles of the existing monetary powers, especially the USA and the eurozone. Such a trend, however, appears to benefit many economic entities that are increasingly linked with China in terms of trade and investment, but whose currencies are basically used domestically. Consequently, most trade and investment deals between these economies and China are still invoiced and settled in a third party's currency, the US dollar. This brings considerable transaction costs and exchange rate risk, and, therefore, other things being equal, hinders the flow of trade. In addition, from a global perspective, the expansion of the Chinese currency also contributes to the transition from the current dollar-dominated monetary system to a multipolar world. It is believed that this gradual change can help adjust the substantial imbalance between supply and demand of reserve assets, which represents a major weakness of today's system, and triggered, to some extent, the 2008 crisis (Farhi et al., 2011).

Given these multifaceted implications, the internationalization of the RMB has been at the center of recent academic and policy debate. Few studies relate, however, the case of the RMB to more general experiences from other monetary powers. Consequently, both discussions on the prospects of the Chinese currency and the related policies often lack solid empirical foundation. Another issue of importance, the interaction between the internationalization of the RMB and recent trends and features associated with the new normal of China's economy, has attracted little attention in the current theoretical and policy discussions. As an attempt to fill these gaps in the literature, our paper proposes

an evidence-based policy analysis on the emergence of the RMB overseas, with a focus on its relationship with China's new economic and financial landscapes.

The rest of the paper proceeds as follows. Section II provides an overview of the major progress and achievements in relation to the RMB internationalization to date. Section III examines the empirical determinants of international currency status and offers a scenario analysis of the potential emergence of the Chinese currency in a tri-polar international monetary system. Section IV addresses China's policy initiatives designed to promote the RMB in global trade and finance. Section V summarizes the main findings of the paper and draws some concluding remarks.

II. Renminbi Internationalization Thus Far

There is no doubt that remarkable progress has been made in the internationalization of the RMB since its inception in the aftermath of the 2008 crisis. This section briefly presents four interrelated aspects of this process, which mark the multidimensional emergence of the RMB overseas.

One of the first significant steps toward China's monetary ambition was the introduction of the cross-border trade RMB settlement pilot scheme in July 2009. This initiative began in Shanghai Municipality and some cities in Guangdong Province, and later was extended to the rest of China. According to the People's Bank of China (PBOC), by the end of 2011, the accumulated total volume of trade settled in RMB reached 2.08 trillion yuan, roughly tripling in size compared to the previous year. Since March 2012, RMB trade settlement has been applied to all Chinese import and export enterprises, as well as to all offshore trading partners. That move marked the end of the "pilot" program and further boosted the use of the RMB in the following years. As shown in Table 1, the volume of settlement increased to 6.55 trillion yuan in 2014, and accounted for more than 20 percent of China's global trade volume. This increase in volume is also associated with a noticeable structural change: At the very beginning of the initiative, because of the tendency for yuan appreciation and the significant spread

Table 1. RMB Cross-border Trade Settlement

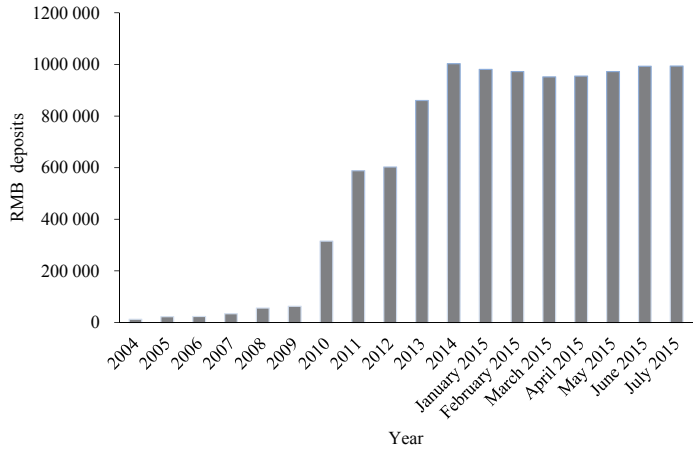
Year/Items	RMB trade settlement (RMBtn)	Of which, merchandise trade (RMBtn)	Percentage in total merchandise trade
2011	2.08	1.56	6.6
2012	2.94	2.06	8.4
2013	4.63	3.02	11.7
2014	6.55	5.90	22.3

Source: *Financial Statistical Report* of the People's Bank of China.

between the onshore and offshore RMB, the import settlement largely outpaced export settlement. The former accounted for approximately 80–90 percent of the total RMB trade settlement. The PBOC unwillingly accumulated an even larger stockpile of foreign reserves, and, consequently, the scheme of promoting RMB internationalization through this channel was heavily criticized (see Zhang, 2011). This embarrassment, however, did not last long. In fact, since late 2011, as the above factors disappeared, the import and export RMB settlements have become more balanced (Yu, 2014).

The second aspect is the emergence of offshore RMB business. Although Chinese mainland allowed Hong Kong residents to open RMB deposit accounts in local banks as far back as 2004, over the first 6 years or so, the RMB deposits grew at a very slow pace and remained less than 63 billion in 2009. As shown in Figure 1, the dramatic build-up of RMB deposits in Hong Kong started in 2010, when a series of measures aimed at broadening the scope for RMB business had been introduced. It is also important to note that the RMB deposits have shown signs of stagnation since 2014. The recent yuan depreciation against the US dollar, and the shrinking spread between onshore–offshore RMB exchange rates are, once again, commonly construed as two major reasons for this new trend (see Yu, 2014). Meanwhile, as the RMB deposits have accumulated in the offshore markets, more channels for cross-border investments have been being created, including the RMB bonds market, the Qualified Domestic Institutional Investor (QDII), the Qualified Foreign Institutional Investor (QFII) and the Renminbi Qualified Foreign Institutional Investor (RQFII), as well as the newly approved Shanghai–Hong Kong Stock Connect program. Two other much anticipated programs, the Qualified Domestic Individual Investor (QDII2) and Shenzhen–Hong Kong Stock Connect, are

Figure 1. RMB Deposits in Hong Kong (RMBm)



Source: *Monthly Statistical Bulletin* of Hong Kong Monetary Authority.

also integrated into the recent policy agenda (Zhou, 2015). In addition, the geographical reach of the offshore markets has been expanded dramatically: although Hong Kong currently retains its position as the premier offshore RMB business center, as of January 2015, 13 countries and regions had joined Hong Kong to establish offshore RMB trading hubs, including Canada (Toronto), Australia (Sydney), the UK (London), France (Paris) and Germany (Frankfurt).

The third aspect is the opening up of the capital account. In fact, being critical to enhancing the RMB's profile overseas, the opening up of the capital account commenced long before the 2008 financial crisis, and has become one of the top policy priorities according to China's 12th Five-Year Plan (2011–2015) and the Third Plenum of the 18th Communist Party of China Central Committee. In practice, the capital account liberalization in China follows a gradualist, step-by-step approach, and has progressed rather effectively. In light of the standards proposed by the International Monetary Fund (IMF, 2011; PBOC Research Team, 2012a), although no item in China's capital account is fully convertible to date, most of them have achieved either partial convertibility (22 out of 40 items) or basic convertibility (14 out of 40 items). The remaining restrictions are mostly applied to short-term capital flows and individual transactions, while there are encouraging signs of improvement over time. For instance, the PBOC has recently relaxed controls over the capital account and over raising funds overseas for the companies and banks registered in the Shanghai Pilot Free Trade Zone (FTZ), which was set up in 2013. Further steps will be made in three more FTZ, which were approved in early 2015, in Fujian, Tianjin and, most notably, Guangdong. The latter will serve as an another important testing ground for the capital account liberalization and the RMB financing business in association with its neighboring cities, Hong Kong and Macao Special Administrative Region. At the same time, the PBOC has stepped up its efforts to establish a more market-oriented exchange rate regime by allowing wider fluctuations in the RMB/dollar rate from March 2014, and introducing a new quotation mechanism of the central parity RMB against the US dollar in August 2015. Clearly, both are welcome moves toward attaining a more flexible yuan,[2] thereby paving the way for further liberalization of the capital account. Furthermore, the overall progress can be quantified. As a widely accepted measure of de facto capital account openness (see Prasad and Ye [2012] and Ito and Kawai [2012]), the ratio of China's external position (foreign assets plus liabilities minus foreign exchange reserves) to GDP increased from 54.2 to 65.6 percent over 2005–2013. Finally, it is noteworthy that China is not seeking to achieve

[2]To some extent, the recent two-way RMB/dollar exchange rate movement is a sign of the RMB's convergence toward its equilibrium value.

full or free convertibility of the yuan. Indeed, as recently stressed by Zhou, Governor of the PBOC (Zhou, 2015), in some cases management of the capital account will be retained to limit risks from international capital flows and to maintain financial stability.

The fourth aspect is China's engagement in international monetary cooperation. From 2009 to August 2015, the PBOC signed 32 currency swap agreements worth a total of 3.1 trillion yuan. The partners mainly consist of China's emerging market neighbors, but also include advanced economies such as Australia, the UK, the European Union, Canada and Switzerland. It should be noted that in the early stages, these initiatives were mainly aimed at dealing with the possible lack of foreign currency liquidity in the aftermath of the global financial crisis, but later turned out to be proactive institutional arrangements encouraging foreign counterparts to hold the RMB as a reserve asset.[3] According to some estimates,[4] in 2014 the RMB had become the seventh largest international reserve currency behind the US dollar, the euro, the British pound, the Japanese yen, the Australian dollar and the Canadian dollar. A recent breakthrough event was the IMF agreeing to include the yuan in the SDR basket on 30 November 2015. The Chinese currency will have a weighting of 10.92 percent in the new basket, behind the US dollar (41.73 percent) and the euro (30.93 percent), but ahead of the Japanese yen (8.33 percent) and the British pound (8.09 percent). Although for the time being it has little immediate effect, the inclusion of the yuan is of great significance for both China and the global financial landscape. On the one hand, it implies that the yuan's convertibility has been recognized by the international community, and, thus, from now on, a major institutional barrier for the yuan becoming a reserve currency has been removed. On the other hand, in the mid/long term, the event will further boost China's financial reforms and opening up, and encourage the country to play a more important role in safeguarding global financial stability and promoting economic prosperity. Moreover, in parallel with the integration into the current global financial system, China has also intensified its efforts to create new institutionalized channels and cooperatives, such as the "New Silk Road Economic Belt," the "21st Century Maritime Silk Road," the New Development Bank[5] and the Asian Infrastructure Investment Bank. At the time of writing, however, the impact of these newly launched institutions on the international presence of the RMB remains to be seen.

[3]Notably, the currency swap deals with China have already helped some countries, such as Argentina, to stabilize their monetary system. See http://www.ecns.cn/business/2015/08-21/178223.shtml.

[4]See http://english.caixin.com/2015-02-25/100785414.html.

[5]It is also known as the BRICS Development Bank.

III. Empirical Determinants of International Currency Status and the Renminbi's Potential Role

1. Empirical Determinants of International Currency Status

To better understand what factors determine the global status of the Chinese currency, we next examine the experiences of major international currencies which either presently exist or have previously existed. Indeed, since the birth of the euro, the preconditions for being an international, especially reserve currency, have increasingly attracted attention from scholars, such as Galati and Wooldridge (2006), Chinn and Frankel (2008), Eichengreen and Flandreau (2008), Flandreau and Jobst (2009), Frankel (2012) and Ouyang and Li (2013). However, these studies differ greatly in their theoretical and empirical perspectives, and data samples and results, thereby leaving considerable room for further investigation.

In what follows, we provide an empirical framework in the spirit of Chinn and Frankel (2008). The present analysis has, however, some novel elements worth noting. First, panel regression techniques are used to control for unobserved country/region effects. The omission of these relevant factors in Chinn and Frankel's study, which is based on the pooled OLS procedure, may lead to inconsistent and/or inefficient estimates. Second, different regression techniques, model settings and alternative indicators of currency status, domestic economic fundamentals and financial conditions have been considered to reach more robust results. Third, the sample period is extended to include data for the euro area as well as the latest data available for other countries. Fourth and finally, relying on the regression outcomes, we perform a scenario analysis for the yuan's potential as a reserve currency.

In a panel framework, the empirical model for determining the status of currency i in year t is specified as:

$$SHARE_{it} = x_{it}\beta + \alpha_i + \varepsilon_{it}. \quad (1)$$

Despite the fact that the internationalization of a currency can be judged in many ways, we first follow Chinn and Frankel (2008) and focus on the reserve currency status, which reflects the function of a currency as a store of value, and might correspond to a somewhat ultimate step of currency internationalization. Specifically, we use the shares of the US dollar, the euro, the mark, the yen, the pound and the French franc in official foreign reserve holdings (allocated) as indicators for the influence of each currency.

Again, in light of Chinn and Frankel (2008), these shares are transformed in logistic form to accommodate the potential nonlinear relationship between currency share and

its determinants. The formula for transformation is as follows:

$$SHARE = \log[share/(1- share)]. \quad (2)$$

On the right-hand side of Equation (1), x stands for a set of empirical determinants of *SHARE*, including economic size, financial condition indicators, value and stability of the currency, and the country/region's stability (see Appendices I and II for details on the data). α_i denotes an error term that reflects the unobserved time-invariant country/region-specific factors, such as institutional conditions and socio-cultural factors. Fixed-effects and random-effects panel estimators have been performed to control for α_i. The choice between these two procedures is determined by the outcomes of the Hausman test. In addition, it is important to note that Chinn and Frankel (2008), Frankel (2012) and Ouyang and Li (2013) include the lagged dependent variable in their pooled OLS or generalized OLS regressions to control for the "inertia effect." This leads, however, to a serious econometric problem. Because of the possible correlation between the lagged dependent variable and error terms, their estimates might be inconsistent: this explains why we do not include the lagged dependent variable in our regressions, and treat the "inertia effect" as an unobserved factor (see the scenario analysis for further discussions).

As the most parsimonious model, we first regress *SHARE* on the home country/region's GDP share in the world total and the ratio of private credit to GDP (denoted by *privatecredit*). The latter, measuring the relative size of the financial resources provided to the private sector, serves as a standard indictor of financial development. As shown in column (1) of Table 2, the coefficients of both variables are positive and statistically significant at conventional levels, indicating that the economic size and financial development of the home country/region have positive effects on the international status of its currency. Moreover, the *F*-test statistic suggests that the country/currency fixed effects are also jointly significant.[6] These relevant unobserved variables are, however, omitted in Chinn and Frankel's study, and this problem may render their results biased.

In the setting shown in column (2), *privatecredit* is replaced by another financial development indicator, stock market capitalization size (also scaled by GDP). While the GDP size remains robust, the coefficient associated with this alternative measure is statistically indifferent from zero, leading us to keep using *privatecredit* in the following analysis.

In the next regression, we augment the model shown in column (1) by adding "country risk" to control for the stability of the home country/region in a broader sense,

[6]Indeed, it is the case in all following regressions based on the fixed effects estimator.

including political risk, economic risk and financial risk. As this indicator has, however, an insignificant coefficient at the 10-percent level, we fail to establish a clear causal relationship between the overall stability index and currency status. However, it is noteworthy that, as shown in Appendix II, the country risk indicator varies little in the sample (measured by the coefficient of variation). This statistical property may explain, in part, the insignificance of the variable coefficient.

Then, the mean value and the standard deviation of the exchange rate of each currency against the SDR are introduced into the regression. They are denoted by "*exr_mean*" and "*exr_volatility*," respectively. As can be seen in column (4), the coefficients associated with these two variables have their expected signs, suggesting that a strong currency in terms of the exchange rate may reinforce its status as a reserve asset, while exchange rate volatility may impair this status. However, only the coefficient of the latter is significant.

We next conduct a regression with an additional variable "*finopenness*," which stands for the sum of foreign assets and liabilities (excluding foreign exchange reserves) scaled by GDP. As mentioned in Section II of the paper, it often serves as a measure of de facto capital account openness. From column (5) of the table, the coefficient of "*finopenness*" is significant and positive, supporting the view that the capital account openness is positively correlated with the status of the home country's currency.[7] The results for other variables remain essentially unchanged.

In what follows, we further add two independent variables, "*interest rate*" and "*current account*." The former stands for the real interest rate of the corresponding economy. Because it measures the returns on investing a reserve currency in its issuing country's bond market, the coefficient of the variable is expected to be positive in the regression. "*Current account*" stands for the current account balance as a percentage of GDP. As the Triffin dilemma suggests, if a country runs a current account surplus (deficit), the corresponding currency tends to appreciate (depreciate), whereas less (more) liquidity can be provided to the rest of the world. Thus, the expected coefficient sign of the variable is ambiguous. Although these two variables are theoretically relevant for explaining the currency status, as shown from column (6) of Table 2, the coefficients of both variables are insignificant, and there is little gain in terms of regression fitness.

Arguably, the causality from financial conditions to international currency status might run in the opposite way, which is to say that a more internationalized currency might help the home country further deepen and open up its financial markets on the

[7]We also use net foreign assets as an alternative indicator of capital account openness. Its coefficient is, however, insignificant.

one hand, and might increase its own demand and, thus, its price on the other hand. To deal with this possible bidirectional causality, we then treat *privatecredit*, *ex_mean* and *finopenness* as endogenous variables, and use the gross secondary school enrollment ratio, the logarithm of GDP per capita, and the 1-year lag of the three endogenous variables as instruments. The outcome of the Sargan/Hansen test indicates that these variables are valid instruments. As can be seen from column (7) of the table, the goodness of fit for this setting (measured by within R^2) is quite high, and all variables have significant coefficients with intuitive signs. Given these results, this specification will serve as the benchmark model for the scenario analysis.

Finally, as an alternative, we also consider the currency shares in the foreign exchange market turnover (equally in logistic form) as the dependent variable in

Table 2. Empirical Determinants of Currency Shares in Foreign Reserve Holdings

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Variables/Estimators	FE	RE	FE	RE	FE	FE	FE-IV
GDP share	6.8579	8.1927	5.1951	5.8850	6.2910	6.2260	6.0186
	(1.8276)***	(2.4191)***	(0.5940)***	(0.9847)***	(1.1964)***	(0.9310)***	(0.5769)***
Privatecredit	0.2394	—	0.6520	0.5722	0.3944	0.4180	0.4676
	(0.0730)**		(0.1162)**	(0.1279)***	(0.1813)*	(0.1525)**	(0.1172)***
Capitalization	—	−0.0243	—	—	—	—	—
		(0.1271)					
Country risk	—	—	−0.0025	—	—	—	—
			(0.0131)				
Finopenness	—	—	—	—	0.0283	0.0312	0.0304
					(0.0130)*	(0.0159)*	(0.0137)**
Exr_mean	—	—	—	0.2640	0.3500	0.3131	0.4101
				(0.3989)	(0.3649)	(0.3023)	(0.2388)*
Exr_volatility	—	—	—	−2.4248	−2.3981	−2.5616	−1.8908
				(0.8951)***	(1.0596)*	(1.2250)*	(1.0302)*
Interest rate	—	—	—	—	—	0.0074	—
						(0.0122)	
Current account	—	—	—	—	—	0.0020	—
						(0.0291)	
Constant	Yes***	Yes***	Yes**	Yes***	Yes***	Yes***	Yes***
Hausman statistic (χ^2)	9.55***	4.4	519***	0.88	75.2***	585.86***	—
F-statistic for fixed effects	255.99***	—	176.63***	—	292.99***	175.33***	362.78***
Sargan/Hansen statistic	—	—	—	—	—	—	2.029
R^2	0.3433	0.7984	0.6635	0.7127	0.7045	0.7058	0.7768
Sample period	1980–2013	1988–2012	1999–2013	1994–2013	1994–2013	1994–2013	1994–2013
Number of observations	155	111	60	85	85	85	79

Notes: FE, RE and IV stand for fixed effects, random effects and instrumental variable estimators, respectively. The FE and RE are chosen according to the outcomes of the Hausman test. Heteroscedasticity-consistent standard errors are in parentheses. ***, ** and * denote the significance at the 1, 5 and 10-percent level, respectively. Within-R^2 is used for FE and FE-IV estimators and between-R^2 for the RE estimator.

Table 3. Empirical Determinants of Currency Shares in Foreign Exchange Market Turnover

	(1)	(2)	(3)	(4)	(5)	(6)
Variables/Estimators	FE	FE	FE	RE	FE	FE
GDP share	2.1064	2.4924	1.4967	1.4934	1.5388	1.3040
	(0.5555)**	(0.8422)**	(0.5626)*	(0.4777)***	(0.5419)**	(0.5579)*
Privatecredit	0.1021	—	0.1127	0.2407	0.2036	0.1085
	(0.0514)*		(0.0186)***	(0.0932)***	(0.0944)*	(0.0831)
Capitalization	—	−0.0465	—	—	—	—
		(0.0643)				
Country risk	—	—	0.0036	—	—	—
			(0.0045)			
Finopenness	—	—	—	—	0.0058	0.0004
					(0.0053)	(0.0097)
Exr_mean	—	—	—	0.5743	0.6027	0.7139
				(0.4106)	(0.4507)	(0.4616)
Exr_volatility	—	—	—	−1.2199	−1.2052	−1.2550
				(0.6507)*	(0.5667)*	(0.2858)***
Interest rate	—	—	—	—	—	−0.0108
						(0.0108)
Current account	—	—	—	—	—	−0.0318
						(0.0197)
Constant	Yes***	Yes***	Yes***	Yes***	Yes***	Yes***
Hausman statistic (χ^2)	18.16***	10.82***	247.04***	0.46	72.73**	1258.08***
F statistic for fixed-effects	172.57***	161.26***	130.09***	—	245.36***	197.68***
R^2	0.0959	0.0908	0.2230	0.4699	0.4115	0.4964
Sample period	1989–2013	1989–2012	1999–2013	1994–2013	1994–2013	1994–2013
Number of observations	108	104	58	83	83	83

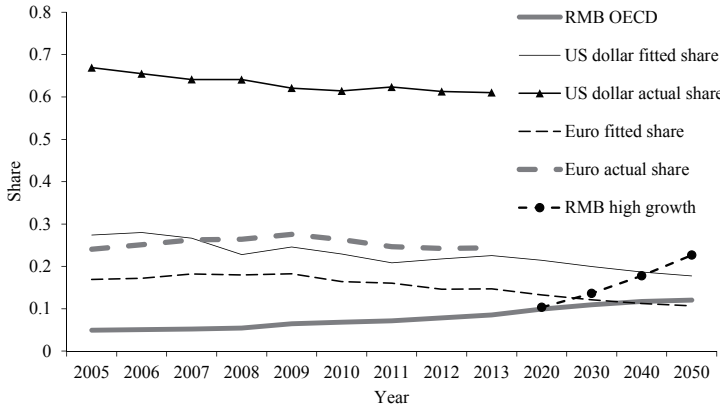
Notes: FE, RE and IV stand for fixed effects, random effects and instrumental variable estimators, respectively. The FE and RE are chosen according to the outcomes of the Hausman test. Heteroscedasticity-consistent standard errors are in parentheses. ***, ** and * denote the significance at the 1, 5 and 10-percent level, respectively. Within-R^2 is used for FE and FE-IV estimators and between-R^2 for the RE estimator.

Equation (1). To some extent, this indicator reflects the mixed role of a currency as both a medium of exchange and a store of value in the global monetary system. As reported in Table 3, it turns out that the goodness of fit for all models is relatively poor, and the capital account openness, currency exchange rate, market capitalization and country risk index all have insignificant coefficients. Nonetheless, the regression results still suggest that both GDP size and access to credit are significant and robust contributors to raising the status of international currency, while the exchange rate volatility works in the opposite way.

2. Scenario Analysis on the Renminbi Internationalization

Interestingly, the above results enable us to undertake a scenario analysis of the prospects of the RMB's expansion in a tri-polar monetary system. It should be, however,

Figure 2. Actual and Fitted Shares of the US dollar, the Euro and the RMB in Foreign Exchange Reserves (OECD Scenario)



Sources: Actual values from Currency Composition of Official Foreign Exchange Reserves (COFER), IMF; fitted values are from the authors' estimations.

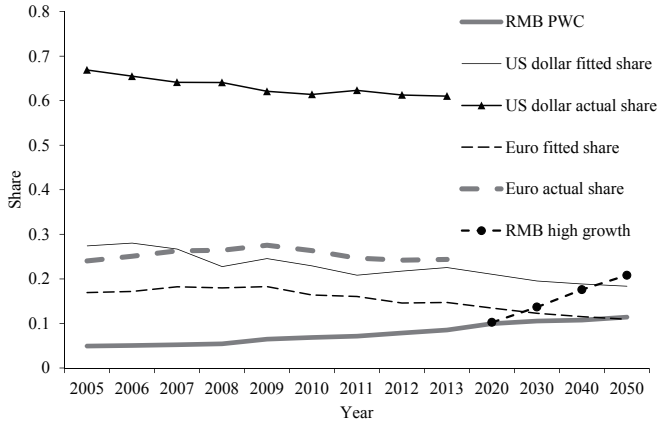
emphasized that the main purpose of this analysis is to show the theoretical potential of the three currencies in the global reserve system. In doing this, we offer a referential benchmark, which can be compared with the situation in reality to assess to what extent the actual status of an individual currency deviates from its theoretical potential. Thus, the scenario analysis should not be interpreted as forecasting.

In particular, we take into account some economic fundamental changes which are features of the new normal for China's economy: (i) the slowdown of economic growth, which is the most important factor retarding the RMB internationalization; (ii) the end of the tendency for yuan appreciation,[8] which negatively affects the share of the RMB in international reserves; and (iii) further financial development (measured by *privatecredit*) and opening up (measured by *finopenness*), which both help the promotion of the use of Chinese currency overseas. More details on the hypothetical data assumed in the scenarios are given in Appendix III.

Drawing on the regression results shown in column (7) of Table 2, we first consider a scenario based on the growth projections offered by the OECD (2014). In this scenario, China, the euro area, the USA and the world will all experience a tendency of economic slowdown in the coming decades. As illustrated in Figure 2, under this scenario, the fitted share of the RMB in international reserves will overtake the share of the euro, reaching 11.7 percent in 2040. However, through this path, the Chinese

[8]It should be stressed that the recent depreciation of the yuan against the US dollar and the SDR does not necessarily imply a long-term trend. Thus, in our analysis, the yuan exchange rate against the SDR is assumed to be the same level as that in 2013.

Figure 3. Actual and Fitted Shares of US dollar, Euro and the RMB in Foreign Exchange Reserves (PWC Scenario)



Sources: Actual values from Currency Composition of Official Foreign Exchange Reserves (COFER), IMF; fitted values from authors' estimations.

currency might not be able to dethrone the US dollar before 2050, although the gap between them could be considerably narrowed (8.5 *vs* 22.5 percent in 2013; 12.0 vs 17.7 percent in 2050). In the same figure, we also show the path of the RMB's share if China's economic slowdown is less pronounced. All other things being equal, with higher growth assumptions for China (see also Appendix III), the RMB will become the second largest reserve currency before 2030, and the largest before 2050.

Next, we turn to the scenario based on the growth outlook given by PricewaterhouseCoopers (PWC, 2015). Compared to the OECD's projections, the PWC forecasts slightly slower growth for China and somewhat faster growth for the rest of the world. As illustrated in Figure 3, the RMB's overtaking of the euro will be delayed to 2050 and it is of no surprise that the international use of the RMB will lag far behind that of the US dollar. Even if China's economy can expand at a faster pace, with the PWC's projections for other economies, the RMB will follow a trend similar to that in the above scenario.

In addition to different GDP growth prospects, hypotheses about China's financial development and opening up also suggest an impact, to a lesser extent, on the international presence of the RMB. Relying on the "OECD scenario," for instance, if in 2030 the relative size of China's private credit and external assets/liabilities can achieve the same level as those in the USA in 2013, the RMB will overtake the euro approximately 10 years earlier and will close its gap with the US dollar more rapidly.

There is, however, a need for caution in interpreting the results of these scenario analyses. First, the above scenarios are for reference only. For instance, although the

rationale behind the growth outlooks given by both the OECD and the PWC broadly corresponds to the "secular stagnation" in advanced economies on the one hand (Summers, 2014) and to the "regression to mean" in China on the other (Pritchett and Summers, 2014), these gloomy economic prospects are, by no means, unavoidable, with substantial capacity for growth-friendly policy initiatives. In addition, generally speaking, clear theoretical guidance is lacking in predicting the financial deepening and capital account openness in the course of economic development. Indeed, both are matters of policy.

Second, the status of currency is not just determined by economic and financial conditions, but is also affected by the "inertia" in currency use due to network externalities and economies of scale and scope (Chinn and Frankel, 2008). Other unobserved factors, including institutional conditions, the socio-cultural environment and the quality of macroeconomic policies, also play important roles in shaping the international monetary system. That is why there is always a gap between the actual status of a currency in international reserves and its potential status. Specifically, as displayed in Figure 2, both the US dollar and the euro remain disproportionately dominant when compared with their fundamentals, while the RMB's actual status is greatly below its potential. In particular, the aforementioned gap for the US dollar attains a remarkable level of 40 percent, serving as a measure of the so-called "dollar hegemony." In this regard, the shaping of the international monetary system is subject to a great deal of uncertainty and discretion, which remain, unfortunately, unexplained in our regression analysis.[9]

IV. Policy Discussions

The above quantitative research helps us to revisit China's policy initiatives designed to promote the use of its currency abroad. In the following paragraphs, we will focus on two important aspects of the story: the relationship between the RMB internationalization and China's economic development and transformation, and the relationship between domestic financial reforms and capital account liberalization.

First and foremost, the economic slowdown and the gradual formation of a market-based financial system (two major features of the new normal) represent crucial challenges for the internationalization of the RMB. On the one hand, according to our estimates, as economic growth slows, the process of RMB internationalization will also

[9]For reference only, in analyzing the internationalization of the RMB, Subramanian (2011) proposes a 10-year lag between currency dominance and economic dominance.

slow down (other things being equal). However, in the long run, the tri-polar monetary system can still be formed as long as China can maintain sustainable high-speed growth (compared to the USA and the euro area). On the other hand, financial deepening and liberalization will help raise the profile of the RMB overseas, whereas new financial conditions will also be associated with new problems and risks, such as more frequent international capital movement and a more volatile exchange rate.

Under these new economic and financial environments, policy-makers should view China's monetary ambition as a necessary component of a greater plan, and, thus, should also revisit the motivations behind the country's efforts to develop and open up its financial sector. China can benefit from the internationalization of the RMB in many respects, including reducing foreign exchange risk in cross-border trade and external financing, exploiting competitive advantages of its financial institutions in RMB business, and advancing the market-oriented financial reforms and opening-up, especially capital account liberalization and exchange rate reforms. Obviously, as China's economy is undergoing deep structural changes, all these problems equally top the country's policy agenda.

In this light, the internationalization of the RMB is not an end in itself, but a means among others to achieve a more sustainable and balanced development insofar as the aforementioned benefits from the process can be properly realized. Accordingly, efforts to raise the yuan's profile overseas should only be judged by their impact on China's financial stability and efficiency, as well as long-term economic development and transformation. From this standpoint, there is no need to worry too much about the decelerated accumulation of offshore RMB deposits, the two-way international capital flows and the recent depreciation of the RMB against the US dollar, which, to different extents, can be attributed to the market-oriented reforms of China's financial system. By the same token, the increase in the holdings of offshore RMB for the purpose of betting on its appreciation should not be viewed as a welcome occurrence (e.g. the massive "hot money" inflows before 2015), because this kind of "internationalization" is "more style than substance" in terms of achieving China's long-term monetary ambitions, and brings about significant financial risk (see Zhang, 2011). In this case, capital controls as a stop-gap measure can be considered to tackle speculative capital flows (both directions) despite their short-term negative impact on capital account openness and the status of the RMB as an international currency (see Yu, 2014; Zhou, 2015). However, if the internationalization of the RMB does really contribute to the robustness and viability of China's economy, there is no point in waiting until all the presumably required fundamentals have matured. More proactive policies and comprehensive reforms should be adopted in favor of this process.

The above argument brings us to our second point. Although our empirical findings suggest that both domestic financial development and capital account liberalization constitute two significant contributors for the use of the yuan overseas, the policy design on the sequencing of these two tasks remains unclear. Indeed, this topic has been much debated among scholars and policy-makers. According to some (see Yin, 2011; Zhang, 2011; Yu, 2012), in the absence of large-scale domestic financial reforms, which include the liberalization of both interest rates and the exchange rate, as well as the further development of capital markets, opening up the capital account is likely to increase, rather than decrease, the risk exposure of China, especially the risks associated with its mammoth holdings of foreign assets and with volatile short-term capital flows. Those concerns lead them to advocate the so-called "sequencing" strategy, by which they mean that the domestic arrangements should precede the financial opening up, especially the capital account liberalization.

Nonetheless, in our view, the "sequencing" approach is inapplicable to the current issue. There are basically four reasons for this claim. First, the experiences of the USA, the UK, Japan, Germany and Korea show that there exists neither a single correct "sequencing" for the domestic financial reforms and the capital account liberalization, nor a clear causality from financial opening up to domestic instability. The success of both tasks depends mainly on the related policy design and implementation (see PBOC Research Team, 2012a,b).

Second, to a certain extent, such a strategy neglects the fact that various institutional factors are often interdependent and mutually determined. As implied in the "sequencing" principle, before the domestic financial system is robust enough, the policy mix of "capital controls" and "offshore markets" appears to be one of few options available for policy-makers. The rationale behind this policy choice is, however, inherently flawed: Although we agree that under certain circumstances capital controls can serve as an expedient measure for coping with urgent threats to financial stability, from a long-term perspective, it is clearly implausible to establish a market-based and well-regulated financial system while keeping foreign competitors and capital outdoor (see Ma et al., 2012). In addition, capital controls are often partially effective, and, thus, capital flows through non-regulated channels remain a persistent concern for the monetary authority. This is actually the case for many emerging countries and especially for China (see Baba and Kokenyne, 2011; Kawai and Liu, 2015).

Third, as pointed out by Fan and Woo (2006), instead of the "sequencing," a better approach, which they refer to as "parallel partial progression," is to "push the reforms in all areas at the same time following similar steps," and, therefore, the problems due to "bottleneck" and "over-shooting" effects can be tackled. Similarly, strengthening

domestic financial sectors can proceed in parallel with opening up the capital account as long as both moves, which are interdependent and mutually supportive, benefit the economy (also see Ma et al., 2012).

Fourth, and more importantly, in the spirit of the "parallel progression" strategy, China is actually pushing forward a number of reforms at roughly the same time, including interest rate deregulation, foreign exchange reforms, capital market liberalization and capital account opening up, without posing serious challenges to the country's financial stability and external balance. For instance, recent practice shows that the involuntary accumulation of foreign exchange reserves due to RMB trade settlements and capital account openness (an adverse trend with which the advocates of the "sequencing" approach are highly concerned) remains limited and transitory. In particular, because of the structural changes in the domestic economy and the global financial environment, China's accumulation of foreign exchange reserves has tended to stagnate and even decrease over the past 2 years or so.[10]

V. Concluding Remarks

In this paper we first present China's major advances in promoting the internationalization of its currency, with a focus on its recent efforts as the country enters "the new normal." Four aspects of the progress have been highlighted in the present study, including cross-border trade settlement, offshore business, capital account liberalization and international monetary cooperation. Drawing on the experiences from major monetary powers, we undertook an econometric investigation, and found that the home country's GDP size, access to credit, capital account openness and currency value as well as its stability are significant determinants of international currency status. Based on our empirical findings, we also conducted a scenario analysis to see how the relevant determining factors would affect the future path of the RMB's emergence as a reserve currency. Finally, we discussed the policies relating to the internationalization of the RMB, emphasizing the relationship between the process and China's economic development and transformation, as well as the impact of policy-making on domestic financial reforms and capital account liberalization.

Broadly speaking, as China enters the new normal, the promotion of the international use of the RMB should be regarded as a means to help the country achieve

[10]In fact, generally speaking, China's market-oriented transition did not follow a well-planned "sequencing." By contrast, many partial reforms were undertaken in a parallel way, often through "trial and error" and experimentation (e.g. the price liberalization and the restructuring of the state-owned enterprises).

a more sustainable and balanced model of development, rather than an end in itself. In particular, looking ahead, as a major component of China's financial deepening and liberalization, what the internationalization of the RMB can bring to China's financial resources allocation and domestic financial reforms need more attention. The contribution of the emergence of the yuan to global financial stability and rebalancing will also be increasingly important. However, because China's dependence on external demand is declining, its catalytic effect on the country's foreign trade will remain of secondary importance.

Eventually, as suggested in our regressions and scenario analysis, because of the inertia effect and other unobserved factors, the rise and fall of the global monetary powers do not follow a deterministic path. Moreover, looking at the history of modern globalization, there has only been one change in global monetary dominance, when the pound was dethroned in favor of the US dollar in the aftermath of the Second World War. The lack of precedent for this once-in-a-century switch makes the process even more difficult to foresee. China's policy-makers do have considerable room to adopt more proactive and specific measures to further boost the internationalization of the RMB. However, despite the remaining tasks and challenges, it can now be said that China is emerging as an international monetary power. It is hoped that our paper can feed into the theoretical rethinking and policy discussions on this topic of increasing interest.

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Appendix I. Empirical Data Descriptions

Variables	Descriptions	Sample periods	Data sources
Currency share in reserves	Currency shares in official reserve holdings.	Dollar, pound, and yen: 1980–2013; Mark and franc: 1980–1998; Euro: 1999–2013.	For 1980–1994, from Frenkel and Goldstein (1999); for 1995–2013, from COFER, IMF (allocated reserves).
Currency share in turnover	Currency shares in foreign exchange market turnover (linear interpolated into annual series).	Dollar, pound, and yen: 1989, 1992, 1995, 1998, 2001, 2004, 2007, 2010, 2013; Mark and franc: 1989, 1992, 1995, 1998; Euro: 2001,2004,2007,2010, 2013.	BIS Triennial Central Bank Survey, various issues.
GDP share	Share of GDP in the world total (current dollar).	US, UK, and Japan: 1980–2013; Germany and France: 1980–1998; Euro area: 1999–2013.	World Development Indicators, World Bank.
Credit ratio (*privatecredit*)	Domestic credit to private sector scaled by GDP.	US, UK, and Japan: 1980–2013; Germany and France: 1980–1998; Euro area: 1999–2013.	World Development Indicators, World Bank.
External finance (*finopenness*)	Share of foreign assets plus foreign liabilities in the GDP.	US, UK, and Japan: 1980–2013; Germany and France: 1980–1998; Euro area: 1999–2013.	For 1980–2011, updated and extended version of the External Wealth of Nations Mark II database developed by Lane and Milesi-Ferretti (2007); for 2012–2013, CEIC.

Capitalization	Market capitalization of listed companies scaled by GDP	US, UK, and Japan: 1988–2012; Germany and France: 1988–1998; Euro area: 1999–2012	World Development Indicators, World Bank
Exr_mean	Mean of daily SDRs per currency unit within a year	Dollar, pound, and yen: 1994–2013; Mark and franc: 1994–1998; Euro: 1999–2013	IMF
Exr_volatility	Standard deviation of daily SDRs per currency unit within a year	Dollar, pound, and yen: 1994–2013; Mark and franc: 1994–1998; Euro: 1999–2013	IMF
Interest rate	Real interest rate for US, UK, Japan, Germany, and France; Difference between short term interest rate and Consumer Price Index	US, UK, and Japan: 1980–2013; Germany and France: 1980–1998; Euro area: 1999–2013	Data for US, UK, Japan, Germany, and France from World Development Indicators, World Bank; Data for Euro area from OECD
Current account	Current account balance as percent of GDP	US, UK, and Japan: 1980–2013; Germany and France: 1980–1998; Euro area: 1999–2013	World Economic Outlook Database, IMF
Country risk	Composite risk index in December of each year; the index for the Euro area is the average of those for Germany and France.	US, Euro area, UK, and Japan 1999–2013	International Country Risk Guide, various issues
GDP per capita	GDP per capita in logarithm (current dollar)	US, UK, and Japan: 1980–2013; Germany and France: 1980–1998; Euro area: 1999–2013	World Development Indicators, World Bank
Education	Gross secondary school enrollment ratio	US, UK, and Japan: 1994–2012; Germany and France: 1994–1998; Euro area: 1999–2012	World Development Indicators, World Bank; For 2013, linear trend extrapolation

Appendix II. Descriptive Statistics of Key Variables

Variables	Mean (a)	Standard deviation (b)	Coefficient of variation (= b/|a|)
Currency share in reserves (*logistic form*)	–2.0969	1.7043	0.8128
Currency share in turnover (*logistic form*)	–1.8412	1.0699	0.5811
GDP share	0.1323	0.0913	0.6901
Privatecredit	1.2034	0.4442	0.3691
Capitalization	0.7803	0.4138	0.5303
Country risk	79.7842	3.6079	0.0452
Finopenness	2.6766	2.5904	0.9678
Exr_mean	0.6111	0.4258	0.6968
Exr_volatility	0.0124	0.0122	0.9839
Interest rate	4.1747	2.7417	0.6567
Current account	0.0720	2.6271	36.4875

Appendix III. Hypothetical Data in Scenario Analysis

Countries/currencies/ scenarios	Annual GDP growth rate	Private credit /GDP	External wealth /GDP	Mean value and volatility of currency
China/RMB:				
OECD	2014–2020: 6.28% 2021–2030: 4.04% 2031–2040: 3.32% 2041–2050: 2.29%	2020:145% 2030: 150% 2040: 155% 2050: 160%	2020: 70% 2030: 80% 2040: 90% 2050: 100%	Same as in 2013
PWC	2014–2020: 6.3% 2021–2030: 3.6% 2031–2040: 2.7% 2041–2050: 2.7%	Idem	Idem	Idem
High growth	2014–2020: 7% 2021–2030: 6% 2031–2040: 5% 2041–2050: 4%	Idem	Idem	Idem
US/ US dollar:				
OECD	2014–2020: 2.93% 2021–2030: 2.40% 2031–2040: 2.02% 2041–2050: 1.65%	Same as in 2013	Same as in 2013	Same as in 2013
PWC	2014–2020: 2.8% 2021–2030: 2.2% 2031–2040: 2.5% 2041–2050: 2.5%	Idem	Idem	Idem
Euro area/euro:				
OECD	2014–2020: 1.83% 2021–2030: 1.90% 2031–2040: 1.66% 2041–2050: 1.42%	Same as in 2013	Same as in 2013	Same as in 2013
PWC	2014–2020: 2.2% 2021–2030: 1.8% 2031–2040: 2.0% 2041–2050: 2.0%	Idem	Idem	Idem
World:				
OECD	2014–2020: 3.64% 2021–2030: 3.15% 2031–2040: 2.77% 2041–2050: 2.25%	–	–	–
PWC	2014–2020: 3.8% 2021–2030: 3.0% 2031–2040: 2.9% 2041–2050: 2.8%	–	–	–