

# An Evaluation of RMB Internationalization Based on FX Market Trading Patterns

( Executive Summary )

With the deepening of China's reform and opening-up and the improvement of comprehensive national strength, RMB internationalization has become an important target in China's international economic policy. How to reasonably access the process of RMB internationalization and promote its acceptance and circulation in the global market is an important policy issue. In this report, we will make an evaluation and analysis of RMB internationalization from the perspective of currency trading pattern based on FX trading data from CLS.

## 1. Theoretical Framework

The concept corresponding to the RMB internationalization is the international money that is usually explained by its functions. Kenen (1983) argues that currency internationalization refers to the use of a currency beyond its national borders and may be used and held outside its territory by its own residents or nonresidents. Chinn and Frankel (2005) develops a list of the international functions of internationalized currencies. According to this list, an international currency can provide residents or nonresidents with the functions of value storage, exchange medium and accounting units of the function. It can be used for currency substitution, investment pricing and trade and financial transactions for private purposes, as well as for official reserves, currency carriers for foreign exchange intervention, and anchor currencies for pegging the exchange rate.

**Table 1 Basic functions of International currencies**

	<b>Private Use</b>	<b>Official Use</b>
<b>Medium of Exchange</b>	vehicle currency: invoicing trade and financial transactions, settlement currency	vehicle currency: intervention currency in the foreign exchange market
<b>Unit of Account</b>	quote currency (denominating trade and financial transactions)	anchor of the other currency's exchange rate

<b>Store of Value</b>	investment currency (portfolio allocation) or currency substitution (private dollarization)	reserve currency (international reserves)
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**Source: Hartmann (1998)**

Chinn and Frankel's list of the functions of internationalized currencies provide an intuitive strategy to measure the degree of RMB internationalization. Actually, many existent "RMB internationalization indexes" are essentially weighted sum of some indicators of these functions. The difference is only in the choice of indicators and the determination of weights. But this approach is not without doubt. The simple composition of related aspects of monetary functions might lead to the neglect of the complex relationship among the functions. In essence, the most basic function of money is the medium of transaction, the other two functions are derived from it. In the international monetary system, the importance of these functions is also related to the basic state of the financial and economic system. Thus, the choice of method for international currency evaluation depends on the specific scenario and the purpose for the issuer to internationalize her currency.

Different from the prevailing approach, this study tries to evaluate the position of RMB in global monetary system from the basic function of international currency ---- international medium of exchange. For example, a real international currency should not be traded only by domestic financial institutions or the foreign institutions having business ties with the home country of the currency. It should also be traded by the foreign financial institutions having nothing to do with its home country except for the currency trading itself. When a currency becomes international medium of exchange, it's a natural step for it to carry on the other two functions of internationalized currency. Due to the network effect in payment system and the fixed cost required for someone to adopt a new currency, the exchange medium function of international currencies is also more stable than the other two. Furthermore, for international financial market participants, the acceptability of a currency is more relevant to their business.

## **2. Empirical Background**

The rise of the RMB's role as international currency benefits from the development of the offshore market. The offshore market is one of the most important innovations in the development of the modern financial industry as a market where nonresidents engage in international currency transactions. For the internationalization of currency, the development of offshore market will expand the scale of currency circulation and increase investment and financing channels. For a currency with a home country that doesn't fully open her financial sector yet, the offshore market can build the channel for the circulation of the currency

between residents and nonresidents and form an initial liquidity and pricing system for the overseas use of the currency. Thus, the development of RMB offshore market became a critical part in the strategy to promote RMB internationalization.

The key idea in the offshore market-based RMB internationalization is to expand the use of RMB in the perspective of business categories, traders, and locations through the participating of people and institutions in RMB business and finally realize the target that RMB become a prevailing international currency. Ideally, the process includes three stages:

Stage 1: Acceptance by the economic agents in business interchange with China;

Stage 2: Acceptance by the economic agents in business interchange with those economic agents above;

Stage 3: Acceptance by economic agents in no any direct or indirect business or financial association with China.

A key step in the course is to make those economic agents in no any direct or indirect business or financial association with China willing to accept RMB. It can be achieved by two means:

- (1) Subsidizing RMB holders by providing arbitrage opportunities on exchange rates or interests rate;
- (2) Enhancing the possibility for those economic agents to acquire the needed assets from those who accept RMB by providing ample RMB-denominated goods and assets.

Although offshore RMB business has got great development, there are still some controversies on the real driving force behind the achievement. Many scholars believe that the emergence of Hong Kong, Taiwan and other RMB offshore centers is actually a result of arbitrage based on RMB appreciation expectation and the interest rate spread between the offshore market and the onshore market, so the blooming of RMB offshore market is fragile and misleading. With the fading of RMB appreciation expectation in 2015, the growth of offshore RMB business seemed to lose its momentum. So a question here is if RMB offshore market has fostered “real” demand for RMB instead of being a result of pure speculation. The study tries to answer the question with an exploration into the trading patterns of RMB offshore market.

### **3. Assumption and Methodology**

The key assumption of the study is that international currencies are significantly different not only in trading volume, but also in trading patterns, from those of non-international currencies.

Here the trading pattern is a broad concept. It not only includes the characteristics of the trading itself such as time, location, institution, but also includes the structural features of the complex network comprising of the institutions participating the trading of specific currencies and the transactions between them. For the currencies at the similar level of internationalization, some of their trading patterns should be similar. In many occasions, these trading patterns are more stable and relevant indicators of the internationalization.

Based on the above assumption, this study draws market structure indicators from the trading data of 17 CLS currencies<sup>1</sup> in Q2 2015 including

- (1) Proportion of different trading institutions categories;
- (2) Proportion of different regions where trading took place;
- (3) Proportion of transnational transactions;
- (4) Proportion of cross-regional transactions;
- (5) Market concentration.

And network indicators include

- (1) Distribution function of trading institutions with various number of trading partners;
- (2) Trading intensity between highly active trading institutions;
- (3) Trading intensity between high volume trading institutions;
- (4) Local intensity of trading relationship;
- (5) Local intensity of trading volume;
- (6) Proportion of trading between high volume trading institutions.

Trading currency-pairs are clustered based on the above indicators and projected into an abstract space of trading patterns. The currencies are then ranked according to the distances between them in the space. After the procedure is calibrated against the generally acknowledged hierarchy of international monetary system, RMB offshore trading data are added into the analysis to get its position among the currencies.

#### **4. Analysis Results**

Based on the above indicators of trading patterns, we get the ranking of the 17 CLS currencies with regard to their level of internationalization.

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<sup>1</sup> As during the sample period (Q2 2015) Hungarian Forint was just included in the CLS currencies and there was no trading data of the currency in CLS system yet, it is not included in the ranking.

**Table 2 International Currency Ranking Based on Trading Patterns\***

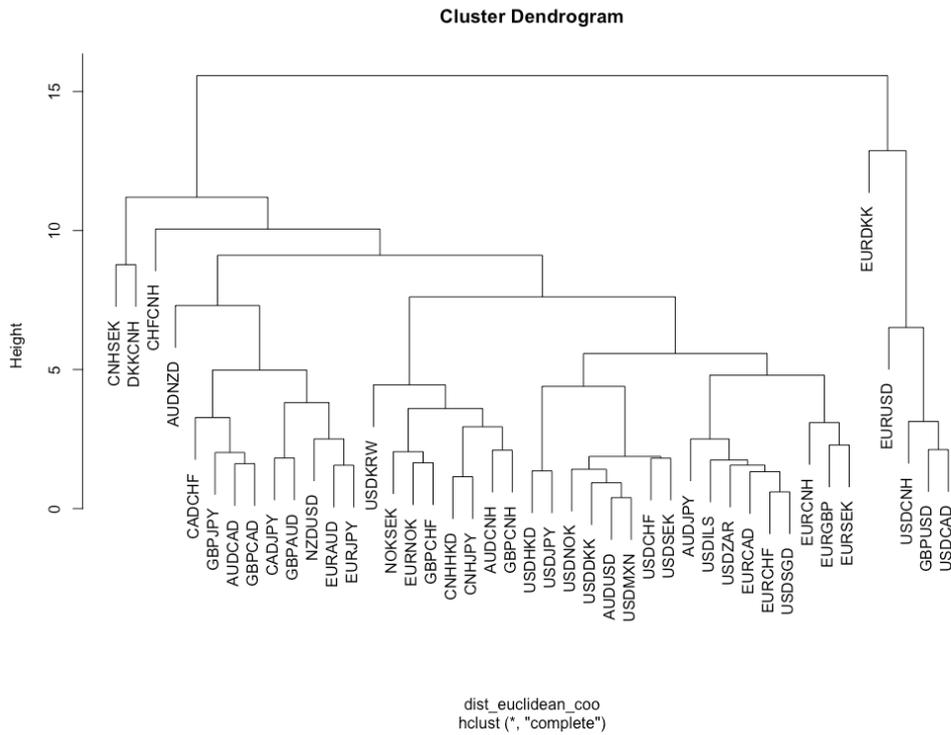
Rank	Currency Name	Currency Code
1	United States Dollar	USD
2	Euro	EUR
3	British Pound	GBP
4	Japanese Yen	JPY
5	Canadian Dollar	CAD
6	Swiss Franc	CHF
7	Australia Dollar	AUD
8	New Zealand Dollar	NZD
9	Swedish Krona	SEK
10	Norwegian Krone	NOK
11	Singapore Dollar	SGD
12	Hong Kong Dollar	HKD
13	Danish Krone	DKK
14	South African Rand	ZAR
15	Mexican Peso	MXN
16	Israeli New Shekel	ILS
17	South Korean Won	KRW

\* As during the sample period (Q2 2015) Hungarian Forint was just included in the CLS currencies and there was no trading data of the currency in CLS system yet, it is not included in the ranking.

The ranking seems reasonable except for maybe some currencies in low positions. With the parameters calibrated, we add RMB offshore trading data into the CLS currencies' trading data<sup>2</sup> and repeat the procedure. The currency-pairs are then clustered as in Figure 1.

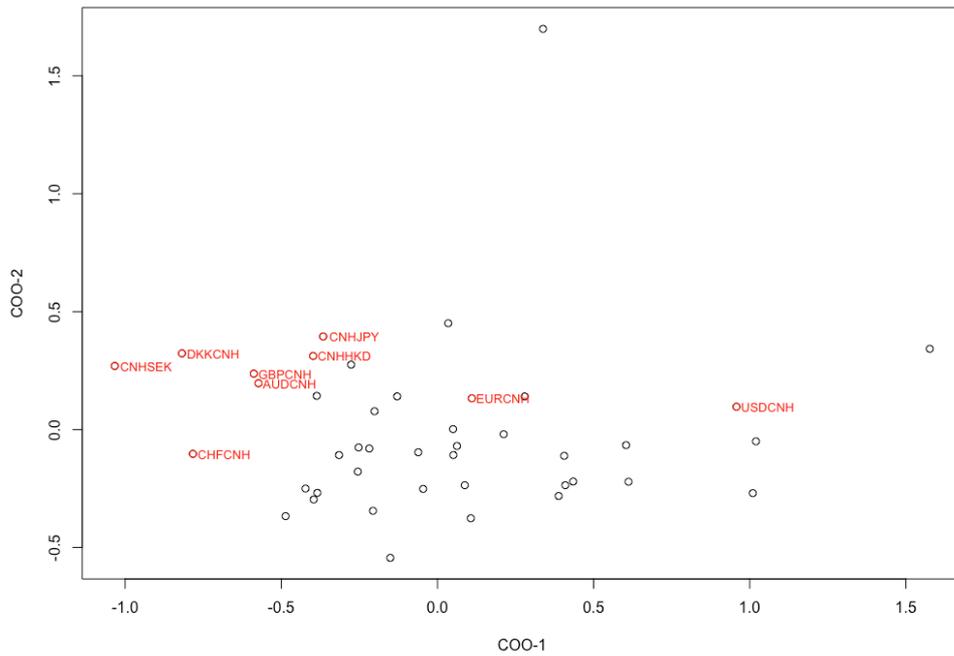
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<sup>2</sup> The trading data of CNH and CLS currencies in this analysis are from a survey of CLS members in Q2 2015.



**Figure 1 Clustering Analysis of Currency-pairs Based on Trading Patterns**

Figure 1 shows generally CNH-pairs have similar trading pattern and are categorized into one group or stay quite close. But there also exceptions. The CHN-pairs involving USD or EUR locate at far-right side of the figure, while those involving Scandinavian currencies locate at far-left side of the figure.



## Figure 2 Location of CNH-pairs in the Space of Trading Patterns

Figure 2 gives the location of CNH-pairs in the space of trading patterns. Apparently, CNH-pairs are located at the periphery of currency-pair cluster. It implies that the trading patterns of RMB in FX market are quite special.

**Table 3 Currency Ranking with Regard to Their Similarity with USD-Euro Trading Patterns\***

Rank	Currency Name	Currency Code
1	United States Dollar	USD
2	Euro	EUR
3	British Pound	GBP
4	Chinese Offshore Renminbi	CNH
5	Canadian Dollar	CAD
6	Swedish Krona	SEK
7	Swiss Franc	CHF
8	Norwegian Krone	NOK
9	Danish Krone	DKK
10	Australia Dollar	AUD
11	Mexican Peso	MXN
12	Japanese Yen	JPY
13	Hong Kong Dollar	HKD
14	New Zealand Dollar	NZD
15	South African Rand	ZAR
16	Singapore Dollar	SGD
17	South Korean Won	KRW
18	Israeli New Shekel	ILS
19	Hungarian Forint	HUF

\* The trading data of CNH and CLS currencies in this analysis are from a survey of CLS members in Q2 2015.

But with regard to the similarity with USD-Euro trading patterns, RMB ranks quite high. From this perspective, RMB tends to be a global currency like Euro or Pound rather than a regional currency like Hong Kong Dollar.

## **5. Conclusion and Policy Recommendation**

The analysis based on FX market trading patterns tends to support the view that RMB is already a real international currency. At the same time, RMB shows quite large difference with most CLS currencies in trading patterns. This paradox can be attributed to two reasons: (1) RMB is not a CLS currency; (2) the sparseness of RMB trading data. The fact that RMB doesn't join an international multilateral PvP settlement mechanism like CLS not only limits its trading efficiency, but also twists its trading pattern to some extent. The sparseness of RMB trading data is another side of the same issue. Since RMB is not a member of CLS currencies, we can't get systematic RMB trading data through the platform and have to use survey data for our research. The latter is incomparable with the former in both richness and accuracy. This problem also threatens the robustness of our results.

The development of RMB offshore market has reached a turning point. When the excess return to RMB holders vanishes with the RMB appreciation expectation, the competition of RMB with other currencies will critically rely on its efficiency as an international medium of exchange, which, in turn, highly depends on the accessibility of international financial infrastructure, especially payment system. With the moving forward RMB internationalization, the necessity of international cooperation on payment mechanism becomes even clearer. The benefits of cooperation are not only from the improvement of RMB trading efficiency in FX markets, but also from the opportunity to employ accurate and systematic trading data to make more effective analysis of international circulation of RMB and more precise assessment of RMB's position in global monetary system.