

A Study on the Interaction between Offshore and Onshore Exchange Rates in the Process of RMB Internationalization

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Abstract: In recent years, the offshore RMB market has played a pivotal role in the process of RMB internationalization, and the interaction with the onshore exchange rate has been strengthened. How the policy makers view and make use of this relationship is of great significance to promote the synchronous development of the onshore and offshore markets and the internationalization of RMB. This paper uses vector autoregression to compare the exchange rate interactions between the onshore and offshore markets before and after the “8-11” exchange reform, and analyzes the spillover effects between the two markets. The analysis concludes that before the “8-11” exchange reform, only CNH has a unidirectional influence on NDF and CNY, and the spillover effect of CNY on CNH and NDF is smaller; after the exchange reform, the onshore market and offshore market show a two-way spillover effect, and with the advancement of the internationalization of the RMB, the influence of the NDF market is getting smaller and smaller. On this basis, this paper proposes that China should gradually realize the internationalization of RMB on the basis of deepening the reform of the RMB exchange rate system and improving the interaction between the offshore market and the onshore market.

Keywords: Offshore Exchange Rate; Onshore Exchange Rate; “8-11” Exchange Change

1. Introductory

Under the current global economic situation, as China’s economy moves from high-speed development to high-quality development, and as reform and opening-up steadily progress, China’s position in world trade is growing, and international trade and investment in RMB is increasing, as is the international influence of RMB. Along with the reform of the RMB exchange rate system, the two-way development of the RMB onshore and offshore markets, the scale of trade has gradually expanded, the types of transactions have become increasingly rich, and the development has been remarkable. At present, the offshore market has become a major factor affecting China’s foreign exchange reserves and exchange rate stability. An in-depth discussion of the interaction mechanism between the onshore market and the offshore market will help us better understand the price formation mechanism of the RMB, and at the same time effectively prevent our currency from being subjected to speculative shocks and safeguard China’s financial security.

2. Theoretical analysis of the linkage between onshore and offshore RMB markets

2.1 Theoretical basis of the linkage between onshore and offshore RMB markets: interest rate parity

There are two basic principles of interest rate parity theory: the interest rate parity theory with no throwback and the interest rate parity theory with throwback. Non-throwback interest rate parity assumes that the investor is risk-neutral and does not need to agree on an exchange rate in advance in order to exchange a country’s currency for a foreign currency of equal value, and at maturity to exchange that country’s currency for a country’s currency of equal value to it. The theory of interest rate parity with a throwback holds that funds always flow from low interest rate countries to high interest rate countries because different currencies are different and the exchange rate will be changed accordingly, and when both the interest rate and the exchange rate are taken into account, the forward exchange rate of the high interest rate country will fall while the forward exchange rate of the low interest rate country will rise, and such an arbitrage effect with a throwback will be generated between the two countries.

2.2 Analysis of the information transmission mechanism in the onshore and offshore RMB markets

Price discovery refers to the continuous adjustment of the price of a transaction to an equilibrium price through market forces. In the

foreign exchange market, there are three types of traders, namely: hedgers, speculators and arbitrageurs, each of whom has a different trading objective, and changes the money supply through the game between each other in order to achieve the balance of the exchange rate. Hedgers use hedging to hedge their spot and forward foreign exchange positions, while speculators have no real need to trade, and their aim is simply to capture the spreads generated by information asymmetry in the market, which in turn brings great liquidity to the market. These three types of investors lead to a convergence of exchange rate differentials across markets, and this process of trading is price discovery.

In traditional international economic theory, the balance of payments of the countries concerned is often used to analyze the relevant exchange rate movements. Thus, depending on the openness of the capital program, the mechanism of information transfer between the two markets can be classified as fully convertible currencies, incompletely convertible, and subject to exchange controls. Currently, China is roughly in the third mode, in which the offshore RMB market can settle transactions in RMB, qualified third-class institutions can access the domestic interbank bond market, and RMB can circulate freely between the two markets, thus forming a transmission mechanism that is mutually oriented and influential between onshore and offshore.

3. Empirical Analysis of RMB Onshore and Offshore Market Linkage

This chapter carries out an empirical analysis through the introduction of the VAR model, which is analyzed through the methods of sample selection, descriptive statistics, formal analysis and conclusion to make it more intuitive and specific.

3.1 Data Selection and Descriptive Statistics

3.1.1 Data selection

This paper analyzes the development of the offshore and onshore RMB markets, and denotes the closing price of the onshore spot RMB exchange rate as CNY, the closing price of the spot exchange rate of the offshore market in Hong Kong as CNH, and the no-dollar forward RMB exchange rate as NDF. In order to avoid the “wrong initial transaction impact”, this paper chooses the sample from May 2, 2012 to April 1, 2022, and then divides the collected data into two parts by the “8-11” exchange rate change node. Source: China Foreign Exchange Trade Center and Wind database.

3.1.2 Descriptive statistics

After the “8-11” exchange reform, the forward exchange rate changes are significantly higher than the spot exchange rate, showing that the market generally has the expectation of RMB exchange rate depreciation, but compared with the “8-11” exchange reform before, the exchange rate fluctuation is much larger than that of the spot exchange rate.

3.1.3 Smoothness test

The data of all three exchange rates are smooth in the case of logarithmic first-order differencing and the logarithmic first-order differences of the three exchange rates have economic significance, which is the rate of return of the exchange rates.

3.1.4 Analysis of empirical results

In this paper, the lag order selection criteria such as AIC, SC, and LR are used to select the lag order for the two sets of data, lag order 2 is chosen for the pre-exchange data and lag order 3 is chosen for the post-exchange data.

3.1.5 Analysis of the results of the Granger causality test

Prior to the “8-11” exchange reform, only the CNH played a role in guiding the NDF and CNY. This is mainly due to the fact that in the reform of China’s RMB exchange rate system, there are still problems such as small trading volume and daily turnover, and the foreign exchange market is not very active, etc. Hong Kong’s offshore RMB market is relatively more mature and has a higher degree of marketization. After the “8-11” exchange rate reform, the inter-orientation between the three types of exchange rate data has been significantly strengthened, and there is a clear causal relationship between the three types of exchange rate data, mainly due to the fact that the CNH is affected by the NDF data, and the NDF is affected by the dual influence of the CNH and the CNY.

3.1.6 Impulse Response Analysis

Observation of the impulse responses reveals that the effect of CNH on CNY fluctuates sharply in the second period, after which there

is a significant increase. The effect of NDF on CNY is smaller and is negative until the second period, after which it is positive. The CNH receives positive shocks from the NDF and the CNY, with larger shocks and a large turnaround in the second phase, and begins to stabilize after the second phase. The effect of CNH on NDF is more stable, with a significant turn in the second stage, followed by a gradual decrease. The effect of CNY on NDF is larger, especially in the second stage.

The results of the pulse response show that the effect of CNH on CNY shows a clear shift in period 2, followed by a slow decline. The impact of NDF on CNY shows a clear shift in periods 3 and 4, but then stabilizes. The CNY has a large impact on the CNH, with a significant turnaround from the second period onwards, followed by a tendency to rise. The NDF has a large impact on the CNH, especially in the second period, with high volatility, and a turnaround in the fourth and fifth periods as well. The impact of CNY on NDF is small, with large fluctuations in periods 2 and 3, and a general trend of gradual widening. The negative impact of CNH on NDF shows a clear turn in periods 2 and 4, and then gradually tends to widen.

4. Conclusion

The results of this paper indicate that the interaction between the onshore and offshore markets of the RMB will be further strengthened with the continuous improvement of RMB marketization and price system. Therefore, in the process of RMB internationalization, China's monetary policy authorities should pay attention to the mutual influence of the two, and this paper puts forward two specific policy recommendations based on the above analysis. First, although the RMB market has undergone a series of reforms, it still suffers from incomplete liberalization of the capital account and a relatively conservative capital market. In contrast, offshore markets such as Hong Kong, Singapore and London are more mature and have developed a relatively sophisticated trading system. Therefore, the onshore and offshore exchange rates can not be converged, must allow domestic investors in the "Shanghai-Hong Kong Stock Connect" and "Shanghai-Lunan Stock Connect" on the basis of better adapted to the mature market. At this stage, we can implement the "dual-track system" of RMB onshore and offshore markets, and open up the capital market in accordance with the actual situation of China. Secondly, the circulation of offshore RMB should be strengthened. To realize the long-term and efficient development of the offshore market, it is necessary to improve the offshore RMB circulation system. Establishing and improving the RMB exchange rate system is a major breakthrough in realizing the internationalization of the RMB, and at the same time, it can also effectively prevent the offshore market from adversely affecting China's onshore market.

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