

# Analysis on the Effects of China's Foreign Exchange Market Pressure

Jianmei Liang

School of Economics, Jinan University, Guangzhou 510632, China.

## Abstract

**Combined with the development of China's economy, this paper points out the formation of pressure in the foreign exchange market, including six factors: trade friction between China and the United States, international expectation of exchange rate appreciation, huge foreign exchange reserves, interest rate difference between China and the United States, economic growth and nominal exchange rate. EMP is constructed by using the construction equation proposed by Weymark which made a general definition of the foreign exchange market pressure index. And the reason of EMP change trend is analyzed. Finally, some Suggestions are put forward to relieve the pressure of foreign exchange market.**

## Keywords

**Foreign Exchange Market Pressure; RMB Exchange Rate; Influencing Factors.**

## 1. Introduction

Under the background of economic globalization, on the one hand, the allocation of economic resources of various countries has been breaking through the limits of national boundaries, seeking the optimal allocation mode and the highest allocation efficiency in the world. On the other hand, the international economic exchanges have also intensified the emergence and strength of financial risks. The emerging foreign exchange reserve plays an important role in maintaining the stable operation of the international economy and the pattern of the international monetary system. Under the domestic controlled exchange rate system, China's accumulated foreign exchange reserves have both advantages and costs for China's rapid economic development. Obviously, as a developing country, the huge foreign exchange reserve is the most powerful proof of a country's economic development strength. It is the material basis for making up for its balance of payments deficit, resisting the financial storm, stabilizing its exchange rate and maintaining its international reputation. However, in recent years, the continuous expansion of China's foreign exchange reserves has had a lot of negative effects on economic development. The domestic price level is rising, the inflation pressure is increasing, the imbalance of national economic structure is more serious, and the unstable factors of foreign exchange market are increasing. In the face of internal and external economic imbalance, how to stabilize the foreign exchange market under various complicated and changeable situations and better play the role of macroeconomic policies is an important challenge for China's economy in the future.

Therefore, a systematic study of the relationship between foreign exchange market pressure and macroeconomic variables from both theoretical and practical perspectives is of great significance to the formulation of macroeconomic decisions and the future development and reform of China's finance.

In 1977, Girton and Roper first proposed the concept of foreign exchange market pressure, and derived the measurement equation of foreign exchange market pressure [1]. The simple average of exchange rate and foreign exchange reserve changes was used to measure the

foreign exchange market pressure. After that, many foreign scholars based on Girton's and Roper's empirical studies on the economies of various countries respectively. Because the theory of principles is not general and universal, they have not reached a regular research result. Until 1997, weymark made a general definition of the foreign exchange market pressure: under the fixed exchange rate system, the exchange rate change is almost zero, which can not reflect the foreign exchange market pressure; under the fully floating exchange rate system, the exchange rate change almost reflects the changes of the supply and demand sides in the foreign exchange market; however, our country is currently in a managed floating exchange rate system, so it is impossible to study the fluctuation of the exchange rate alone It fully reflects the pressure of China's foreign exchange market. He believes that all pressures on the local currency, including expectations and random disturbances, can be reflected in external economic imbalances[2].

With the increasing pressure of RMB appreciation in the world, the foreign exchange market pressure has attracted the attention of domestic academic circles. In 2003, Zhu Jie derived the measurement equation of EMP index under the background of external imbalance. It also explains the reasons for the change of foreign exchange market pressure since the exchange rate reform[3]. In 2008, Bu Yongxiang analyzed the factors influencing the foreign exchange market pressure. The research results show that the changes of credit, economic growth rate and interest rate spread at home and abroad will affect the change of China's foreign exchange market pressure index[4]. In 2010, Wan Chao and Jin Yuying studied six factors, including nominal exchange rate, foreign exchange reserve, international interest rate spread, inflation level difference, forward discount and Sino US trade balance, and constructed a foreign exchange market pressure index to explain the foreign exchange market pressure in different periods according to various factors[5]. In 2014, Yan Jiajia studied that the domestic economic growth rate, exchange rate changes and market expectations are the main factors for the formation of RMB foreign exchange market pressure, and calculated the RMB foreign exchange market pressure index using model dependence method and model independent method[6]. In 2018, Zhou Yun selected effective exchange rate, exchange rate expectation, foreign exchange reserves and Sino US interest rate spread as four factors influencing foreign exchange market pressure, and used different weight construction methods to construct and compare the pressure index of China's foreign exchange market[7].

## 2. Methodology

### 2.1. Analysis of the factors influencing the pressure of foregin exchange market

#### 2.1.1. Trade friction

As the two largest economies in the world, China and the United States are highly dependent on trade. China is the third largest export market of the United States after Canada and Mexico, and is also the largest import source country of the United States. The trade relationship between the United States and China plays an important role in China's foreign exchange market. Since the beginning of this year, the U.S. trump government has vigorously publicized trade protection, and Sino US trade friction is becoming more and more fierce. The tariff increase will exert pressure on China's foreign exchange market through various channels. The first is the trade channel. By imposing import tariffs on most of China's commodities, China's current account deficit will appear. If the current account deficit becomes normal, the downward pressure on the foreign exchange market will be difficult to ease. The second is investment channels. The upgrading of Sino US trade war will lead to the gradual transfer of industries that are produced and processed in China's market and then exported to the United States to neighboring countries, resulting in the outflow of foreign capital under the capital account, and will form downward pressure on the foreign exchange market in the long run.

However, due to the long-term lack of flexibility of RMB exchange rate, it will be difficult to play the role of leverage adjustment, resulting in China's unreasonable balance of payments structure, negative return on foreign investment and serious loss of foreign exchange reserves. The trade war launched by the United States against China has affected the exchange rate of the RMB against the US dollar, and has also lowered the RMB index, the RMB exchange rate against the basket of currencies. Figure 1 shows the trend of RMB exchange rate index CFETS in one year. The biggest decline was 5.56%, from 97.85 on June 15 to 92.41 on July 31, and has been hovering around 93 since then. In the corresponding period, the RMB exchange rate continued to depreciate under the promotion of market forces.

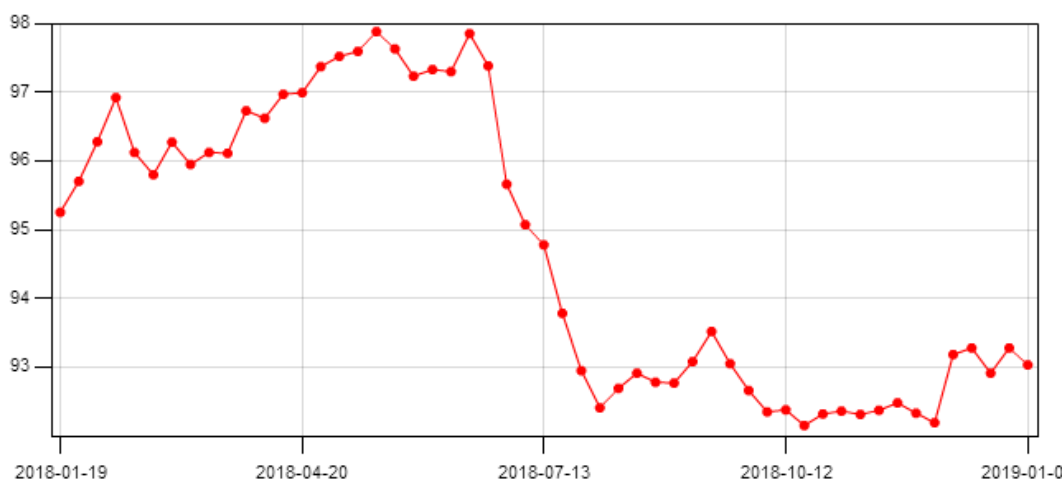


Figure 1. Flow chart of target tracking process

### 2.1.2. Exchange rate expectation

As the world's second largest economy, China's contribution to the world economy is obvious to all. The strength of China's RMB has added a lot of confidence to the steady growth of the world economy. There are continuous calls for RMB appreciation in the world. Western economies, led by the United States, politicized their economic problems and vigorously "created" public opinion pressure for the appreciation of RMB. They claimed that China would improve the international competitiveness of its export commodities by devaluing its own currency or forcing its competitors to appreciate its currency, and to drive economic growth by expanding its trade surplus or narrowing its trade deficit, resulting in the depression of its domestic manufacturing industry And the employment rate is declining. The implication is that the undervalued RMB exchange rate is an important cause of global economic imbalance. Therefore, if enterprises, residents and investors at home and abroad form the expectation of RMB unilateral appreciation again, the "hot money" which can not be explained by trade, compliance investment and credit will flow into the market violently, and the market's expectation of RMB appreciation will increase the pressure on the foreign exchange market and form a vicious circle of "boosting the flames".

The mechanism of "expectation self realization" makes expectation an important source of exchange rate pressure. Figure 2 shows the trend of RMB non delivery forward exchange rate and spot exchange rate. After 2002, it reflects the increasing expectation of RMB appreciation. With the increasing expectation of appreciation, large-scale international hot money flows into China, which further increases the pressure of RMB appreciation. In the 2008 financial crisis, the US dollar devalued sharply against the RMB, and the difference reached the maximum. After that, the pace of market-oriented reform of the exchange rate accelerated, and the RMB exchange rate changed from one-way appreciation to two-way fluctuation.



Figure 2. Trend chart of RMB non delivery forward exchange rate and spot exchange rate

### 2.1.3. Foreign exchange reserve

According to economic theory, under the floating exchange rate system, the intervention of monetary authorities in foreign exchange market will be greatly reduced. The market will realize the price fluctuation according to the change of supply and demand, so as to solve the problem of imbalance of supply and demand automatically. The exchange rate will be stable under the condition that both the money market and the foreign exchange market are balanced, and there is no need to keep a large amount of foreign exchange reserves. However, after developing countries and transition countries abandon fixed exchange rate system, their foreign exchange reserves increase rapidly. Now, nearly two-thirds of the world's \$3.5 trillion in foreign exchange reserves are in Asia. This is because the financial system of developing countries is very fragile, and it is easy to induce international speculative capital to attack a country's currency. However, most developing countries are not completely floating exchange rate system. In order to maintain people's confidence in their own currencies, they often need high foreign exchange reserves to maintain a relatively stable exchange rate level. By maintaining the government's final intervention ability in the market, we can so that the domestic economy is temporarily free from external economic interference. But at the same time, direct intervention in the foreign exchange market by buying and selling foreign exchange in order to smooth the change track of RMB exchange rate and passively put a large amount of basic currency into the economy to meet the market demand may lead to the rising pressure of foreign exchange market.

### 2.1.4. Interest spread between China and foreign countries

Based on the theory of interest rate parity. Capital is profit driven. Interest spread will bring cross-border capital flow, and interest arbitrage activities of capital will change the supply and demand of money, and the supply and demand of money will change the exchange rate. As the interest rate spread between China and the United States widens, capital flows into China net, and RMB has appreciation pressure against the US dollar; the interest rate gap between China and the United States is narrowed, arbitrage space is reduced, capital flows to more developed economies, and RMB has devaluation pressure against the US dollar. At present, China is not a fully open economy and can not achieve free capital flow and effective exchange rate fluctuations. However, the role of interest rate parity in China and the United States can not be fully explained by the interest rate parity. Figure 3 shows the trend of the relationship between China US interest rate spread and spot exchange rate.

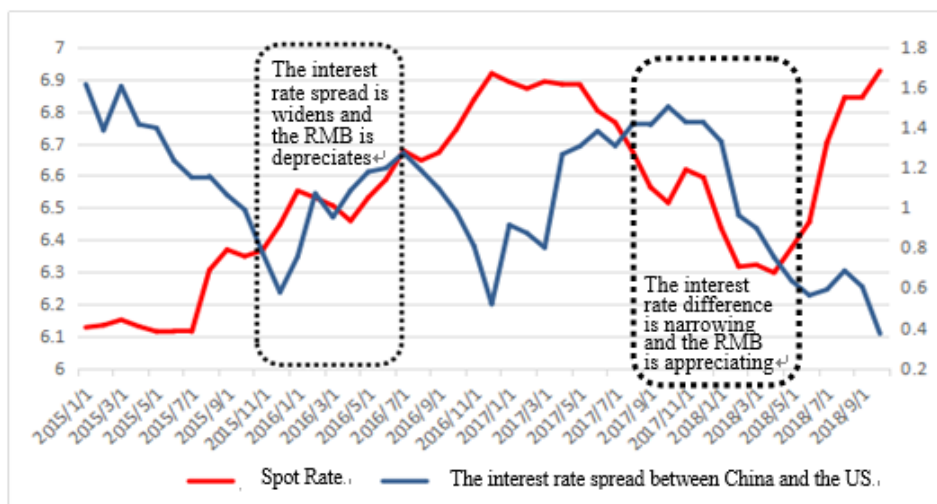


Figure 3. The relationship between China US interest rate spread and spot exchange rate

### 2.1.5. Economic growth

Economic growth has always been the fundamental factor to determine the value of a country's currency. The reason lies in: if a country's economic growth rate is high, people have confidence in the good operation of the macro-economy, foreign investors must actively invest in the country, thus causing strong demand for the country's currency, and the pressure of appreciation in the foreign exchange market naturally exists. China's economic development in the past 30 years has been open and export-oriented. As we all know, export is one of the three carriages driving China's rapid economic growth. In the balance of payments, it is reflected in the balance of payments surplus under the current account and capital and financial account. The surplus in successive years leads to the unbalanced fluctuation of the external currency market. China's exchange rate system is not fully marketized, and the pressure of China's foreign exchange market is constantly increasing.

### 2.1.6. Nominal exchange rate

The nominal exchange rate is equal to the weighted average of the bilateral nominal exchange rates between its currency and the currencies of all trading partners. Before the exchange rate reform, it can comprehensively reflect the change trend of the relative price of RMB and other currencies. It can more roughly reflect the pressure on RMB in the foreign exchange market, which can be released through the change of nominal effective exchange rate. Before the exchange rate reform, China's exchange rate level was basically maintained at 8.2 level. Exchange rate appreciation, as a way to release the pressure of foreign exchange market, is basically ineffective at this stage. After the exchange rate reform, with the increase of the elasticity of RMB exchange rate, the pressure release channel brought by continuous appreciation gradually opens. From July 2005 to January 2007, the RMB exchange rate continued to appreciate month by month. Obviously, this part of the appreciation played a significant role in easing the appreciation pressure of the foreign exchange market. Then, with the implementation of the exchange rate reform policy which changed the unilateral appreciation of RMB, the RMB exchange rate changed from one-way appreciation to two-way fluctuation, and the effect of releasing pressure through the change of nominal effective exchange rate gradually weakened.

## 2.2. Results and discussion

### 2.2.1. The construction of foreign exchange market pressure index

Based on the above analysis of the influencing factors of foreign exchange market pressure, the influence of interest rate spread between China and the United States on the exchange rate is

not very clear. This paper selects five indicators to reflect the pressure sources of RMB appreciation, including RMB nominal exchange rate change rate  $DE$ , foreign exchange reserve change rate  $dfer$ , RMB non delivery forward exchange rate appreciation discount  $dndf$ , net export balance change rate  $DNX$  and economic growth agent index  $dy$ . The GDP index reflecting domestic economic growth is quarterly data with a long time span, which is not suitable for the analysis in this paper. Therefore, the consistent index of macroeconomic prosperity index published by the National Bureau of statistics is selected as the proxy index of GDP. Data from wind financial database, National Bureau of statistics and people's Bank of China. The data sample is from January 2005 to July 2018. From the construction experience of main empi at home and abroad, the main literature at home and abroad selects the weighted arithmetic average method as the index calculation method. Referring to the research method of Wanchao, this paper uses the reciprocal of standard deviation of each index in the sample interval as the coefficient of each index[8]. The specific construction model is set as follows:

$$EMP = \frac{1}{\sigma_{DE}} \cdot DE + \frac{1}{\sigma_{DFER}} \cdot DFER + \frac{1}{\sigma_{DNDF}} \cdot DNDF + \frac{1}{\sigma_{DNX}} \cdot DNX + \frac{1}{\sigma_{DY}} \cdot DY \tag{1}$$

As can be seen from Figure 4, from July 2005 to July 2018, the operation of China's empi fluctuated around zero. From the sample interval, after the reform of RMB exchange rate system in July 2005, before the policy was issued, the market had predicted the appreciation of RMB in advance and realized it in advance. After the policy was really introduced, the reality released part of the expected pressure. At this time, the exchange rate depreciated slightly and the pressure of foreign exchange market decreased.

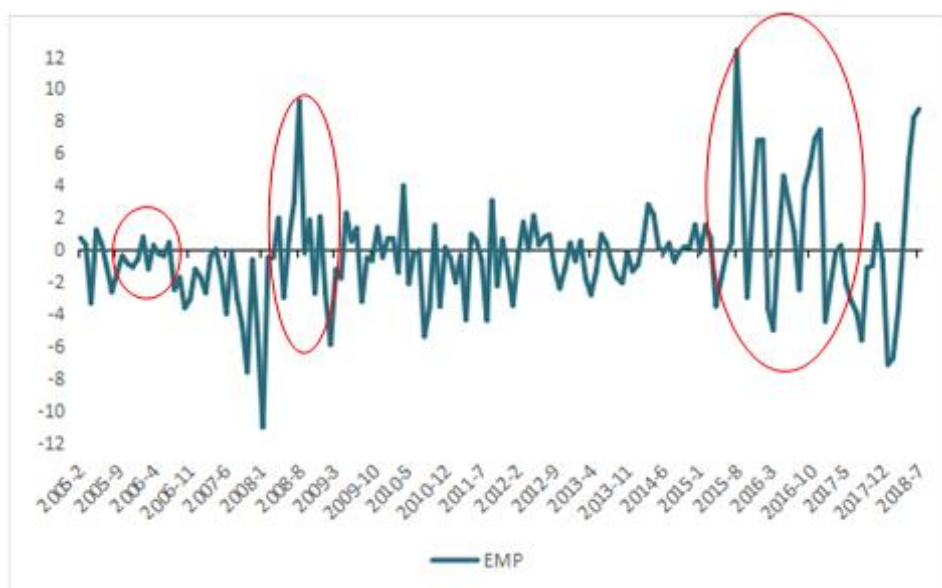


Figure 4. Change trend of RMB foreign exchange market pressure index

Since then, from the end of 2008 to the beginning of 2009, the international financial market has been greatly impacted. On the one hand, in order to alleviate the external pressure, China appropriately narrowed the fluctuation range of RMB. When many countries had to choose their own currencies to depreciate sharply against the US dollar, the RMB exchange rate remained basically stable, but the rate of appreciation slowed down. On the other hand, the financial crisis has caused economic damage in western developed countries, China's export trade has declined, and the international community needs China to stabilize the exchange rate and thus stabilize the confidence of the international market. The United States and European countries have temporarily eased the pressure on RMB appreciation. China's empi shows a downward trend.

In the three years since the "August 11" exchange rate reform in 2015, the RMB exchange rate formation mechanism has become more market-oriented. The central bank has not taken too many direct intervention measures, and the tolerance of exchange rate depreciation has been improved. The two-way fluctuation is a big probability event. Generally speaking, the foreign exchange market is under pressure to maintain appreciation. The main reason is that the US dollar is weakening as a whole, while China's main economic indicators are generally better, the year-on-year growth rate of exports is significantly accelerated, and the economy maintains a medium and high-speed growth trend.

Based on the construction of foreign exchange market pressure index, the trend of RMB exchange rate pressure since 2005 can be used to fit the major events. However, there are many factors that affect the foreign exchange market pressure. This paper is only based on the macroeconomic fundamentals, trade relations and exchange rate expectations. Moreover, because the EMP index construction model is still in certain defects, the selection of weight is questionable, so the construction of foreign exchange market pressure index in China and abroad should be further studied.

### 3. Conclusion

Under the continuous double surplus, China has accumulated about 3 trillion US dollars of foreign exchange reserves. With the huge foreign exchange reserves, foreign countries hope to use public opinion and hot money inflow to pressure the Chinese government and force RMB appreciation to respond to the growing demands of trade protectionism in these countries. In this regard, China has undergone several exchange rate system reforms to ease the pressure of RMB appreciation or devaluation. In this regard, this paper puts forward the following countermeasures and suggestions to ease the pressure of China's foreign exchange market and perfect the RMB exchange rate formation mechanism: perfect the RMB exchange rate control mechanism and perfect the RMB exchange rate control mechanism.

### References

- [1] Girton, L, and D. Roper. Monetary models of exchange pressure applied to the post war Canadian experience. *American Economic Review*, Vol. 67 (1977) No.3, p.537-548.
- [2] Weymark, Dlanan. Measuring the degree of exchange market intervention in a small open economy. *Journal of international Money and Finance*, Vol.22 (1997) No.1, p. 55-79.
- [3] Jie Zhu. China's foreign exchange market pressure and the degree of intervention of the central bank: An Empirical Analysis. *world economy*, Vol. 29 (2003) No.6, p.14-23.
- [4] Yongxiang Bu. RMB appreciation pressure and monetary policy: Empirical Analysis Based on monetary model. *Economic research*, Vol. 67 (2008) No.9, p.58-69.
- [5] Chao Wan, Yuying Jin. Research on the change of RMB foreign exchange market pressure index and the effect of pressure release. *Finance and trade research.*, Vol. 26 (2010) No.2, p.82-88.
- [6] Jiajia Yan, Wenbin Huang. Research on the pressure and influencing factors of RMB foreign exchange market. *Journal of Guizhou University of Finance and economics*, Vol. 37 (2014) No.5, p.10-18.
- [7] Yun Zhou. The construction and comparative analysis of China's foreign exchange market pressure index -- An Empirical Study Based on China's data of 2005-2015. *Statistical and Information Forum*, Vol. 67 (2018) No.4, p.39-48.
- [8] Li Zhang. Analysis of the impact of interest rate spread between China and the United States on the change of RMB exchange rate. *Forum on statistics and information*, Vol. 34 (2010) No.4, p.57-62.