



What Influence the Exchange Rate of RMB after the Outbreak of Covid-19?

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Abstract. This article studies the trend and influencing factors of the exchange rate of RMB since the outbreak of the Covid-19 in 2020. Since the outbreak of the Covid-19, the RMB exchange rate has experienced a wide range of fluctuations. This article first summarizes the relevant literature about the determinants of exchange rate, and based on the literature, this paper studies the reasons for why the RMB exchange rate fluctuations since the epidemic. In the literature, the influencing factors of exchange rates includes, the purchasing power of currency, the expected return on monetary deposits, or interest rates and international balance. By studying interest rates and data on economic growth, imports and exports, and interest rates between China and the United States, this article finds that the strong performance of the RMB in 2021 was driven by China's strong economic performance and international trade. However, the depreciation of the RMB after 2022 is the result of the increasing of interest rates in the United States and the sluggish Chinese economy. Although the IMF has some expectations for the recovery of China's national economy, the magnitude of the recovery has not yet returned to its peak in 2021. Therefore, for the recovery of the value of the Chinese yuan, we still need to wait for the end of the Federal Reserve's interest rate hike cycle and the stable recovery of the Chinese economy.

Keywords: Exchange Rate, Interest Margin, Foreign Trade

1 Introduction

Since the outbreak of the epidemic, the RMB has experienced significant fluctuations. At the same time, there has been a significant mismatch in the economic and monetary policy cycles of China and the United States. Therefore, in order to explore the reasons for the drastic fluctuations of the RMB, it is not only necessary to consider domestic factors in China, but also important to consider the world economy and policies. This article attempts to explore the reasons for the fluctuation of the RMB during this period through theory and data. Firstly, Figure 1 shows the exchange rate changes of the RMB.

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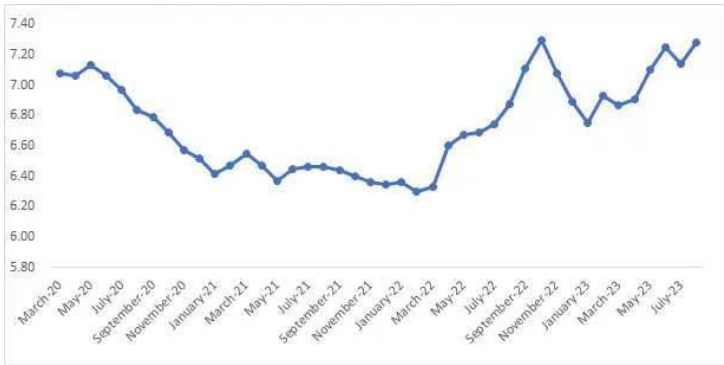


Fig. 1. Exchange Rate of RMB since Covid-19

In March 2020, the exchange rate of the Chinese yuan against the US dollar was around 7.1, and it continued to appreciate in the following year, reaching 6.4. It remained stable at around 6.4 throughout 2021. In March 2022, the Federal Reserve initiated its most aggressive interest rate hike in forty years, causing the RMB exchange rate to fluctuate and adjusted under unexpected tightening. At the end of October of that year, the exchange of RMB against USD fell to around 7.30, setting a new low since the end of 2007 [1]. From November 2022 to March 2023, the RMB increased from 7.2 to 6.8. Regarding the reason for this round of RMB exchange rate hike is that market thought US inflation has peaked and fallen, and the Federal Reserve has slowed down interest rate hikes, which is likely to lead to a recession in the US in 2023. At the same time, China's adjustment of the "four arrows" policy in the real estate industry (namely credit support, bond issuance support, equity financing, and domestic and foreign loans), as well as the foreseeable recovery of the Chinese economy, have all led to a decline in the US dollar index and the appreciation of the RMB against the US dollar. It can be seen that at that time, both domestic and foreign investors held optimistic expectations for the Chinese economy and were concerned about a recession in the US economy, resulting in a significant appreciation of the RMB. Then from March to August 2023, the RMB depreciated significantly again, and the exchange rate of the RMB slowly depreciated from 6.8 at the beginning of the year to around 7.2. On the one hand, it is because the Federal Reserve continues to raise interest rates significantly, causing the US dollar to continue to flow back to the United States. In November 2023, the US federal funds rate had reached the range of 5.25%-5.5%. Figure 2 shows the high return of US dollar assets. On the other hand, the optimistic expectations for the Chinese economy at the beginning of the year fell through, and both the Chinese economy and the real estate market faced significant difficulties. The US economy did not experience a recession but instead experienced unexpected growth, and the fundamental differences between the Chinese and US economies were also important factors leading to the depreciation of the RMB.

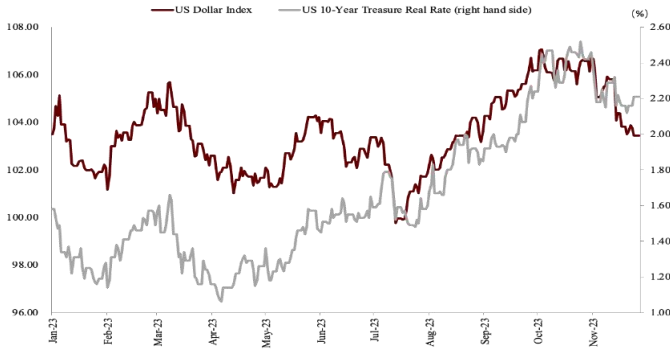


Fig. 2. Dollar index and real interest rate of US treasury bond bonds

The exchange rate is the price of currency and is also determined by the supply-demand relationship. When a country's goods are strongly demanded in the international market, there will also be a significant demand for its currency. If supply exceeds demand, the exchange rate will appreciate. The monetary policy of the central bank determines the returns on holding currency. When monetary policy tightens, interest rates rise, and the returns on holding currency rise, then the currency would be likely to appreciate. At the same time, both foreign trade conditions and monetary policy are endogenous to a country's economic situation. If the economy is prosperous, foreign trade is often hot, and the return on deposit is high. Therefore, the following analysis of this article will start from three aspects: foreign trade, monetary policy, and economy conditions, to explore the fluctuation of RMB exchange rate since the epidemic.

The structure of rest of this paper is as follows. Literature review summarizes the existing literature about how exchange rate is determined. In analysis part, I use the theories to analysis why RMB fluctuated and show some economic data to give evidence. Finally, conclude this paper.

2 Literature Review

There have been many discussions in existing literature on the factors influencing exchange rates, and this article summarizes the relevant theories in existing literature.

2.1 Purchasing Power Parity Theory

There are two forms of purchasing power parity theory: absolute purchasing power parity and relative purchasing power parity. The theory of absolute purchasing power parity holds that the exchange rate between two currencies should be equal to the ratio of the price indices of the two countries. The exchange rate represents the ratio of domestic currency to foreign currency. In fact, it represents the ratio of exchanging domestic purchasing power for foreign purchasing power. Absolute purchasing power explains exchange rate decisions based on the purchasing power of domestic and

foreign currencies in a basket of comparable goods. The theory of relative purchasing power parity suggests that the change in exchange rate should be equal to the difference in inflation rates between the two countries [2].

2.2 The Interest Rate Parity

The theory of interest rate parity suggests that the expected return on deposits of any two currencies should be the same. That is to say, the interest rate difference between two different currency deposits should be equal to the percentage of expected exchange rate fluctuations in the market. The prerequisite for the establishment of interest rate parity is a balanced market interest rate and complete convertibility of currency. Assuming these two prerequisites are met, after considering the benefits of interest income and exchange rate fluctuations, the actual return rate of deposits in the two currencies should be the same. However, we know that neither of these prerequisites holds true in China, so the explanatory power of interest rate parity in China is not strong. With the development of marketization in China, the role of interest rate parity will continue to strengthen. Firstly, China is continuously moving towards full convertibility of the RMB and free flow of capital, interest rate parity will apply better in China. Secondly, China's interest rate formation mechanism has become market-oriented [2].

2.3 The Theory of Balance of Payment

The supply and demand of foreign exchange determine the level of exchange rate. The surplus of international payments will increase the demand for domestic currency, thereby promoting currency appreciation. There is a long-term equilibrium relationship between monthly fluctuations in exchange rates and imports and exports, and the significance is high[3]. The long-term impact of exchange rate fluctuations on export trade is not only much greater than the impact of exports, but also has a significant delayed effect, which is consistent with general trade theory and actual situations.

The above discusses some theories of exchange rate determination. In the following text, I will provide some data evidence to explore the influencing factors behind the trend of the RMB exchange rate.

3 Analysis

This article will analyze the causes of the RMB trend after the epidemic from four aspects of time series data: the 10-year interest rate difference between China and the United States, total import and export volume, growth rate of import and export, and GDP growth rate.

3.1 Discussion About Global Economy and Exchange Rate Since 2020

The pandemic has led to a global economic downturn. The epidemic has caused difficulties in personnel and goods transportation, and may create new bottlenecks in the global supply chain. The weak economic recovery of various countries will lead to a slowdown in the global technological research and development, and significant obstacles to personnel exchanges and trade cooperation between countries, causing fluctuations in the global financial market and hindering the internationalization process of the RMB.

The Federal Reserve raises interest rates frequently. After the epidemic, the inflation level in the United States has increased, and in April 2022, the US CPI increased by 8.3% year-on-year, reaching a high level. On March 17, 2022, in response to inflation, the Federal Reserve began raising interest rates and began a new round of interest rate hikes after 2015. The different monetary policies of the Federal Reserve and the People's Bank of China will affect the future exchange rate of the RMB, causing fluctuations in the exchange rate market [4].

The Russia-Ukraine conflict continued, and the shadow of high inflation shrouded the world. On February 24, 2022, Russia carried out special military operations against Ukraine, and the Russia-Ukraine conflict broke out in an all-round way. As a result, disputes among EU countries might hinder the development of European economy, and investors' risk preferences were significantly suppressed, leading to capital outflows from emerging markets, driving the general depreciation of emerging market currencies, and causing global inflation to rise. The RMB has initially shown certain characteristics as a safe haven currency, but it is not a typical safe haven asset, but rather a regional safe haven currency. Although the exchange rate of the RMB against the US dollar is trending stronger, the yield of Chinese bonds is actually increasing. The reason is that in February, overseas net reduction of RMB bonds was 80.3 billion yuan, including 35.4 billion yuan of RMB treasury bond bonds. In March, foreign capital continued to reduce its RMB bonds by 112.5 billion yuan. The exchange of reduced holdings of RMB assets for foreign exchange overseas has caused a sustained depreciation of the offshore RMB exchange rate, which drove the depreciation of onshore RMB exchange rate [4].

The IMF predicts that global growth will decline from 3.4% in 2022 to 2.9% in 2023, lower than the historical average (3.8%) of the IMF from 2000 to 2019. But the IMF predicts that with the recovery of China's economic activity and the improvement of personnel mobility, the growth rate of the Chinese economy will significantly increase to 5.2% in 2023. The United Nations predicts in its report that as the Chinese government optimizes its epidemic prevention policies and adopts favorable economic measures, China's economic growth will accelerate this year, reaching 4.8%. The World Bank also predicts that China's economic growth will increase from 2.7% in 2022 to 4.3% this year [5].

From 2022 to 2023, the US economy experienced a strong growth. From the perspective of growth momentum, consumption remains the main driving force for US economic growth. The driving effect of private investment on economic growth has also significantly increased. Net exports, government consumption, and

investment continue to positively drove economic growth. The Federal Reserve suspended interest rate hikes during its September meeting, but delayed expectations of the timing of the rate cut. The possibility of another rate hike within the year still exists. After the epidemic, the US economy has shown unexpected resilience, which is also an important factor supporting the US dollar exchange rate.

3.2 Evidence From Data

The previous article explored the determinants of exchange rate. Based on the aforementioned economic theory, this paper collected the interest rate of 10-year treasury bond bonds of China and the United States, monthly data of China's import and export, and year-on-year growth of GDP to explore the reasons for the trend of RMB exchange rate against the US dollar since the epidemic. The data is sourced the National Bureau of Statistics of China and Bloomberg.

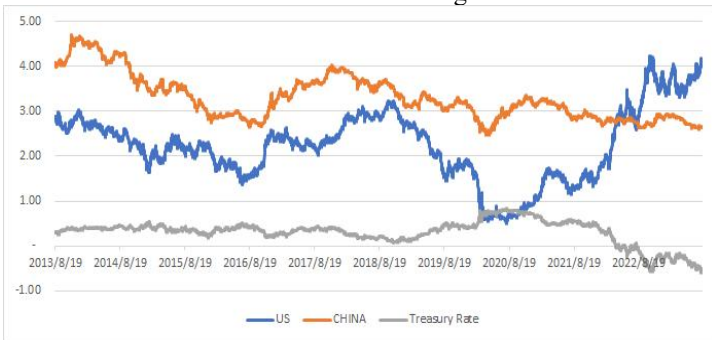


Fig. 3. China and US 10-year Treasury Rate

As shown in Figure 3, from the first quarter of 2020 to the first quarter of 2022, the interest rate spread between China and the United States has been continuously narrowing, which put pressure on the RMB to depreciate. However, at the same time, we see a strong appreciation of the RMB. Therefore, the trend of the RMB during this period is not driven by interest rate differentials, and it is necessary to consider the exchange rate trend from the perspectives of economic fundamentals and foreign trade.



Fig. 4. China's total import and export value

However, as shown in Figure 4, we observed that China's foreign trade imports and exports were booming during this period, with net export values reaching a historic high and economic growth showing impressive performance. Therefore, the appreciation of the RMB should be mainly driven by foreign trade and strong economic fundamentals. In 2021, China's risk-free interest rate has emerged from the "deep V" market that began with the 2020 pandemic and has returned to pre pandemic levels, while the US economy is still at a historic low [6].



Fig. 5. Growth Rate of China's Imports and Exports

As shown in Figure 5, it can be seen that the year-on-year growth of imports is relatively stable. However, in March 2021, due to the impact of the epidemic, the year-on-year growth of exports increased significantly, far exceeding imports. It can be seen that the epidemic has had a significant impact on imports and exports, and has also increased the international demand for RMB through foreign trade channels.

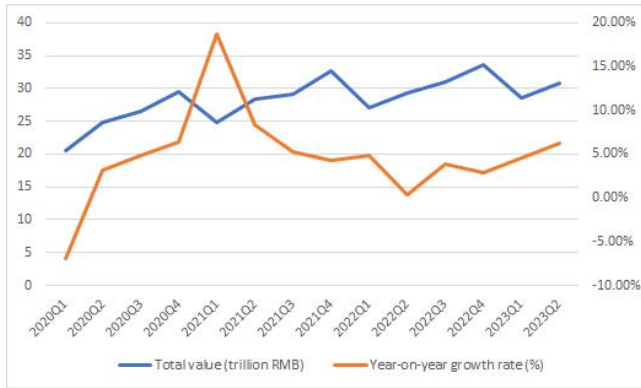


Fig. 6. Growth of China's Economy

In Figure 6, we can see the same changes in exports as in Figure 5. Although the total value was not high in March 2021, the growth rate of exports was relatively large, leading to a significant increase in GDP growth rate.

From the second quarter to the third quarter of 2022, the depreciation of the RMB was severe. The reasons for the severe depreciation of RMB are as follows. Firstly, there is a misalignment of macroeconomic trends between China and American. The Chinese economy is facing triple pressures of demand contraction, supply shock, and weakened expectations. Additionally, it was been hit by factors such as the rebound of the epidemic, sudden changes in the international geopolitical landscape, and the resulting surge in commodity prices. The downward pressure on the economy has increased. However, the US economy was strong, with strong retail consumption under fiscal subsidies. Despite an unexpected decline in GDP in the first quarter of 2022, the financial markets were not pricing a recession of the US economy. Secondly, there is a deviation in the direction of monetary policy between China and American. Starting from the second quarter, the yield of 10-year US Treasury bonds remained stable above the yield of Chinese bonds. China's prudent monetary policy is flexible and moderate. In January 2022, the MLF interest rate was lowered, and the reserve requirement ratio was lowered in April, increasing support for the real economy. The Federal Reserve has also started a rate hike and balance sheet reduction model, announcing a gradual reduction in balance sheets starting from June 2022. Due to the different monetary cycles between China and the United States, China is still in the period of monetary easing, while the United States has significantly tightened monetary policy, which has led to the rapid reduction of the interest rate gap between China and the United States to negative. The interest rate of the 10-year treasury bond bonds between China and the United States has been "inverted" for the first time in 12 years, which is also the main reason for the sharp short-term depreciation of the people's currency [7].

Since the fourth quarter of 2022, the interest rate spread between China and the United States has remained stable and fluctuating at a relatively low level. The RMB exchange rate has appreciated slightly after the optimization of epidemic prevention and control measures, and depreciated significantly afterwards. At the same time, the

import and export growth rate has also turned negative year-on-year. The deterioration of China's foreign trade situation is one of the factors leading to the depreciation of the RMB. In addition, short-term capital flows are also an important factor that put depreciation pressure on the RMB [8].

4 Conclusion

By studying interest rates and data on economic growth, imports and exports, and interest rates between China and the United States, this article finds that the strong performance of the RMB in 2021 was driven by China's strong economic performance and international trade. However, the depreciation of the RMB after 2022 is the result of the increasing of interest rates in the United States and the sluggish Chinese economy. Although the IMF has some expectations for the recovery of China's national economy, the magnitude of the recovery has not yet returned to its peak in 2021. Therefore, for the recovery of the value of the Chinese yuan, we still need to wait for the end of the Federal Reserve's interest rate hike cycle and the stable recovery of the Chinese economy.

Since the outbreak of the pandemic, exchange rates in various countries have experienced significant fluctuations. So, what are the factors causing fluctuations between other currencies is an interesting question. Is the answers similar to what this paper indicate? The universality of the research ideas and methods in this article is worth exploring.

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