The Concrete Investigation Pointing to CNY Exchange Rate from The Perspective of Mundellian Trilemma

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Abstract. The objective of the study is to analyze the changing trends of the RMB exchange rate policy in recent decades from the perspectives of national policies, the development history, and potential advantages and disadvantages, using the main research method of The Impossible Trinity. This study adopts a desktop research method, focusing on the definition and main content of The Impossible Trinity, the current situation of RMB exchange rate policy, and the possible selection of RMB exchange rate system based on the theory of The Impossible Trinity, to study the reform of RMB exchange rate policy. The results of the study reveal that the main characteristics and reasons for the formation of the RMB exchange rate policy are the diversification of international trade currencies (such as the US. Dollar), the lessons learned from a basket of monetary policies, and the combination of a socialist market economy system. At the same time, it also brings potential shortcomings (the fluctuation of the restricted RMB exchange rate, the affected RMB exchange rate owing to trends of US dollar exchange rate, the contradiction between capital account and exchange rate policy changes, the forced increase in starting-up funds of foreign-funded enterprises, and the need for the further improvement in exchange rate market policies). Therefore, the choice of the RMB exchange rate system should effectively increase the proportion of the RMB in the international market, effectively control the range of RMB fluctuations, and thus achieve a true exchange rate system, which is market-based, single and managed. Ultimately, Chinese monetary system will achieve balance.

Keywords: Mundellian Trilemma (the impossible Trinity), CNY Exchange Rate, Choices, Defects

1 INTRODUCTION

1.1 Research Background

Currently, with financial trades between Chinese mainland and Hong Kong thriving, the exchange rate of CNY to HKD has experienced a sharp fluctuation [1] (from

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1.066340 in 2008-12 to 1.0871 in 2023-02-10) since the further cooperative policies (like the official document CEPA adopted mutually in 2003 [2]) were published.

In the current era, CNY Exchange Rate. As an international standardized official document, CEPA ensures the long-term stability and potential possibility of CNY Exchange Rate with other developed and developing countries. CEPA, has extended advantages over some defective documents (like thirteen expired financial documents concerning public-private partnership (PPP) published by the Ministry of Finance) which covers considerable commercial targets and principles to better assist Ministry of Commerce of the People's Republic of China in promoting overseas trade.

1.2 Research Objective

It is mainly because through such an invaluable experience, my partner and I can both acquire a deeper understanding towards CNY Exchange rate and more practical applications with the structural model Mundellian Trilemma (The Impossible Trinity).

1.3 Feasible Positive Feedbacks

Given most people do not have a chance to obtain a better understanding about some internal changes related to CNY Exchange Rate, this report would analyze its potential influences in two different aspects that would be interpreted as both The Impossible Trinity itself theory and its practical applications in some commercial settings.

It is apparent that this concept contains considerable theorized and standardized stability on the theory aspect. Just as its major comprised proportions are all putting their keynote to three different parts (current, exchange rate and earnings), The Impossible Trinity manages to achieve just two of them, aiming at making the largest profit from these actions. As a consequence, provided that individuals are eager to make their mind to gain a thorough summary and reflection how this concept of theories works in realistic changes of CNY Exchange Rate, they would discover this report and ultimately learn what they initially pursue for in studying commercial concepts.

Another aspect of benefits and meanings behind this report is to support some reasonable methods to tackle some economic otherwise financial difficulties in other overseas enterprises. These companies, which could adapt relevant solutions to enhance their core competence against their business peers, subsequently gain an achievement of win-win theory in alleviating the tension of relationships between employers and employees, cutting some unnecessary external expenditures to enrich internal reserve and extending their overseas business to promote the international influence of CNY Exchange Rate.

2 LITERATURE REVIEW: A MULTIDIMENSIONAL INTERPRETATION OF THE MUNDELLIAN TRILEMMA

2.1 The Theoretical Essence and Real-World Challenges of the Mundellian Trilemma

The Mundellian Trilemma, as one of the core theories in international macroeconomics [3], provides profound insights into the constraints on national policy choices. However, there is a tension between the universality of the theory and its adaptability to specific national economic environments. While existing literature has thoroughly explicated the theory, its explanatory and predictive power still faces challenges, especially in transitional economies like China. For instance, how China achieves a balance between maintaining exchange rate stability, facilitating capital mobility, and preserving monetary policy independence is a complex and dynamically changing issue that is not fully addressed in current literature.

2.2 Critical Analysis of Existing Research

Existing research often focuses on the construction and mathematical derivation of the Mundellian Trilemma, neglecting the political-economic factors in the implementation of policies. For example, policymakers may be influenced by domestic and international political pressures, which are seldom mentioned in current literature. Moreover, the volatility of international financial markets, the complexity of cross-border capital flows, and changes in the international monetary system all pose new challenges to the applicability of the Mundellian Trilemma. There is a lack of sufficient exploration in these areas within existing literature.

2.3 Research Gaps and Future Directions

Future research should pay more attention to the empirical analysis of the Mundellian Trilemma in different economies, especially considering the differences in economic structures, development stages, and policy environments.[4] Additionally, research should extend to the international political economy, exploring how international relations impact national choices within the trilemma. The potential impact of financial technology developments, such as digital currencies and blockchain technology, on traditional exchange rate regimes is also an emerging area worthy of in-depth study.

2.4 Profound Insights into Existing Literature

In evaluating existing literature, it is important to recognize that while the Mundellian Trilemma provides a powerful analytical framework, it is not omnipotent. The theory's limitations lie in its failure to fully consider non-economic factors in the policy-making process, such as political will, social stability, and international cooperation. Therefore, future research should combine theoretical analysis with empirical studies to explore the optimal combination of policy objectives in the real world.

3 ANALYSIS OF THE CURRENT SITUATION OF THE RMB EXCHANGE RATE SYSTEM

Given a range of financial policies which were put forward in 2023 (like Circular of the State Administration of Foreign Exchange on Expanding the Pilot Program for High-level opening-up of Cross-border Trade and Investment published by State Administration of Foreign Exchange in December 15, 2023[5]), the prospect of futuristic CNY Exchange Rate would be bright enough to keep stable at a relatively high standard to function reasonably.

As the reporter who wrote the first background information on the website Sina News concerning CNY Exchange Rate in 2024, said this year would achieve a great breakthrough that CNY Exchange Rate against U.S dollar would probably outnumber 7 each in a relatively more precise way. It might be witnessed that three critical factors that the attribute of the "policy floor" has risen, the imprint of the "financing currency" has deepened, and the function of the "economic stabilizer" has weakened would play a main role in shaping the basic form of Chinese Economy.

To better overview how CNY Exchange Rate would stand in a relatively positive situation in 2024, above-mentioned unstable elements, which would subsequently lead a series of phenomena separately called moderate appreciation, the high pressure of depreciation in the first half of the year and the large overall fluctuation while its locality possible to seven, should be listed as reminders in order to provide more convincing background Information in futuristic studies.

For instance, the provided chartFig.1. illustrates the major reasons that promote three changes of CNY Exchange Rate. Start with the three vertices of the triangle, it is obvious that respectively the "policy floor", "financing currency" and "economic stabilizer" is fixed at the apex as the core points, and the main reason for their formation is the competition between China and the United States and the inversion of interests between China and the United States. And under the influence of interest fluctuationsFig.2., the RMB exchange rate will take corresponding measures to ensure the stability of the exchange rate.[6]

Among them, the phenomenon of two-way fluctuation will lead to high volatility, and one-way fluctuation will lead to low volatility. After the implementation of these two measures, it will lead to a decline in trading volume to a certain extent, which will reduce exchange rate volatility, and secondarily this factor and the inversion of Sino-US interests will act together on the "financing currency", thereby bringing depreciation pressure and carry trade to the "policy floor", thus indirectly leading to the decline of the "economic stabilizer". At the same time, interest rate volatility has risen, thus successfully mitigating the impact of the earlier reduction in the exchange rate volatility.[7]

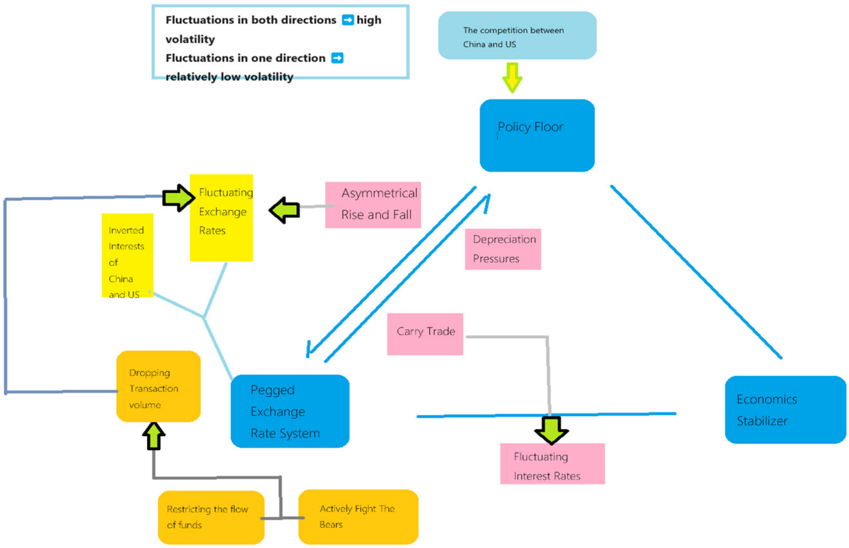

Fig. 1. The circle of three major factors contributing to the fluctuation of the CNY Exchange Rate (Note: The time range is from October 31 to November 30, 2023.)

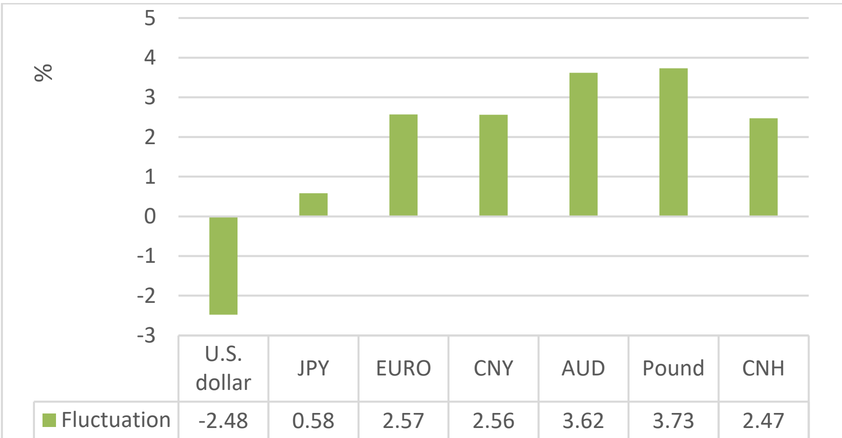

Fig. 2. The rise and fall of major exchange rates in November (Source: Wind and Dongwu Securities Research Institute)

3.1 The Evolutionary Trajectory of China's Exchange Rate Policy

This section provides an in-depth analysis of the chronological development of China's exchange rate system, emphasizing the key policies Table 1 and their effects on the value of the Renminbi (RMB). The historical progression is detailed in the table below, which outlines the policy issuers, the specific years [8], and the targeted policy measures related to the RMB exchange rate.

Table 1. the strategic evolution of China's exchange rate policy

Policy Issuer	Year	Policy Measure	Impact on RMB Exchange Rate
Ministry of Finance	1978	Introduction of the dual-track exchange rate system	Initiated a shift towards a more flexible exchange rate regime
State Council	1994	Transition to a managed floating exchange rate system	Enhanced the RMB's alignment with market forces
People's Bank of China (PBOC)	2005	Implementation of a basket peg	Reduced reliance on the US dollar, promoting a more balanced exchange rate
PBOC	2015	Expansion of the RMB trading band	Increased exchange rate flexibility and market influence
State Administration of Foreign Exchange	2023	New regulations on foreign exchange administration	Aimed at further liberalization and internationalization of the RMB

Source: Sina Finance

The table above captures the strategic evolution of China's exchange rate policy, reflecting the country's economic growth and integration into the global financial system. Each policy change has had a distinct impact on the RMB's exchange rate, ranging from increased flexibility to a more market-oriented approach. The subsequent analysis should discuss the broader economic implications of these policy shifts, such as their effects on trade, investment, and financial stability.[9]

3.2 The main characteristics and defects of China's exchange rate system

3.2.1 Main characteristics and causes

At present, China implements a managed floating exchange rate system based on the market supply and demand, with reference to a basket of currencies for regulation. This system allows the RMB exchange rate to reflect the relationship between the market supply and demand to some extent, while the central bank keeps the exchange rate relatively stable through intervention. The RMB exchange rate is no longer pegged to the US dollar, but refers to multiple currencies, reducing its dependence on a single currency. With the gradual opening of the capital account, the exchange rate system needs to adapt to the changes in capital flows to maintain the effectiveness of monetary policy and the stability of the exchange rate. In addition, China is gradually promoting the reform of exchange rate marketization, improving the marketization degree of exchange rate formation mechanism, and enhancing exchange rate flexibility.

The formation and implementation of the system are mainly based on the following reasons:

(1) With the rapid development of China's economy and the improvement of the level of opening to the outside world, the exchange rate system with a single peg to the US dollar has been difficult to adapt to the increasingly complicated international economic environment. In order to reduce the impact of external shocks on the domestic

economy, China needs a more flexible exchange rate system to cushion the fluctuations in the international market.

(2) Reference to the exchange rate formation mechanism of a basket of currencies is helpful to spread the exchange rate risk and avoid the potential risks caused by excessive dependence on a certain currency. This mechanism enables the RMB exchange rate to more comprehensively reflect the economic relationship between China and its major trading partners.

(3) The purpose of setting a limited floating range is to keep the exchange rate stable and give the market a certain space for independent adjustment. This will help to maintain the stability of the domestic financial market and prevent excessive speculation from causing violent exchange rate fluctuations.

(4) The gradual opening of the capital account requires that the exchange rate system can better adapt to the changes in capital flows. Under the case that the capital account has not been fully liberalized, the managed floating exchange rate system can protect the domestic economy from the impact of short-term capital flows to some extent.

(5) Market-oriented reform is the development direction of exchange rate regime.[10] By gradually relaxing control over the exchange rate and perfecting the marketization of the exchange rate formation mechanism, we can promote the healthy development of the financial market, enhance the flexibility of the exchange rate, and lay the foundation for the future implementation of a completely floating exchange rate system.

In a word, the characteristic of China's current exchange rate system is to gradually promote the reform of exchange rate marketization on the premise of ensuring economic stability and financial security, so as to adapt to the economic development trend under the background of globalization.

3.2.2 Defects

Although China's current exchange rate system has promoted economic stability and opening up, it has also exposed some defects in the implementation process:

(1) Although the managed floating exchange rate system is implemented, the floating range of the RMB exchange rate is relatively limited, which limits the role of the market in exchange rate formation to a certain extent. This limited fluctuation may cause the exchange rate not to fully reflecting the real situation of market supply and demand, which will affect the efficiency of the exchange rate.

(2) Referring to a basket of currencies in the exchange rate formation mechanism helps to spread risks, but in practice, the RMB exchange rate is still greatly influenced by the trend of the US dollar.[11] This exchange rate policy of "soft peg" to the US dollar means that China's exchange rate policy may not be flexible enough to cope with fluctuations in the international financial market.

(3) There is some disharmony between the gradual advancement of capital account opening and the reform of the exchange rate system. The increase in capital flow puts forward higher requirements for exchange rate stability, and the current exchange rate system may face challenges in dealing with large-scale capital flows, especially before the capital account is fully opened, how to balance exchange rate stability and capital flow liberalization has become a difficult problem.

(4) Although the compulsory settlement and sale of foreign exchange system help to concentrate foreign exchange resources, it also increases the operating costs of enterprises and affects the flexibility of foreign exchange management. To some extent, this system has inhibited the ability of market participants to manage exchange rate risks.

(5) The depth and breadth of the exchange rate market still need to be improved. At present, China's foreign exchange market has single trading subjects, trading varieties and trading methods, which limits the role of the market in the formation of exchange rate and affects the marketization of exchange rate.

To sum up, we can see that the current rigid and inflexible RMB (US dollar) exchange rate system arrangement is an inefficient institutional supply [12], and these problems need to be solved step by step in the future reform in order to further improve the exchange rate system.

4 THE CHOICE OF RMB EXCHANGE RATE SYSTEM BASED ON THE MUNDELLIAN TRILEMMA

4.1 Different combinations of financial policies under the Mundellian Trilemma

Trilemma, also known as the impossible trinity of Mundell-Fleming, was put forward by economists robert Mundell and John Marcus Fleming. It points out that under the condition of an open economy, it is impossible for a country to achieve the following three goals Fig.3. at the same time: fixed exchange rate, independent monetary policy and free capital flow, and at most, two goals at the same time. This theory is very important for analyzing and understanding China's financial policy combinations.

	系列 1	系列 2	系列 3
U.S. dollar	-2.48	2.4	2
JPY	0.58	4.4	2
EURO	2.57	1.8	3
CNY	2.56	2.8	5
AUD	3.62		
Pound	3.73		
CNH	2.47		

Fig. 3. Mundell-Fleming impossible trinity (Source: Krugman (1999))

Under the background of globalization, the free flow of capital is the goal pursued by many countries, because it can attract foreign investment and promote international trade and economic growth.[13] However, in an open economic environment, if capital flows are not effectively regulated, a country's interest rate level will be significantly affected by international capital arbitrage, which may weaken the effectiveness of domestic monetary policy. In the economic downturn, in order to stimulate economic growth, the central bank may lower interest rates, but the free flow of capital may lead to the flow of capital to foreign markets with higher interest rates, reducing domestic investment, and force domestic interest rates to meet international standards, thus limiting the stimulating effect of monetary policy. Therefore, the capital control is the necessary condition for maintaining a fixed exchange rate under an independent monetary policy with the assistance of Chinese government.

Even if a country chooses to give up the independence of monetary policy, allow capital to flow freely and try to maintain a fixed exchange rate, it is difficult to sustain this strategy in the face of large-scale international capital flows. This is because, no matter how big a country's foreign exchange reserves are, compared with international capital in the world, their scale is still insignificant. Once the central bank runs out of foreign exchange reserves, it will no longer be able to support the exchange rate, resulting in a sharp decline in the value of the currency and the collapse of the fixed exchange rate system.[14] The 1997 financial crisis in Thailand is a typical example. Therefore, in the actual economic operation, it is unrealistic to rely on unlimited foreign exchange reserves to maintain a fixed exchange rate and the free flow of capital. This combination is only theoretically possible, that is, assuming that foreign exchange reserves can be increased indefinitely. However, in reality, foreign exchange reserves are limited, so this kind of policy combination is actually not feasible.

In order to achieve the independence of monetary policy and the free flow of capital at the same time, we should implement a managed floating exchange rate system, allow the exchange rate to fluctuate within a certain range, and prevent excessive fluctuations through foreign exchange market intervention.[15] Under this system, the capital outflow will lead to an increase in the supply of local currency in the international market and a devaluation of the local currency. Devaluation helps to improve export competitiveness, curb imports, and then reduce capital outflows, which can not only maintain the relative stability of the exchange rate, but also maintain the independence and effectiveness of monetary policy to some extent. Under the fixed exchange rate system, the central bank must use foreign exchange reserves to maintain the stability of the exchange rate, which not only consumes foreign exchange reserves, but it may also limit the space for independent adjustment of monetary policy.

However, a managed floating exchange rate regime is not a panacea. In the exchange rate system reform in 2005, China changed from a single pegged exchange rate system to a floating exchange rate system managed with reference to a basket of currencies. This reform is aimed at improving the flexibility of the exchange rate while maintaining the independence of monetary policy. However, the RMB exchange rate is still influenced by the US dollar to a great extent, which still limits the complete independence of monetary policy. Therefore, regarding the choice of RMB exchange rate system, we need to further explore the optimization path.

4.2 The choice of RMB exchange rate system optimization path

Formally, China's exchange rate system is a floating exchange rate system, which increases the floating range of the exchange rate of the US dollar and other non-US dollar. However, because trade with the United States accounts for the largest proportion in

China's foreign trade, although it is formally based on a basket of currencies and is no longer pegged to the US dollar, it is actually a "soft pegged exchange rate system with reference to the US dollar", which is closer to a fixed exchange rate system.

In the short term, we must further improve the RMB exchange rate formation mechanism, gradually relax the management of the central bank's foreign exchange quota, implement the system of willing foreign exchange settlement and sale, enhance the marketization of RMB exchange rate, expand the effective floating range of RMB exchange rate, and realize a truly "market-based, single and managed" RMB exchange rate system.

In the future, the development trend of China's financial reform will point to gradually relaxing capital flow control and promoting the free convertibility of RMB in an orderly manner. At present, although there are some restrictions on capital flow, these restrictions will gradually be relaxed, and capital flow will evolve from limited freedom to complete freedom. With the increase of capital liquidity, the RMB exchange rate system will also face adjustment and tend to a more flexible exchange rate mechanism. Such a change will help to reduce the potential cost brought by the choice of exchange rate system and ensure the stability and healthy development of the economy.

5 CONCLUSION

Under the background of globalization and free flow of capital, the ternary paradox (Mundellian Trilemma) provides an important theoretical framework for analyzing and understanding the choice of China's exchange rate system. This theory points out that under the condition of open economy, it is difficult for a country to achieve a fixed exchange rate, independent monetary policy and free capital flow at the same time. As an important participant in the world economy, the choice of China's exchange rate regime has a far-reaching impact on the economic environment at home and abroad.

The evolution of China's exchange rate system embodies the policy trade-off under the constraints of the ternary paradox. From a single fixed exchange rate system pegged to the US dollar to a floating exchange rate system managed with reference to a basket of currencies, the China administration has tried to find a balance between maintaining exchange rate stability, maintaining the independence of monetary policy and promoting capital flow. However, this balance is not easy, especially in the face of large-scale international capital flow, the sustainability of the fixed exchange rate system is challenged.

In practice, China took a series of measures to deal with the challenge of the ternary paradox.[16] For example, through a managed floating exchange rate system, the exchange rate is allowed to fluctuate within a certain range, and excessive exchange rate fluctuations is prevented through foreign exchange market intervention. This system has maintained the relative stability of the exchange rate to a certain extent, and also provided some autonomy for monetary policy. However, the RMB exchange rate is still influenced by the US dollar to a great extent, which limits the complete independence of monetary policy.

In order to further optimize the exchange rate system, China needs to continue to promote the reform of exchange rate marketization, improve the marketization degree of exchange rate formation mechanism and expand the effective floating range of exchange rate. This includes improving the RMB exchange rate formation mechanism, gradually relaxing the foreign exchange quota management of the central bank, implementing the system of willing settlement and sale of foreign exchange, gradually relaxing the control under the capital account, and promoting the free convertibility of RMB in an orderly manner. These measures will help to reduce the potential costs brought about by the choice of exchange rate regime and ensure the stable and healthy development of the economy.

In a word, the selection and optimization of China's exchange rate system are a complicated and continuous process, and it needs to constantly seek a balance between safeguarding national economic security, promoting economic growth and adapting to changes in the international economic environment. With the further opening of China's economy and the development of the financial market, the reform of the exchange rate system will continue to open to adapt to the new international economic structure.

The limitation of this study lies in its reliance on historical policy analysis; future research could validate the specific economic impacts of exchange rate policy changes with more empirical data. Moreover, as the global economic landscape continues to evolve, future studies should consider how international political-economic factors influence the choice and implementation of exchange rate policies. With the rapid development of financial technology, the impact of digital currencies and cross-border payments on the exchange rate system will also emerge as an important area for future research.

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