



Effects of Fluctuations in the RMB Exchange Rate on Trade Between Belt and Road Initiative Nations

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Abstract. This paper indicates the influence of fluctuations in the Renminbi (RMB) exchange rate on bilateral trade between China and countries involved in the Belt and Road Initiative (BRI). By analyzing the effects of different exchange rate regimes, this study aims to provide insights into how RMB exchange rate volatility influences trade patterns, economic competitiveness, and policy adjustments in BRI countries. This study combines previous studies by scholars with theoretical insights to elucidate how RMB exchange rate changes under various regimes affect trade between China and its BRI partners. Findings reveal that while RMB depreciation generally promotes Chinese exports, the degree of this impact depends on the exchange rate regime and the financial conditions of the partner countries. The paper wraps up with policy suggestions for China and BRI countries to more effectively manage exchange rate risks and enhance trade benefits.

Keywords: RMB Fluctuation, Belt and Road Initiative, Import and Export, Exchange Rate Policy

1 Introduction

1.1 Background of BRI

The Belt and Road Initiative (BRI), launched by China in 2013, represents a comprehensive strategy aimed at enhancing global connectivity and fostering economic cooperation across Eurasia and beyond. Central to this initiative is the strengthening of trade and investment ties between China and participating countries. In this context, fluctuations in the Chinese Yuan exchange rate have emerged as a significant factor influencing bilateral trade dynamics with BRI countries. Grasping how fluctuations in the Chinese yuan exchange rate affect trade relationships is essential for both policymakers and businesses, as it can affect trade balances, economic stability, and strategic partnerships.

China is the world's second-largest economy, RMB fluctuation has a profound impact on the international trade situation. Exchange rate fluctuations impact trade through several mechanisms, including price competitiveness and trade balances [1]. When a country's currency devalues, its exports become cheaper and more

competitive abroad, potentially boosting export volumes. Conversely, imports become more expensive, which can reduce import volumes. This paper will employ exchange rate theories and case studies to analyze how the exchange rate of Chinese yuan fluctuated exchange rate affect bilateral trade with BRI countries under various exchange rate regimes and will explore potential optimization strategies.

1.2 The theory of the impact of exchange rates on trade

Elasticity Approach. The elasticity method, also known as the Marshall Lerner condition, developed by economists Alfred Marshall and Allan Lerner. This condition is mainly used to explain the effect of a country's exchange rate depreciation or appreciation on its trade balance, mainly focuses on the effect of currency depreciation on the elasticity of import and export demand. This method suggests that if a country's demand for imported and exported goods is sensitive enough to price changes, currency depreciation will improve the country's trade balance, increase exports, and reduce imports [2]. On the contrary, if demand elasticity is insufficient, currency depreciation may not bring the expected trade improvement effect.

Transmission theory. Introduce the fundamental ideas of exchange rate transmission theory and examine how fluctuations in exchange rates influence the cost and competitiveness of imported and exported goods through price mechanisms.

The exchange rate transmission effect describes how exchange rate fluctuations (such as currency depreciation or appreciation) are transmitted to the final consumer price by affecting the international prices of goods and services. This effect can be divided into two categories:

Direct transmission: Exchange rate fluctuations directly affect the cost of imported goods. If the Chinese yuan depreciates, the price of foreign goods in the local currency will rise, thereby increasing import costs.

Indirect transmission: Exchange rate fluctuations are indirectly transmitted by affecting production costs and price levels. For example, the depreciation of the Chinese yuan may increase the cost of importing raw materials for domestic enterprises, ultimately leading to an increase in commodity prices.

2 Case Study

2.1 Currency Policies of the BRI countries

The IMF employs an empirical categorization of nations' currency policy structures according to the level of market influence in the currency setting process. Segmenting the currency framework into ten classifications. A hard peg is a currency arrangement where one nation's currency is firmly anchored to another nation's currency or to a group of currencies. This fixing is usually achieved through legal or policy provisions. A soft peg, or managed float, is an exchange rate regime in which the currency exchange rate floats within a permissible range of volatility, but the central

bank intervenes when necessary to prevent sharp fluctuations in the exchange rate. Under a floating exchange rate regime, the currency exchange rate is determined by market supply and demand and is not fixed to the other currencies. The exchange rate fluctuates naturally based on economic data, market sentiment, international trade and other factors.

Table 1. Exchange rate systems classification.

Systems classification	Exchange rate system arrangement	Number of countries
Hard pegged exchange rate	No independent legal tender	14
	Currency Board System	
Soft pegged exchange rate	Traditional pegged	89
	Stabilization Arrangement	
	Crawling pegged	
	Crawling like peg	
	Horizontal range pegged	
Floating exchange rate system	Managed floating	42
	Free floating	
Residual term	Other managed arrangements	

Of the 150 countries that signed the "the Belt and Road" co construction document with China, 145 are IMF members (Cuba, Niue, Cook Islands, Vanuatu and Palestine have not joined the IMF, so no statistics are available). Wide cooperation coverage and diversified exchange rate arrangements. The countries jointly built along the "the Belt and Road" include not only developed countries such as Luxembourg, Singapore and New Zealand, but also the least developed countries recognized by the United Nations such as Afghanistan, Laos and Djibouti. There are significant differences in the level of economic and financial development, and the selection of currency arrangement is also relatively diversified. Statistics show that the exchange rate systems of the countries along the BRI involve all types, including 14 countries with a strictly exchange rate system, 89 countries with a flexible fixed currency system, and 42 countries with a floating exchange rate system, however, are indented [3].

2.2 Renminbi Exchange Rate Regime

The RMB adopts a managed floating exchange rate regime. The RMB exchange rate floats freely within a certain range relying on market forces of supply and demand. This means that the rate of exchange of Chinese yuan can fluctuate in return changes in the international market. The People's Bank of China (PBOC) plays a role in the rate of exchange formation process by adjusting market expectations and intervening directly (e.g., foreign exchange market operations) to maintain the rate of exchange stability and orderly fluctuations. 2015's "8-11 Exchange Reform" saw the PBOC deciding to change the formation mechanism of the RMB exchange rate. The PBOC opted to modify the RMB currency setting process from the former "fixed to the US dollar" approach to "driven by market forces, with consideration of a currency basket [4]. The "8.11 currency adjustment" has had a notable effect on the market, leading

to a devaluation trend of the RMB for almost eighteen months and resulting in significant capital flight.

In the face of sharp fluctuations in the exchange rate, the PBoC promptly modified the currency rate reference setting to make the market stable. In February 2016, the PBOC formally released a new pricing formula for the RMB exchange rate mid-price, i.e., "The mid-price is derived by combining the closing price recorded on the previous trading day with adjustments based on fluctuations in the exchange rates of a selected basket of currencies," and requested market makers to, in their quotes of the mid-price [5].

In May 2017, amidst escalating depreciation pressures on the Renminbi (RMB), the People's Bank of China (PBOC) announced the incorporation of a "counter-cyclical factor" into the mid-price pricing mechanism for the rate of exchange of Chinese yuan [6]. This factor is calibrated based on the fluctuations in the exchange rate that mirror the prevailing supply and demand dynamics within the market, ensuring a more comprehensive and responsive approach to managing the RMB's valuation. The current tripartite mid-price formation mechanism for the exchange rate includes this factor, along with the prior day's closing price and fluctuations in the exchange rates of a currency basket. Since then, it is anticipated that the RMB's unilateral depreciation will be progressively addressed and reversed, leading to stabilization and recovery of the RMB exchange rate. The system transitioned to a bilateral floating model, enhancing the RMB's exchange rate flexibility over time.

2.3 The effect of Chinese yuan fluctuations on BRI countries

This paper will examine how fluctuations the RMB exchange rate affect bilateral trade between BRI countries, considering their various exchange rate policies. Due to the large number of countries along the Belt and Road, this paper will select a few of them as representative countries for analysis. This paper aims to analyze the connection between China's bilateral trade and the level of the RMB exchange rate with the countries along the BRI. Firstly, according to the rate of exchange announced by the International Monetary Fund, the direct quotation method is used to express the change of the exchange rate level of RMB. Second, the exchange rate level of RMB is compared with China's bilateral trade with the countries along the Belt and Road to see whether there is any correlation between RMB appreciation or depreciation on the bilateral trade of the countries in the BRI. As shown in the figure, six representative countries along the BRI with which China has close trade transactions are selected, and the connection between the Chinese yuan and bilateral trade with Thailand, Russian, Montenegro, Montenegro, The United Arab Emirates, and Saudi Arabian is compared.

Representative Countries of Floating Exchange Rate System. Thailand's legal tender is the Thai baht, which is subject to a floating exchange rate system in which

the exchange rate is determined by supply and demand in the foreign exchange market. When the baht fluctuates greatly and deviates.

When the baht fluctuates greatly and deviates from the fundamentals, the Central Bank of Thailand may intervene in the exchange rate.

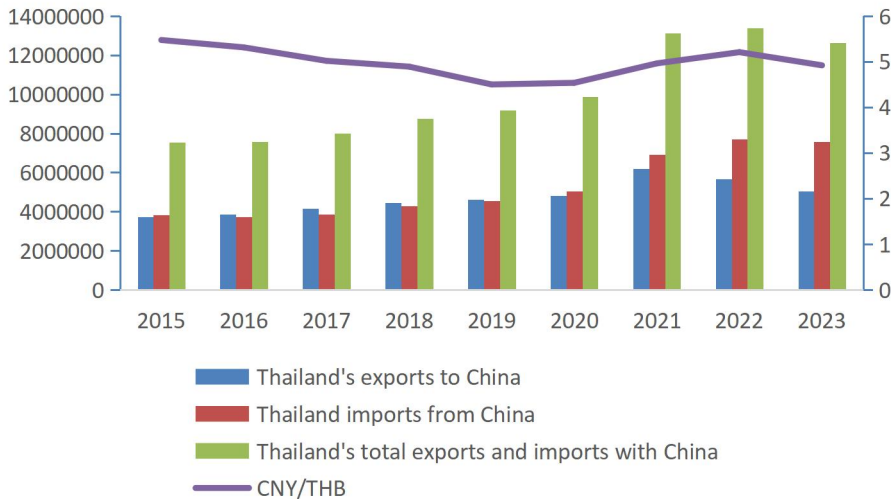


Fig. 1. Bilateral trade volume of Thailand and the currency rate fluctuations of the Chinese yuan relative to the Thai baht.

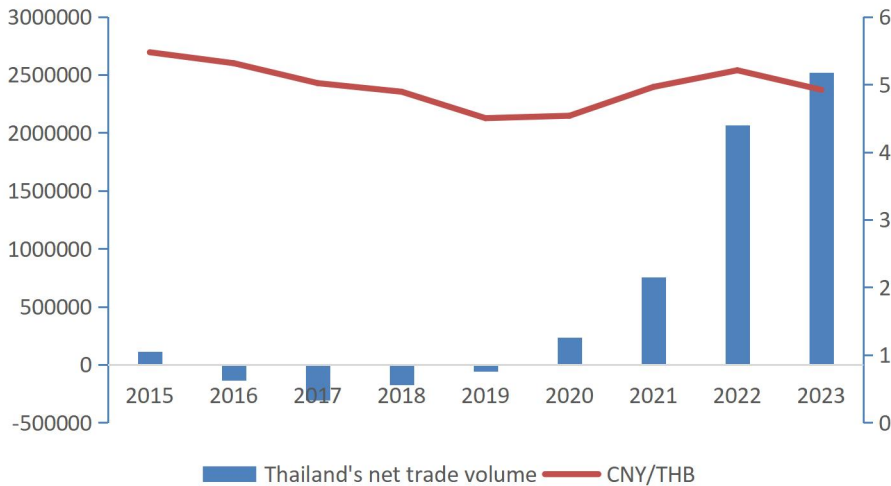


Fig. 2. Thailand's net import trade volume and the exchange rate of RMB to Thai baht

From Fig. 1 & Fig 2, it can be seen that before 2020, the depreciation of the Chinese yuan relative to the Thai baht led to a gradual increase in Thailand's imports of goods from China. After 2020, the Chinese Renminbi appreciated and slightly

depreciated relative to the Thai baht, but Thailand's imports of goods from China continued to increase, possibly due to the partnership between China and ASEAN in 2021.

Russia's sovereign currency is the ruble, which is subject to a free-floating exchange rate regime. The Bank of Russia will intervene in the market when necessary (e.g. when the world price of oil falls) for financial stability reasons.

The conversion rate of the dollar against the ruble is determined using quotes from the domestic interbank foreign exchange market, whereas the rates of other currencies versus the ruble are derived from domestic ruble-to-dollar quotes and international dollar-to-other-currency rates.



Fig. 3. Bilateral trade volume of Russia and the currency rate fluctuations of the Chinese yuan relative to the Russian ruble.

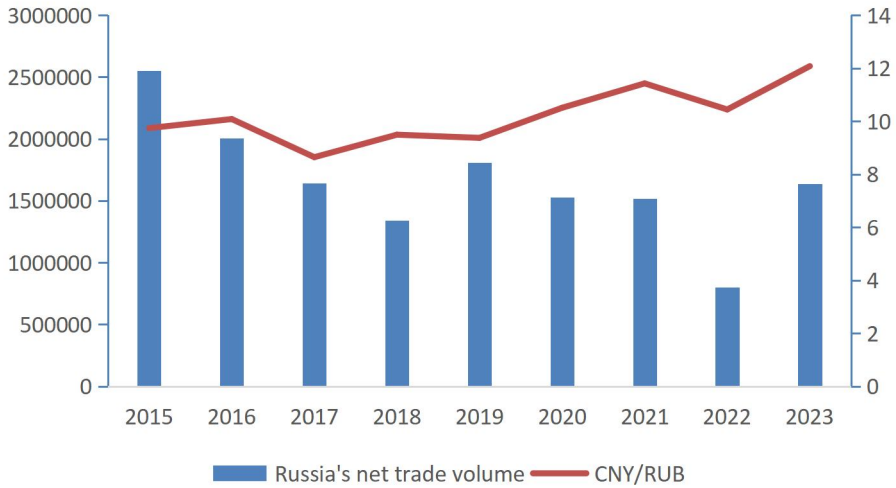


Fig. 4. Russia's net import trade volume and the exchange rate of RMB to Russian ruble.

As observed in Figs. 3 and 4, the depreciation of the Chinese yuan against the Russian ruble tends to boost Russia's imports from China, while its appreciation leads to a decrease. However, Russia exports fewer goods to China than it imports, and this trend is not consistently observed annually.

Representative Countries of Hard pegged Exchange Rate Policies.

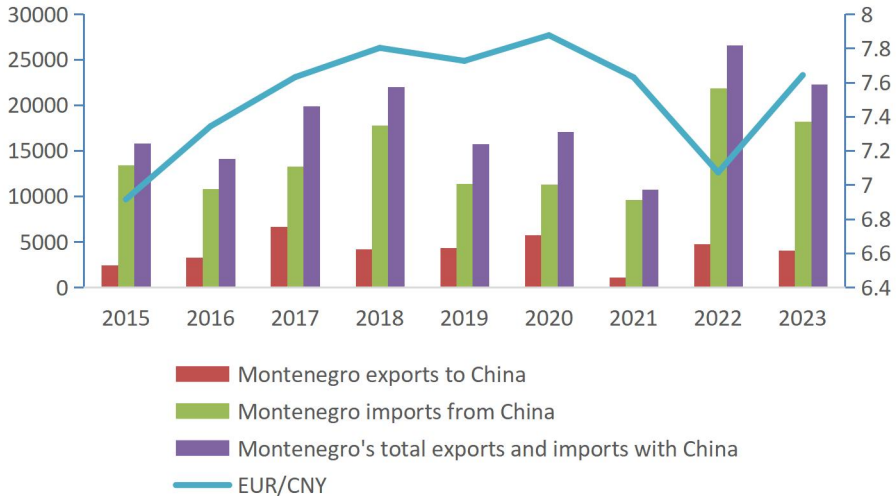


Fig. 5. Bilateral trade volume of Montenegro and the currency rate fluctuations of the Chinese yuan relative to the euro.

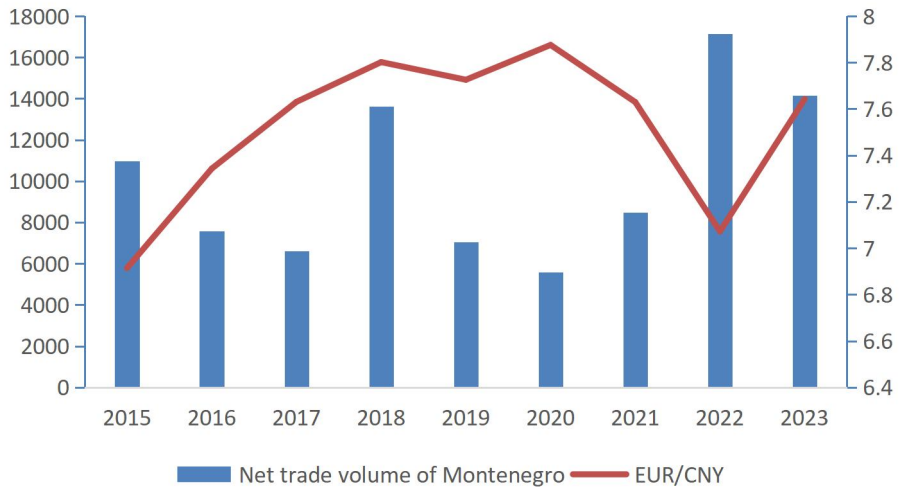


Fig. 6. Montenegro's net import trade volume and the exchange rate of RMB to euro.

As shown in Figs. 5 and 6, Montenegro, despite not having an EU agreement, has unilaterally adopted the euro as its national currency. Since 2015, Montenegro's import trade with China has grown annually, with minimal impact from fluctuations in the Chinese yuan exchange rate on bilateral trade volumes.

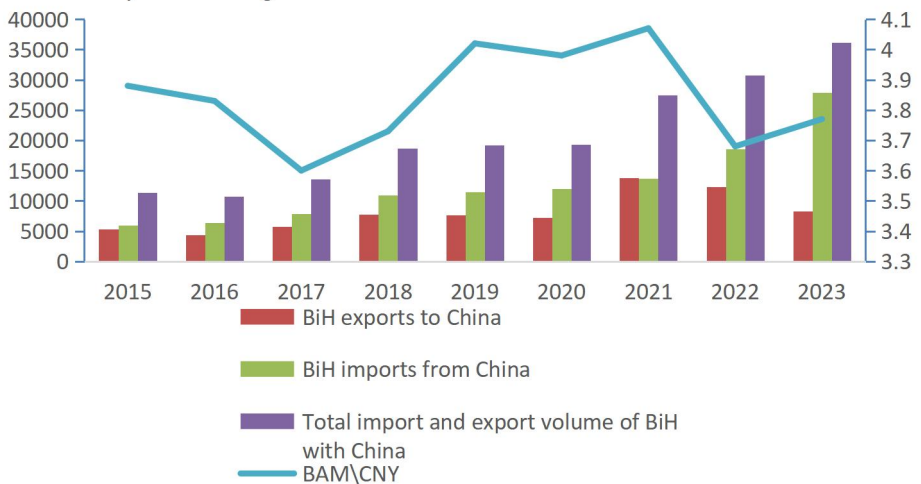


Fig. 7. Bilateral trade volume of Bosnia and Herzegovina and the currency rate fluctuations of the Chinese yuan relative to the Mark.

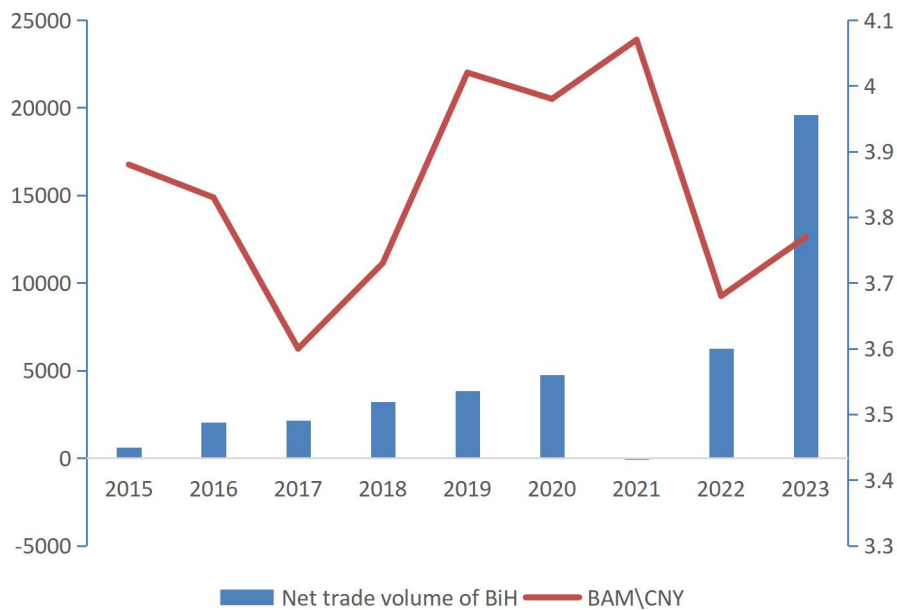


Fig. 8. Montenegro's net import trade volume and the exchange rate of RMB to Mark.

From Fig. 7 & Fig 8, the volume of import trade of Bosnia and Herzegovina from China has been increasing year by year, and the fluctuations in the Chinese yuan exchange rate have minimal effect on the bilateral trade.

Representative Countries of Soft pegged Exchange Rate Policies.

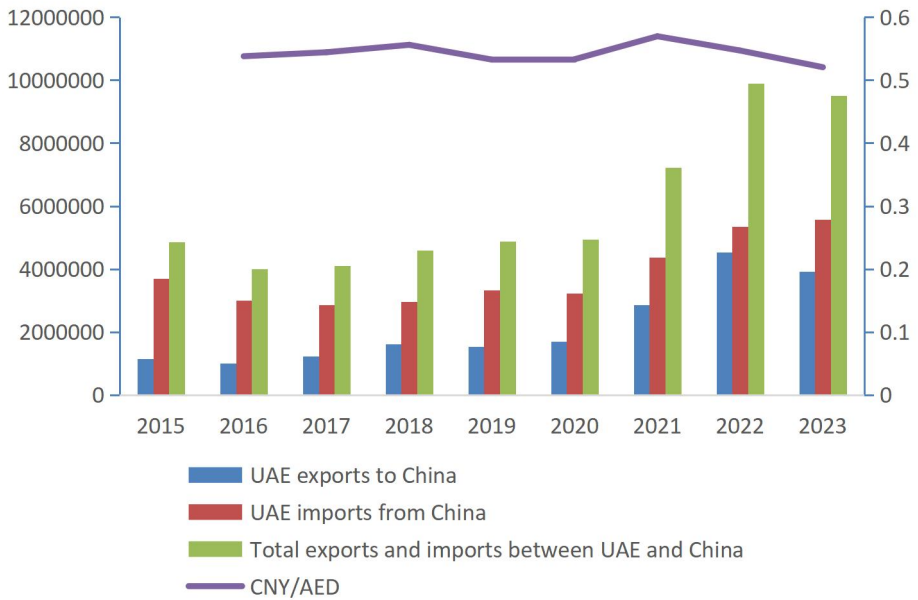


Fig. 9. Bilateral trade volume of United Arab Emirates and the currency rate fluctuations of the Chinese yuan relative to the Dirham.

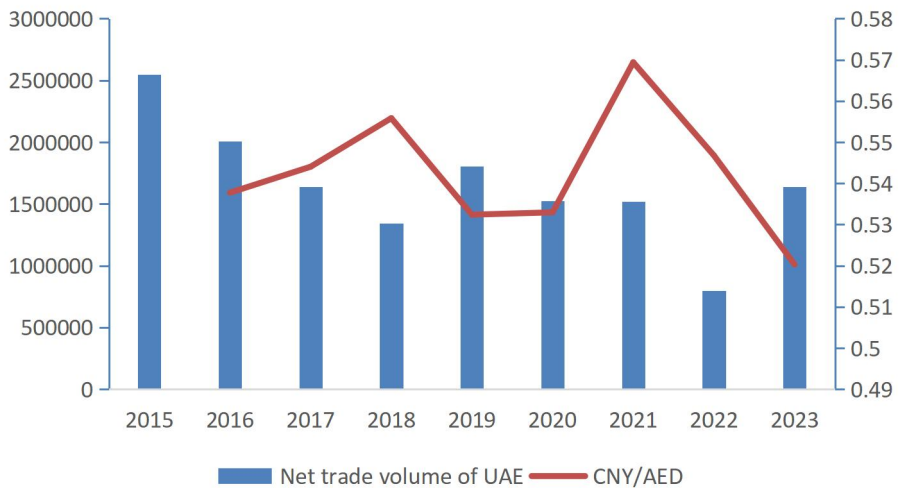


Fig. 10. United Arab Emirates' net import trade volume and the exchange rate of RMB to Dirham.

From Fig. 9 & Fig 10, When the Chinese yuan appreciates against the dirham, the UAE's net import trade of goods from China decreases. When the Chinese yuan

depreciates against the dirham, the UAE's net import trade of goods from China increases.

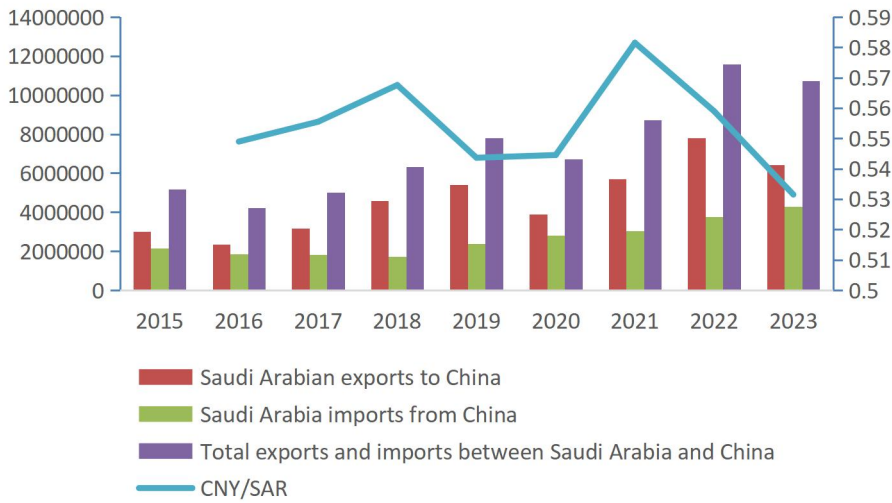


Fig. 11. Bilateral trade volume of Saudi Arabian and the currency rate fluctuations of the Chinese yuan relative to the Saudi Riyal.

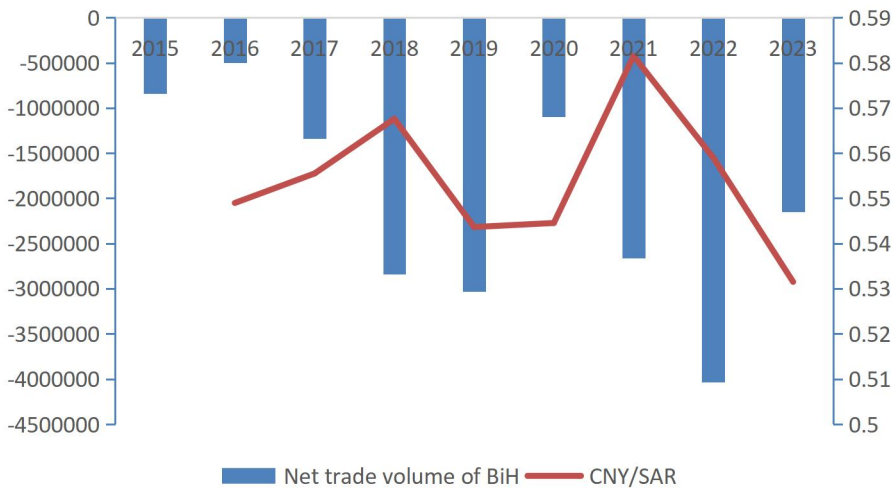


Fig. 12. Saudi Arabians' net import trade volume and the exchange rate of RMB to Saudi Riyal.

According to the analysis in Figures 11 and 12, it is evident that Saudi Arabia's import trade volume of goods to China exceeds China's export volume to Saudi Arabia. Saudi Arabia has abundant oil and natural gas reserves and is one of the

world's most important energy exporting countries. On the contrary, as one of the world's largest energy consuming countries, China has a huge demand for oil and natural gas. Therefore, Saudi Arabia supplies a large amount of energy products to China to meet its energy needs.

2.4 Comparison

Impact of floating exchange rate countries. Floating exchange rate countries, such as Thailand and Russia, have exchange rates that are determined solely by market supply and demand. The bilateral trade of these countries is most directly and significantly affected by fluctuations in the RMB exchange rate. The depreciation or appreciation of RMB will directly affect the currency exchange rate of these countries, thus affecting the cost and competitiveness of trade. When the RMB depreciates, the currencies of these countries may appreciate relatively, making Chinese exports more expensive in these markets, which may lead to a decrease in bilateral trade. Conversely, an appreciation of the RMB may make Chinese exports cheaper, boosting bilateral trade. Subsequent paragraphs, however, are indented.

Impact of hard-fixed exchange rate countries. Hard-fixed exchange rate countries, such as the Montenegro and BiH, maintain a fixed exchange rate between their currencies and the US dollar. The effect of RMB currency fluctuations rate fluctuations on the bilateral trade of these countries is relatively minimal. Since the exchange rates of these countries' currencies are pegged to the U.S. dollar, movements in the RMB against the U.S. dollar indirectly affect the exchange rates of these countries, but this effect is usually mitigated due to the stability of the fixed exchange rate. The trade of such countries tends to be less affected by the pass-through effect of RMB exchange rate changes, mainly through the indirect effect of the exchange rate against the US dollar.

Impact of soft-fixed exchange rate countries. Soft pegged exchange rate countries, such as Saudi Arabia and the UAE, have currencies that maintain a certain floating range with the U.S. dollar or other currencies. RMB exchange rate changes will have a more significant impact on the bilateral trade of these countries. As the exchange rate of these countries has a certain degree of flexibility, the fluctuation of the RMB will directly affect the level of its exchange rate, thus affecting the competitiveness of bilateral trade and trade costs. For example, when the RMB depreciates, it may make Chinese exports become more competitive for these countries, thus promoting the growth of bilateral trade.

3 Discussion about exchange rate policy

3.1 Promoting the internationalization of the RMB

The internationalization of the RMB can reduce the exchange rate risk of enterprises in international transactions. When the Belt and Road countries use the RMB for trade settlement, both parties to the transaction no longer rely on third-party currencies (e.g., the United States dollar), thus reducing the impact of exchange rate fluctuations on transaction costs. For example, some Southeast Asian countries have started to accept RMB settlement, which reduces their risk of exchange rate fluctuations when trading with China. Studies show that the internationalization of the RMB has reduced the transaction costs of the countries concerned to a certain extent [7].

The internationalization of the renminbi has facilitated transactions between China and Belt and Road countries. This not only simplifies the payment process, but may also lead to the signing of more RMB-denominated contracts, thus increasing the scale of bilateral trade. The use of the RMB as a settlement currency has strengthened economic ties between China and these countries. According to Li Zhengjun, the internationalization of the RMB has facilitated China's economic interactions with the BRI countries, especially when China is a major exporter [8].

3.2 Strengthen trade diversification

A key strategy to mitigate the Chinese yuan exchange rate's effect on bilateral trade under "the Belt and Road" is diversifying trade. This involves expanding into emerging markets, diversifying products/services, and leveraging digital/e-commerce platforms. Strengthening partnerships with international businesses also helps adapt to market demands, reducing the negative effects of exchange rate fluctuations [9].

3.3 Strengthen regional economic cooperation.

Strengthening regional economic cooperation with BRI countries in trade, investment, and other areas can mitigate exchange rate risks. Key strategies include policy coordination, information sharing, establishing a regional platform for exchange rate and market info, enhancing financial cooperation through institutions like AIIB, and accelerating free trade and economic cooperation zones to reduce barriers and boost resilience [10].

4 Conclusion

The present study has delved into the intricate and dynamic connection between RMB exchange rate changes and bilateral trade in BRI countries, offering a comprehensive understanding of the mechanisms at play and their implications. Through rigorous analysis, this paper has uncovered several key insights that shed light on the

complexities of this relationship. The internationalization of the renminbi has facilitated transactions between China and BRI countries.

In conclusion, the effects of fluctuations in the Chinese yuan exchange rate on bilateral trade in BRI countries is a multifaceted and dynamic phenomenon that requires a nuanced understanding and thoughtful policy responses. By recognizing the unique characteristics of each BRI country, fostering regional cooperation, and engaging in ongoing research, China and its partners can harness the full potential of their trade relationships and contribute to a more stable and prosperous global economy. As China maintains its prominence in global trade and economic advancement, effective management of its currency exchange rate remains paramount in influencing its partnerships with BRI nations and the international community.

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