Factors affecting cross-border RMB settlement under the Belt and Road Initiative: An empirical study based on panel data of 19 countries (regions)

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Abstract. Based on the panel data of 19 countries (regions) under the background of the Belt and Road Initiative (BRI) from 2014 to 2018, this study uses generalized least squares (GLS) models, which reduce the heteroscedasticity to explore the factors affecting partner countries’ RMB settlement choice. Further, this study compares the differences of influencing factors between BRI and non-BRI countries (regions). The results show that for countries (regions) along the Belt and Road, China’s economic and financial development more effectively promote the use of RMB settlement. In addition, the trade characteristics are closely related to the cross-border RMB receipts and payments. In terms of trade volume, the larger the bilateral trade between China and BRI countries (regions), the larger the cross-border RMB receipts and payments will be. In terms of trade structure, due to low degree of substitution for high-tech products, the higher the proportion of China’s high-tech products exported to foreign countries (regions), the greater bargaining power in the choice of pricing and settlement currency. Moreover, bilateral currency swap agreements, the establishment of RMB clearing centers, and currency stability are also critical influencing factors.

1. Introduction

The second Belt and Road Forum for International Cooperation was held in Beijing during April of 2019, and as of April 2019 China has signed Belt and Road cooperation agreements with 126 countries and 29 international organizations. In the first half of 2019, the bilateral trade volume between China and countries along the Belt and Road has reached $617.5 billion dollars with a year-on-year increase of 9.7%, which is much higher than the 3.9% growth rate of China’s total foreign trade during the same period. The close economic and trade exchanges between China and Belt and Road Initiative (BRI) countries provide a broad platform for RMB internationalization (Liu, 2019).

Currently, the U.S. dollar and euro are the main currencies of the world’s foreign exchange reserves. Most countries use the U.S. dollar for valuation and settlement due to trade inertia, transaction costs, and risk reduction. However, the rapid rise of China’s economy in recent years have changed the U.S. dollar’s domination in the world currency and investment systems. Countries along the Belt and Road have started to use the RMB for valuation and settlement. In 2018, the amount of cross-border RMB receipts and payments between China and BRI countries accounted for 13.1%, ¥2.07 trillion yuan, of the total cross-border RMB receipts and payments in the same period. In the
same year, RMB crude oil futures were listed on the Shanghai Futures Exchange, which greatly enhanced RMB’s power in bulk trading valuation and settlement.

The RMB can be further internationalized if the countries along the Belt and Road extensively choose the RMB as the currency for valuation and settlement for their economic and trade exchanges. From 2013 to 2018, the cumulative value of imports and exports of goods between China and BRI countries reached $6 trillion dollars, accounting for 27.4% of China’s total foreign trade during the same period. By using RMB as the settlement currency, Chinese companies can avoid exchange rate fluctuation risks, reduce exchange expenses, and cut financial costs, thereby further promoting import and export. In addition, under robust financial systems, the circulation of the RMB in the international market will attract foreign investments in China. However, to reduce foreign exchange risks and maximize benefits, there are inertia forces in the choice of settlement currency, which is currently dominated by the U.S. dollar (Wang and Liu, 2012). Therefore, it is significant to explore what factors affect countries to choose RMB as the settlement currency under the background of the BRI. It also promotes RMB internationalization.

Currently, scholars have, from a micro perspective, examined how manufacturers, who aim to maximize expected benefits, select settlement currency from imperfectly competing international markets. For example, from the perspective of expected profits of manufacturers, Dong and Wang (2010) added a third currency as a settlement option to existing import and export currency research, resulting in a three-economy, three-currency equilibrium model. They argued that when certain macro conditions are satisfied, the price elasticity of demand and currency stability are important factors affecting the choice of settlement currency between trading parties. In addition, market share, product differences, and currency inertia are also influential factors (Xiao and Xiao, 2012).

Aside from discussing the micro perspective, scholars have also explored the factors that affect cross-border RMB settlement from the perspectives of macroeconomics and politics. For example, in political and trade structures, Fang (2015) analyzed the impact of organization types, product types, and overall situation of import and export on cross-border RMB settlement. Based on the gravity model with consideration of trade obstacles, He and Wang (2019) estimated the bilateral trade efficiency between China and BRI countries and explored the best countries to promote the use of RMB. Bai et al. (2016) conducted an empirical study on the influencing factors of cross-border RMB settlement with the VECM model and found that the amount of import and export trade has the largest impact. In addition, the development of offshore RMB markets, the exchange rate of the RMB against the U.S. dollar, fiscal revenue, and economic development all affect the cross-border RMB settlement.

In summary, the literature on the selection of cross-border trade settlement currency is mostly based on the interests of foreign trade companies or qualitatively/quantitatively analyses from the global perspective. The lack of empirical research on the factors affecting RMB settlement in the Belt and Road region is mainly due to its short existence. Further, the cross-border RMB settlement has developed rapidly in recent years. However, the BRI, as an economic strategy vigorously developed by China, is self-evident in the trade volume and economic influence exerted on China and neighboring countries, and it is an important part of RMB internationalization.

Therefore, under the context of the Belt and Road, this study uses generalized least squares (GLS) models to explore the influencing factors of the use of RMB in settlement and to analyze the impact of the BRI on these factors. According to the influence degree of various factors, we offer reasonable suggestions to improve RMB settlement amount and provide a feasible development path for the RMB internationalization.

2. Literature review

Present literature explores the cross-border settlement of currencies from the function of international currencies and factors affecting the choice of currencies in bilateral trade settlement. Chinn and Frankel (2005) argued that if a country’s currency can fulfill the functions of transaction medium, unit of valuation, and value storage on an international scale, the currency can be recognized as an international currency. According to the “three steps” viewpoint, the steps to internationalization of a
country’s currency start as a settlement currency, followed by an investment currency, and ending as an international reserve currency (Wang et al. 2017; Wang et al. 2019). Therefore, the function of RMB’s denomination and settlement is the starting point of its internationalization, and it is also the focus of policy implementation (Bai and Deng, 2016).

According to research, the factors that influence the choice of currency in bilateral trade settlement can be viewed from both micro and macro perspectives. From the micro perspective of manufacturer profits, there are mainly two methods: the partial equilibrium analysis, which treats the exchange rate as the only uncertain factor; and the general equilibrium analysis, which considers exchange rate fluctuations as caused by various shocks that can simultaneously affect other macroeconomic variables (Xiao and Xiao, 2012).

Based on the above, Feng and Wei (2011) constructed a partial equilibrium model of three currencies in two economies within an imperfectly competitive market. They found that the price elasticity of demand for export commodities has the strongest impact on the exporter’s choice of settlement currency, followed by the trade volume of the export country, the denomination currency choice of other exporters, and exchange rate fluctuation. From the perspective of maximizing manufacturer’s expected profit, Dong and Wang (2010) constructed a model of three economies with three currencies, showing that the price elasticity of demand and the stability of the currency are key influencing factors. If the price elasticity of demand for goods is weak and the monopoly power in the market is strong, exporters can use their domestic currency as the settlement currency to maximize expected profit. At the same time, exporters prefer currencies with small exchange rate fluctuations.

From the macro perspective, Donnenfeld and Haug (2003) found that countries with large currency settlements and large trade volumes are more likely to have the initiative to choose settlement currency in international trade. Lai and Yu (2015) argued that the degree of capital openness, exchange rate fluctuations, economic scale, and other factors will affect the choice of settlement currency. In addition, the expected value of offshore and cross-border RMB transactions have a long-term equilibrium relationship. Deng et al. (2018) further explored the impact of bilateral political relations and geographic distance on cross-border trade settlements.

Recently, scholars have started to research cross-border trade settlement with RMB. Since the implementation of the pilot program for cross-border RMB trade settlement in 2009, the volume of its transaction has rapidly risen. Within two years, the ratio of cross-border RMB trade settlement to China’s total imports and exports increased from 0.02% in 2009 to 8.8% in 2011 (Li and Sheng, 2017). Wu et al. (2014) empirically analyzed relevant data from 2009 to 2012, concluding that the growth rate of China’s per capita GDP had the largest impact on the settlement amount, while exchange rate fluctuations had a smaller impact. Wang and Zhang (2013) found that the scale of foreign trade, the development of financial markets, and the introduction of related policies are conducive to the increase of settlement amount, while high inflation and heterogeneity of products are unconducive. By analyzing China-Russia cross-border currency circulation, Zhang (2011) found that the level of technology development is an important factor affecting the choice of settlement currency.

Scholars have suggested that the choice of trade settlement currency can be addressed with the valuation and settlement of bulk trade, and a large part of China’s bulk trade is from the BRI countries (Li and He, 2018). At present, China has reached agreements with Venezuela, Sudan, Iran, and other countries to settle oil transactions with the RMB. During the APEC summit in 2012, Russia has also agreed to China’s purchase of any amount of oil with the RMB. This shows that the RMB, as a currency for oil trade settlement, is accepted by other countries (Hu and Han, 2019).

Currently, scholars have started to arrive at consensus on the debate of cross-border RMB settlement, but empirical research on the Belt and Road settlement currency is still lacking. As an important development strategy for China, the Belt and Road involves economic and trade cooperation with neighboring countries in various fields, and its regional economic volume is huge. This study explores the factors that affect cross-border RMB transactions and payments in various countries (regions) from the perspectives of economy, trade, finance, and policy. We compare and analyze the differences between these factors for BRI and non-BRI countries (regions).
3. Data description

This study selected data between 2014 and 2018 of the United States, Japan, Germany, United Kingdom, France, South Korea, Australia, Netherlands, Switzerland, Singapore, Malaysia, Vietnam, Luxembourg, Bahamas, Taiwan, Hong Kong, Macau, Cayman Islands, and British Virgin Islands for a total of 19 countries or regions to empirically investigate RMB settlement in cross-border trade. The explained variable is the amount of cross-border RMB settlement within various countries or regions. The data is collected from the “RMB Internationalization Report” issued by the People’s Bank of China between 2014 and 2018. Among the explanatory variables, the classification of the Belt and Road status is based on the CSMAR database. The gross national product, world GDP, high-tech export, and consumer price index for each country or region are attained from the World Bank’s database. The exchange rates for various currencies are extracted from the Wind database. The total value of bilateral imports and exports in 2014-2017 came from EPS DATA and 2018 from the Wind database. Data on the establishment of RMB clearing centers and bilateral currency swaps agreements are attained from the People’s Bank of China. The financial development index is from the IMF database. Table 1 lists the relevant descriptions of the five types of variables.

| Variables         | Symbol | Description                                                                 | Source                      |
|-------------------|--------|-----------------------------------------------------------------------------|-----------------------------|
| Explained variable| RMB    | The amount of cross-border RMB transactions with various countries or regions. | RMB Internationalization Report |
| Economic factor   | FGDP   | GDP of each country or region / world GDP.                                  | World Bank                  |
|                   | CGDP   | China’s GDP / world GDP.                                                   | World Bank                  |
| Trade factor      | Trade  | China’s bilateral trade volume with other countries or regions.              | EPS DATA, Wind Database     |
|                   | HTech  | High-tech exports / manufactured goods exports.                             | World Bank                  |
| Financial factor  | ExRate | The standard deviation of the exchange rate of the RMB to target countries and regions. | Wind Database               |
|                   | CPI    | Consumer price index (2010 = 100).                                         | World Bank                  |
|                   | FDID   | Financial development index difference.                                    | IMF Database                |
| Policy factor     | Belt   | Belt=1 represents countries or regions along the Belt and Road; otherwise 0. | CSMAR Database              |
|                   | Swap   | Swap=1 represents the signing of the bilateral currency swap; otherwise 0.  | People’s Bank of China      |
|                   | Clear  | Clear=1 represents the establishment of the RMB clearing center; otherwise 0. | People’s Bank of China      |

The explained variable in this study is the volume of cross-border RMB settlement with various countries or regions. The explanatory variables are considered based on the following four factors. The first factor is the economic factor. The gross domestic product (GDP) reflects the macroeconomic operating conditions and development level of a country. In general, countries with higher economic levels have higher international status, and its domestic currency is more likely to be used as a settlement currency. To eliminate the impact of scale, China’s GDP ratio over world GDP (CGDP) and each country’s GDP ratio over world GDP (FGDP) were selected as measurement indicators.

The second factor is the trade factor. Trade is the key to internationalized currencies. As two countries conduct more trade, it is more likely for them to use the currency of one of the two countries as the settlement currency. This study uses the total import and export trade volume between China and the partner country to reflect the scale of trade. In addition, the trade structure has an influence over the choice of settlement currency. The characteristics of high-tech products include advanced technology, high added value, and strong functionality, which make them less replaceable, and the price elasticity of demand in the international market is low. Therefore, countries with a high ratio of high-tech exports have more power in dictating pricing and choice of settlement currency. Therefore, this study employs the ratio of high-tech product exports to total manufactured product exports of China in 2014-2018 as a measure of trade structure.
The third factor is the financial factor. The stability of a currency is a symbol of stable operation of a country’s economy and a reasonable guarantee for the sustainable development of a country's financial system. A stable currency can reduce exchange losses caused by exchange rate fluctuations, cut costs, and improve the convenience of trade. Therefore, in cross-border trade, companies may prefer to use stable currencies as a settlement currency, thereby reducing operational risks. This study uses the standard deviation of the exchange rate of the target country or region to RMB and China’s consumer price index (CPI) to measure currency stability. Developed financial markets provide traders with more financial instruments to hedge risks and improve yields, which attract foreign investors and thereby increasing its circulation and promoting its internationalization. This study uses the difference between the financial development index of China and the trading country as a measure. The IMF financial development database contains nine indicators describing the depth, access, and efficiency of developed financial institutions and financial markets. The comprehensive financial development index is the overall reflection of these sub-indicators.

The last factor is the policy factor. The BRI has promoted the signing of a series of infrastructure construction cooperation, created a green channel for efficient and convenient trade, and improved China’s position in international trade. Hence, an indicator variable is introduced and set as 1 for BRI countries (regions), and 0 for non-BRI countries (regions) to examine whether the BRI has an impact on RMB settlement. Further, the signing of the bilateral currency swap and establishment of the RMB clearing center are also set as indicator variables to capture corresponding effects. The Swap is set as 1 if there is a bilateral agreement for currency swap; otherwise it is 0. The Clear is set as 1 if there is RMB clearing center; otherwise it is 0. Bilateral currency swaps and establishment of RMB clearing centers are beneficial to the scale of cross-border RMB settlement.

4. Empirical analysis

4.1. Descriptive statistics

According to the descriptive statistics reported in Table 2, we find a large gap between cross-border RMB transactions in various countries or regions, with the highest amount at ¥64,192 billion yuan, lowest at ¥91.9 billion yuan, and an average of ¥699.7 billion yuan. Of the sample, 51.7% are countries and regions that are in the BRI. In addition, from 2014 to 2018, the fluctuations of China’s GDP share in the world was small, with an average of 14.71%. Whereas, the gap between the GDP ratios of partner countries to the world share is large, as high as 24.58%, and as low as 0.06%.

| Variable | Mean  | Median | Maximum | Minimum | Std. Dev. |
|----------|-------|--------|---------|---------|-----------|
| RMB      | 6997.8| 2065.8 | 64192.5 | 919.0   | 14168.32  |
| Belt     | 0.5172| 1.0000 | 1.0000  | 0.0000  | 0.5041    |
| FGDP     | 0.0384| 0.0166 | 0.2458  | 0.0006  | 0.0647    |
| CGDP     | 0.1471| 0.1491 | 0.1563  | 0.1328  | 0.0079    |
| Trade    | 1319.3| 827.64 | 6335.2  | 0.0846  | 1460.5    |
| HTech    | 0.3057| 0.3043 | 0.3158  | 0.2970  | 0.0065    |
| ExRate   | 0.1525| 0.1404 | 0.4461  | 0.0032  | 0.0991    |
| CPI      | 139.07| 102.90 | 256.79  | 97.65   | 60.387    |
| FDID     | -0.1076| -0.1450| 0.3500  | -0.3300 | 0.1741    |
| Swap     | 0.6724| 1.0000 | 1.0000  | 0.0000  | 0.4734    |
| Clear    | 0.7759| 1.0000 | 1.0000  | 0.0000  | 0.4207    |

According to Figure 1, China’s foreign trade showed a surplus regardless of BRI or non-BRI countries (regions). In Figure 1, the horizontal axis in the figure represents the year, and the vertical axis represents the amount. The unit is billion U.S. dollars. The histogram shows the amount of exports (imports) from China to BRI (non-BRI) countries or regions during 2014-2018. The two polylines represent the total value of China’s imports and exports from the same BRI (non-BRI) countries or regions. In terms of scale, regardless of export, import, or total, China’s trade with the
BRI counties (regions) was larger. The average ratio of China’s high-tech product exports in total trade was 30.57%. The domestic consumer price index (CPI) greatly fluctuated, with a minimum of 97.65 to a maximum of 256.79. The average difference between the financial development indices of China and countries (regions) in the sample is -0.1076, which indicates that China’s financial development level is lower than that of most countries in the sample. More than half of the countries in the sample have signed bilateral currency swap agreements with China or have established RMB clearing centers.

4.2. Factors affecting cross-border RMB transactions

Considering possible heteroscedasticity of the variables, this study uses the generalized least squares (GLS) model in empirical analysis on the panel data of the 19 countries or regions during 2014-2018. According to the estimation results, we explain the effects of the Belt and Road strategy, economic factor, trade factor, financial factor, and policy factor on the cross-border RMB receipts and payments. The specific model is described as follows:

$$\ln RMB_{i,t} = \alpha + \beta_1 Belt_{i,t} + \beta_2 FGDPP_{i,t} + \beta_3 CGDP_{i,t} + \beta_4 \ln Trade_{i,t} + \beta_5 HTech_{i,t}$$

$$+ \beta_6 ExRate_{i,t} + \beta_7 CPI_{i,t} + \beta_8 FDI_{i,t} + \beta_9 Swap_{i,t} + \beta_{10} Clear_{i,t} + \epsilon_{i,t}$$

(1)

where $i$ represents a country or region and $t$ denotes time. In addition, as the amount of cross-border RMB transactions between China and other countries (regions) is large, and the regional differences are high, logarithmic processing was employed to stabilize the data.

Table 3 lists the estimated results of the factors affecting cross-border RMB transactions. The results in Table 3 show the following findings. First, joining the BRI significantly promoted the use of RMB for settlement in international trade by partner countries. This is because the Belt and Road strategy provides a broad platform for China and the countries along the route to deepen cooperation in various fields and promotes a series of mutually beneficial and win-win economic cooperation. At the same time, investment cooperation with the infrastructure construction of the countries along the Belt and Road not only lays the foundation to facilitate future trade, but also solves the problem of domestic excess.

Second, the partner country’s GDP ratio and China’s GDP ratio are both significantly positive at the 1% level, and the coefficient of China’s GDP share is much larger than that of the partner country’s GDP. This shows that higher China GDP represents better economic development and will in turn help partner countries to choose the RMB as settlement currency.
Table 3. Factors affecting cross-border RMB transactions.

| Variable | Coefficient | Std. dev. | t-statistic | p-value |
|----------|-------------|-----------|-------------|---------|
| Constant | -3.227708   | 3.639060  | -0.886962   | 0.1898  |
| Belt     | 1.410853    | 0.235059  | 6.002130    | 0.0000  |
| FGDP     | 7.562641    | 1.928660  | 3.921189    | 0.0002  |
| CGDP     | 31.85402    | 7.581064  | 4.201788    | 0.0001  |
| InTrade  | 0.167465    | 0.055978  | 2.991641    | 0.0022  |
| HTech    | 11.29169    | 9.035998  | 1.249634    | 0.1088  |
| ExRate   | -0.978499   | 0.700771  | -1.396317   | 0.0846  |
| CPI      | -0.005220   | 0.001153  | -4.526524   | 0.0000  |
| FDID     | 0.850665    | 0.417181  | 2.039077    | 0.0236  |
| Swap     | 1.177523    | 0.322151  | 3.655186    | 0.0003  |
| Clear    | 0.541281    | 0.142477  | 3.799067    | 0.0002  |

R-squared | Adj. R-squared | S.E. of regression | F-statistic | p-value (F-stat.) |
|----------|-----------------|--------------------|-------------|-------------------|
| 0.814070 | 0.774510        | 0.671331           | 20.57827    | <0.00001          |

Third, the amount of RMB transactions is significant and positively correlated with the bilateral trade volume, which indicates that larger trade volume is conducive to the expansion of cross-border RMB settlement.

Fourth, the amount of cross-border RMB transactions is significant and negatively correlated with exchange rate fluctuations and CPI. This means that smaller exchange rate fluctuations and more stable currency will more likely result in partner country’s settlement of trade in RMB. This is the same as expected, because the stable value of the currency can reduce exchange costs.

Fifth, cross-border RMB transactions are significant and positively related to the difference in the financial development index. It shows that higher financial development index of China, relative to the partner country, will help to make RMB stand as the settlement currency. If it is lower than the target country, it will not help the partner country to choose RMB as settlement currency. This is because a robust financial market system can provide foreign trade companies with more financial tools to reduce foreign exchange risk, so the local currency is more advantageous as a settlement currency for foreign companies.

Finally, the amount of cross-border RMB transactions is significant and positively correlated with bilateral domestic currency swaps agreements and the establishment of RMB clearing centers. This is because bilateral domestic currency swap agreements can expand the stock and use of overseas RMB and make it “globalized”, which is conducive to promoting cross-border RMB settlement. At the same time, bilateral local currency swaps can reduce the transaction costs of organizations due to exchange rate fluctuations when trading across borders. RMB clearing service enables cross-border transactions through the banking system, improves settlement efficiency, lays a solid foundation for the rapid development of the RMB settlement business, and is also conducive to enhance the confidence of foreign companies in choosing RMB for trade settlement.

4.3. The impact of the BRI on cross-border RMB transactions

This study introduces interaction to further compare the differences between the BRI and non-BRI countries (regions) in terms of economic, trade, and financial factors in the impact of cross-border RMB transactions. The specific model is described as follows.

$$\ln RMB_{it} = \alpha + \beta_1 FGDP_{it} + \beta_2 CGDP_{it} + \beta_3 InTrade_{it} + \beta_4 HTech_{it} + \beta_5 ExRate_{it} + \beta_6 CPI_{it} + \beta_7 FDID_{it} + \beta_8 Swap_{it} + \beta_9 Clear_{it} + \beta_10 FGDP_{it} \times Belt_{it} + \beta_11 CGDP_{it} \times Belt_{it} + \beta_12 InTrade_{it} \times Belt_{it} + \beta_13 HTech_{it} \times Belt_{it} + \beta_14 ExRate_{it} \times Belt_{it} + \beta_15 CPI_{it} \times Belt_{it} + \beta_16 FDID_{it} \times Belt_{it} + \beta_17 \varepsilon_{it}$$

(2)

where $i$ represents a country or region and $t$ denotes time. Table 4 lists the estimated results of the impact of the BRI on various factors of cross-border RMB settlement.

The estimated interaction terms in Table 4 show that the countries or regions within the BRI have a larger share of China’s GDP, bilateral trade value, high-tech exports, and financial development index.
difference. These aspects have a positive effect on the use of RMB in trade settlement. This can be attributed to the Silk Road Economic Belt initiative, which involved many countries spanning across the East Asia Economic Zone, and extended all the way west to Europe, becoming a booster for Eurasian economic integration. As the initiator, China has promoted a series of cooperation for the economic development of countries and regions along the route, injected new vitality into the market, and improved China’s status in the world.

Table 4. The impact of the BRI on cross-border RMB transactions.

| Variable | Coefficient | Std. dev. | t-statistic | p-value |
|----------|-------------|-----------|-------------|---------|
| Constant | 0.557226    | 5.105120  | 0.109150    | 0.4568  |
| Belt     | -21.13848   | 9.068288  | -2.331033   | 0.0125  |
| FGDP     | -3.101548   | 5.987471  | -0.518006   | 0.6037  |
| CGDP     | 25.97362    | 9.357595  | 2.775673    | 0.0042  |
| InTrade  | 0.206689    | 0.066982  | 3.085753    | 0.0019  |
| HTech    | 8.686327    | 12.34879  | 0.703415    | 0.2430  |
| ExRate   | 0.105693    | 0.931327  | 0.113486    | 0.4551  |
| CPI      | -0.003907   | 0.001462  | -2.672838   | 0.0054  |
| FDID     | 2.172994    | 1.091115  | 1.991536    | 0.0267  |
| Swap     | -0.854303   | 1.268699  | -0.673369   | 0.2523  |
| Clear    | 0.126180    | 0.249269  | 0.506201    | 0.3078  |
| FGDP×Belt| -16.48761   | 25.29999  | -0.651684   | 0.2592  |
| CGDP×Belt| 28.58703    | 18.27328  | 1.564417    | 0.0628  |
| InTrade×Belt| 1.276040   | 0.209064  | 6.103591    | 0.0000  |
| HTech×Belt| 38.73425    | 22.44980  | 1.725372    | 0.0461  |
| ExRate×Belt| -1.541212   | 1.837531  | -0.838741   | 0.2033  |
| CPI×Belt | -0.066051   | 0.008328  | -7.931443   | 0.0000  |
| FDID×Belt| 15.08436    | 4.325697  | 3.487152    | 0.0006  |

Specifically, cross-border RMB transactions have a significant and positive correlation with the interaction between the BRI and China’s GDP. This shows that China’s GDP ratio has a greater impact on the choice of RMB transactions in BRI countries or regions. This is because the GDP share reflects the overall economic strength of a country, and most BRI countries have small economies, are geographic close to China, and are greatly affected by the Chinese economy.

In addition, from the perspective of trade, cross-border RMB transactions have a positive relationship with the Belt and Road strategy, the interaction terms of bilateral trade value, and the proportion of high-tech product exports. This is because China's geographical advantages with the countries along the route have provided good prerequisites for the rational allocation and utilization of resources by multinational organizations, and thus promoted further trade exchanges. This is because China’s geographical advantages provide good prerequisites for the rational allocation and use of resources by multinational enterprises, and thus promoted close trade exchanges. In addition, most Asian and African countries along the Belt and Road are developing countries, which rely on low-value-added industries, such as energy commodity trading, agriculture, and outsourcing to drive economic growth. Their industrial structure is relatively simple, and low-end supply issues are prominent. Furthermore, high-tech industries in these countries are less established, and most high-tech products are reliant on imports. Therefore, the price elasticity of high-tech product demand is low. These countries have little room for currency selection in trade, therefore, Chinese high-tech companies have a stronger say in negotiations.

Furthermore, China’s comprehensive financial development level is higher compared with the BRI countries, which is accompanied by greater RMB transaction amount. This is because developed financial markets provide for convenient trade and investment. The investment and financing activities of the countries along the route enhances the circulation capacity of RMB in the international market, which is conducive to increase willingness and confidence of countries or regions along the Belt and Road to hold RMB.
Finally, the interaction term between the BRI country (region) and the consumer price index has a significant and negative correlation with the amount of cross-border RMB transactions. It shows that the countries or regions joining the BRI are more sensitive to the stability of RMB. This is because most countries or regions along the Belt and Road are developing countries, the economic strength of their organizations is not strong, and their ability to withstand foreign exchange risks is poor.

5. Conclusions

Based on the GLS models, this study examines the panel data of 19 countries (regions). The results show that the Belt and Road Initiative, national economic level, bilateral trade volume, financial development, currency swap agreements, and RMB clearing centers promote the use of RMB as a settlement currency in cross-border trade. By contrast, exchange rate fluctuations and higher CPI will make RMB less favorable as a pricing and settlement currency in cross-border trade. Further cross-analysis finds that the impact of economic, financial, and trade factors on cross-border RMB transactions are different between BRI and non-BRI countries (regions).

According to the empirical results, we make the following three suggestions: First, optimize foreign trade structure and enhance commodity heterogeneity. China’s exports are labor-intensive commodities that are first imported and then processed. Such commodities have low added value and lack core advantages. Therefore, these trades generate weak bargaining power and are less likely to be settled in RMB. China should focus on supporting enterprises with technological advantages, encourage these enterprises towards cross-border trade, and increase the vitality of high-tech product transactions. At the same time, enterprises should increase investment in research and development and strengthen their ability to innovate in science and technology, so as to improve product quality and their bargaining power, which will help to further promote the development of RMB settlement.

Second, accelerating the development of financial markets. Under the premise of risk assessment and control, while gradually opening the capital account, restrictions on cross-border capital transactions and payments should be gradually relaxed according to national conditions and macroeconomic development. If a country’s currency is to become an international settlement currency, it is necessary to relax the market entry threshold and expand the scope of investors. At the same time, it should provide robust financial markets as a basis to provide trading partners with corresponding financial instruments to hedge and avoid exchange rate risks. Hence, it is necessary to enrich the types of financial services.

Finally, seizing the opportunities offered by the BRI. The BRI, based on the principles of win-win cooperation and mutual consultation, has strengthened economic and trade exchanges between regions and injected new vitality into the healthy development of the regional economy. The Chinese government should establish corresponding international industrial parks based on the industry characteristics of cities along the Belt and Road, provide preferential policies for enterprises, attract high-quality organization, and form a benign ecosystem with complementary advantages. Chinese enterprises should also grasp business opportunities brought by the construction of key investment projects along the Belt and Road, improve the industrial structure, optimize products and services, and carry out targeted trade in accordance with the national conditions of each country. At the same time, it is necessary to actively carry out financial cooperation with countries or regions along the Belt and Road, provide corresponding technical support to countries with less advanced financial industries, and achieve coordinated and sustainable development of regional finance.

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