Modern payment infrastructure of cross-border settlements of Russia and China

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Abstract. The article reveals the features of the payment infrastructure of cross-border trade between China and Russia on the background of geopolitical risks. The authors emphasize the importance of organization and mechanisms of mutual payments between the two states. The risks of using international payment and clearing systems for Russia and China are noted. The development of national payment systems and national systems of financial information transmission in these countries are analyzed. The role and the transformation of traditional forms of payment mechanisms in Russian-Chinese cross-border settlements are defined. The purpose of the article is to perform system analysis and evaluate existing payment schemes today in trade between Russia and China. Methods. In this research methods of logistical and statistical analysis were used, which helped identify key trends, individual problems and prospects from this perspective. Results. Due to the global economy fragmentation and increased international competition, a fundamental reorientation of approaches to the organization of international trade settlements takes place as a factor of reducing the vulnerabilities of foreign economic activity. Novelty. The authors have systematized in details various ways of Russian-Chinese cross-border settlements, using elements of national payment systems that influence intercountry trade turnover, reducing global threats to national economies.

Keywords: payment system - financial messaging system - cross-border settlements - national currency

1 Introduction

The problem of payments, both at the national and transnational level, is especially relevant for the Russian Federation against the background of anti-Russian sanctions. China and Russia are territorial neighbors, consider each other as strategic partners. Economic cooperation between them continues to deepen. Since 2009, China has been Russia’s largest trading partner. The volume of Russian-Chinese trade increases annually. According to the General Administration of Customs of China, the trade turnover between Russia and China in 2022 increased by 29.3% to a record $190.271 billion. Among the main trade partners of China, the Russian-Chinese trade turnover showed the highest growth rate. For example, last year China’s trade turnover with Singapore grew by 23%, and with Canada – by 17%.

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Deliveries from China to Russia in 2022 totaled $76.1 billion, from Russia to China – $114.2 billion, while the total volume of China’s imports from different countries in 2022 increased by 1.1%. In the period from January to March 2023, Chinese exports to Russia increased by 47.1% to $24.07 billion, while imports of Russian goods to China increased by 32.6% to $29.77 billion. The overwhelming portion of Russia’s commodity export structure to China consists of fuel and energy complex products (78%). Timber accounts for approximately 4-5%, metals 8-10%, agricultural products (primarily fish – 2.55%) and fertilizers account for 5% (Table 1).

Table 1. Changes in trade turnover between Russia and China in 2017-2022, $ billion.

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Turnover</th>
<th>Export</th>
<th>Import</th>
</tr>
</thead>
<tbody>
<tr>
<td>Years</td>
<td>2017</td>
<td>2018</td>
<td>2019</td>
</tr>
<tr>
<td>2017</td>
<td>87.0</td>
<td>39.0</td>
<td>48.0</td>
</tr>
<tr>
<td>2018</td>
<td>108.2</td>
<td>56.0</td>
<td>52.2</td>
</tr>
<tr>
<td>2019</td>
<td>111.4</td>
<td>57.3</td>
<td>54.1</td>
</tr>
<tr>
<td>2020</td>
<td>104.1</td>
<td>49.1</td>
<td>54.9</td>
</tr>
<tr>
<td>2021</td>
<td>140.7</td>
<td>68.0</td>
<td>72.7</td>
</tr>
<tr>
<td>2022</td>
<td>190.3</td>
<td>76.1</td>
<td>114.2</td>
</tr>
</tbody>
</table>

Source: Compiled by the authors based on data from the General Customs Service of the PRC [1].

After the introduction of restrictive measures against the Russian financial sector on the use of American and European interbank systems for transmitting information and making payments, the Russian-Chinese foreign economic relations have necessitated the formation of alternative mechanisms for mutual settlements, taking into account the existing currency structure of settlements [2, 3].

Four currencies are currently used in trade settlements between the Russian Federation and the PRC: the yuan, the ruble, the U.S. dollar and the euro (Table 1). But the clear trend is to expand trade settlements in national currencies. During the period from 2017 to 2021, the share of other currencies in Russian-Chinese settlements, the main content of which is the yuan, increased by almost 45%, while the share of the dollar decreased by more than 40% (Table 2). In 2022 the share of the RMB in settlements for Russian exports to China grew from 0.5% to 16%, and in the currency structure of payments for and imports the growth in the share of the RMB in Russian-Chinese settlements amounted to 19 percentage points (from 4% to 23%) [4].

Table 2. Currency structure of settlements between Russia and China in 2017-2021, as % of total

<table>
<thead>
<tr>
<th>Currency</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>US Dollar</td>
<td>77.5</td>
<td>73.1</td>
<td>51.7</td>
<td>39.9</td>
<td>46.8</td>
</tr>
<tr>
<td>Euro</td>
<td>4.4</td>
<td>8.0</td>
<td>24.8</td>
<td>39.0</td>
<td>30.0</td>
</tr>
<tr>
<td>Russian ruble</td>
<td>6.5</td>
<td>5.9</td>
<td>7.3</td>
<td>5.6</td>
<td>6.4</td>
</tr>
<tr>
<td>Other currencies</td>
<td>11.6</td>
<td>13.0</td>
<td>16.2</td>
<td>15.5</td>
<td>16.8</td>
</tr>
</tbody>
</table>

Source: Compiled by the authors according to the Bank of Russia [5].

2 Materials and methods

The methodological basis of this research is the systematization and generalization of approaches to the transformation of cross-border payments in the conditions of the anti-sanctions regime on the example of the largest market entities of the world economy, which are Russia and China. This methodology highlights various schemes of cross-border payments, revealing the points of possible threats in this process, which helps to find the safest ways to conduct payments. To confirm the relevance of the research, a dynamic analysis of the development of mutual Russian-Chinese trade was performed. The materials of Russian and foreign organizations, such as the Bank of Russia, People’s Bank of China,
General Customs Administration of the PRC, IMF, OECD and others were used to obtain adequate statistical information.

3 Results

Today’s global payment clearing system consists of two parts. The first component of the international payment clearing system, which is dominated by various countries, is the cross-border payment and clearing systems in national currencies, such as CHIPS (The Clearing House Interbank Payments System) in the U.S. and CIPS (Cross-border Interbank Payment System) in China. The second component of the international payment and clearing system are international telecommunication systems used by different countries, for example, the world’s leading service for the secure exchange of financial messages SWIFT (Society for Worldwide Interbank Financial Telecommunications) [6, 7].

As the history of the global financial system shows, the use of “foreign” payment systems for national purposes carries risks of restrictions on their use, which Russia encountered after the introduction of anti-Russian sanctions [8]. This was the most important argument for the Bank of Russia to form and launch its own financial messaging system (SPFS), which is an alternative to SWIFT in its purpose, primarily in terms of settlements in the domestic Russian market [9]. According to the 2022 annual report of the mega-regulator for SPFS, the total number of its users in 2022 was 462 organizations, among which 106 were non-residents from more than 10 countries. In 2021, the number of messages sent through the SPFS increased 1.5 times (Figure 1). In 2022, SPFS traffic increased by almost a quarter and is expected to continue growing [10].

Despite the expansion of its activity, the SPFS is still inferior to SWIFT in terms of the number of users, frequency of use and scope of application. And the main problem for the participants of the Russian payment system is settlements with foreign partners.

![Fig. 1. Performance of SPFS and SWIFT in Russia in 2017-2020. Source: Compiled by the authors based on ROSSWIFT data [11].](image)

China also has and is intensively developing its own financial messaging and clearing system, known as the Cross-Border Interbank Payment System (CIPS), which was launched in test mode on April 12, 2012, and officially launched in October 2015. CIPS is a real-time cross-border RMB settlement infrastructure for monetary institutions located both in the PRC and abroad. CIPS enables 24/7 accounting of domestic and cross-border RMB
payments in all time zones of the world. The basic mechanisms of CIPS conform to international standards and practices of financial organizations conducting remittances for trade and investment transactions using the national currency of the PRC.

CIPS participants fall into two types: direct and indirect. Direct participants are domestic and foreign institutions, which have a CIPS banking number and directly handle cross-border RMB payments and settlements through CIPS. Indirect participants are domestic and foreign institutions that do not open accounts directly with CIPS but have CIPS account numbers and trust direct participants to make cross-border RMB payments and settlements through CIPS.

As of March 2023, there were a total of 1,427 CIPS participants, including 79 direct participants and 1,348 indirect participants. Indirect participants include 1005 in Asia (including 555 in China), 225 in Europe, 48 in Africa, 30 in North America, 23 in Oceania and 17 in South America, representing 109 countries and regions worldwide. The only direct participant in Russia is ICBC Bank (JSC) (ICBC Moscow).

Although the number of CIPS users continues to grow, the system mainly serves cross-border settlements in RMB between China and other countries and is used to transmit cross-border financial messages via SWIFT [12, 13].

Both Russia and China are seeking to make greater use of national financial information transmission systems for international settlements and accelerate the internationalization of their currencies, and are looking for a variety of solutions in this area, primarily in the field of mutual settlements.

4 Discussion

Prior to the disconnection of Russian banks from SWIFT, Russia and China, like most other countries in the world, used the traditional format of this international interbank system for transmitting information and making mutual payments. With the tightening of anti-Russian sanctions, the payment scenarios between the two countries have changed [14-16].

The authors analyze modern algorithms of Russian-Chinese payments using different currencies: the Chinese yuan, the Russian ruble, the US dollar and the euro, using the example of a cross-border payment by a Russian client through a Russian commercial bank A to a Chinese client who has an account in Chinese commercial bank B. The clearing bank for settlements in Chinese yuan in Russia is ICBC Bank (JSC) (ICBC Moscow).

If Russian commercial banks use yuan for cross-border payments, they need to open an account in yuan at ICBC Bank (JSC). In this case, the algorithm of funds transfer will include the following steps:

- Bank A notifies ICBC Bank (JSC) of the payment information through the Bank of Russia’s financial messaging system (SPFS) or SWIFT;
- after verification, ICBC Bank (JSC) sends remittance instructions to ICBC Headquarters via SWIFT;
- ICBC Headquarters and Bank B clear payment information in CIPS (Cross-border Interbank Payment System);
- the settlements are carried out through the Real Time Gross Settlement System (HVPS – High-Value Payment System) (Figure 2).
Assuming that Chinese commercial bank B has a ruble account in ICBC, the algorithm of the cross-border payment process will be as follows:

- Bank A notifies ICBC Bank (JSC) of the payment information through SPFS or SWIFT;
- Bank A and ICBC Bank (JSC) perform clearing of payment information in the payment system of the Bank of Russia (PS BR), and transfer funds from Bank A to Bank B;
- ICBC Bank (JSC) notifies ICBC Headquarters of payment information through SWIFT;
- Account changes within ICBC are performed and Bank B is notified of the account change (Figure 3).

Supposing that US dollar is used as currency of payment. Suppose that bank A has correspondent bank X, and bank B cooperates with correspondent bank Y. Then the algorithm of cross-border payment from Russia to China in U.S. dollars will be as follows:

- Bank A notifies bank X of the payment information via SWIFT;
- Bank X and bank Y clear payment information in the CHIPS system
- Bank X and bank Y settle in Fedwire (Federal Reserve Communication System), and transfer funds from the account of bank X to the account of bank Y;
- Bank Y notifies bank B of the account change via SWIFT (Figure 4).
When using euro as the currency of a cross-border payment through correspondent banks X and Y, its algorithm will be as follows:

- Bank A notifies bank X of the payment information via SWIFT;
- Bank X and bank Y clear payment information in the TARGET2 system, and transfer funds from the account of bank X to the account of bank Y;
- Bank Y notifies bank B of the account change via SWIFT (Figure 5).

According to the above algorithms of cross-border payment from Russia to China in four currencies, it is clearly possible to avoid the transmission of financial messages using...
SWIFT within the country, but further cross-border transmission of financial messages cannot be carried out without SWIFT. Therefore, in general, at present, the cross-border transmission of financial messages between the two countries is still heavily dependent on the SWIFT system.

CIPS, on the one hand, seeks to cooperate with SWIFT in messaging to expand the RMB customer base. On the other hand, CIPS provides an opportunity for overseas direct participants to directly connect to it through a dedicated International Ethernet Private Line (IEPL). In case of using IEPL, payment in RMB from Russia to China via ICBC Bank (JSC) clearing bank, does not require messaging via SWIFT (Figure 6).

![Diagram](https://example.com/diagram.png)

**Fig. 6.** Algorithm of cross-border payment from Russia to China in RMB, bypassing SWIFT. Source: compiled by the authors.

### 5 Conclusion

The study shows that Russia and China, as a response to pressure from the world’s leading countries through the banking and payment infrastructures, have created, as alternatives to SWIFT, independent payment systems or financial messaging and clearing systems – SPFS and CIPS, which, however, are still not fully able to replace SWIFT. At the same time, there are payment scenarios that technically allow to transmit messages, bypassing SWIFT. A promising way to improve the effectiveness of SPFS and CIPS in order to reduce the risks of cross-border settlements is their integration, as well as a more active implementation of these systems in the settlements between the BRICS, SCO and EAEC countries, as well as within the framework of the “One Belt, One Road” project. [17, 18]. One of the most favorable directions for the development of cross-border settlements between Russia and China could be joint activities to form a payment system based on blockchain technology [19, 20].

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