II International Scientific Conference GCPMED 2019
"Global Challenges and Prospects of the Modern Economic Development"

ANALYSIS OF CHANGES IN RUSSIA'S BALANCE OF PAYMENTS

V. V. Smirnov (a), D. G. Osipov (b)*, V. L. Gurdzhiyan (c)
*Corresponding author

(a) Chuvash State University named after I.N. Ulyanova, 428015, Moskovsky prospekt, 15, Cheboksary, Russia,
walera712006@mail.ru
(b) Chuvash State University named after I.N. Ulyanova, 428015, Moskovsky prospekt, 15, Cheboksary, Russia,
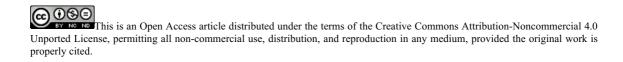denps@mail.ru
(c) Chuvash State University named after I.N. Ulyanova, 428015, Moskovsky prospekt, 15, Cheboksary, Russia,
vladim_leo@mail.ru

Abstract

The aim of the study is to identify active changes in the balance of payments of Russia, to determine the sources and patterns of these changes. The paper reveals the negative impact of sanctions and the general slowdown in growth of world trade on the dynamics of Russia's balance of payments through the fall in the growth rate of commodities export and, as a consequence, total per capita income. Decline in direct foreign investments and the current account of the balance of payments of Russia contribute to volatility of the exchange rate, which is adjusted under the balancing of the Federal budget, which leads to formation of significant international reserves. The source of exchange rate volatility is the monetary policy of the Central Bank and the Ministry of Finance of Russia aimed at maintaining a positive balance of payments and increasing reserve assets. Analysis of changes in the Russia's balance of payments revealed volatility with a shift in the direction of official reserves caused by significant changes in the volume of capital transactions. Demonetization of the Russian economy is a natural result of high negative growth rates of portfolio investments and capital account against the background of consistently low growth rates of goods and services, orientation to land and natural rent, personal transfers from non-resident households, active investment in foreign financial assets, etc. The main trends in Russia's balance of payments are the synchronization of operations with goods, services and income maintaining a positive balance and increase of reserve assets.

Keywords: Analysis of changes, exchange rate, volatility, balance of payments, reserve assets, growth rates.

1. Introduction

Relevance of analysis of changes in the balance of payments of Russia is due to the need to assess the impact of crisis phenomena in the world economy on the state of foreign economic activity. Balance of payments as a form of displaying of trade in goods, services and financial assets of a country with the rest of the world (Melvin & Norrbin, 2017) allows to evaluate significant indicators of foreign economic activity and determine the optimal macroeconomic model. Russia's balance of payments is influenced by numerous factors: the level of economic liberalization; capital mobility, world commodity prices in monetary terms, inflation rates, net cash flow across national borders (Canto & Wiese, 2018); exchange rates; reserves, etc.

A strong argument for the need to analyze changes in Russia's balance of payments is that the growth rate of per capita income is directly proportional to the growth rate of its exports. The level of well-being of Russian citizens to a greater extent depends on the effectiveness of foreign economic activity. Thus the balance of payments which reflects not only the effectiveness of foreign economic activity but also the economic condition of Russia as a whole can be an indicator of the well-being of Russian citizens in as a whole.

Econometric estimates, including structural gap tests, show that the equilibrium growth rates of the developing countries' balance of payments are increasing during the period of economic liberalization. Meanwhile the equilibrium GDP growth rates may fall after trade liberalization due to a sharp increase in the elasticity of imports by income. An increase in foreign direct investment inflow and an increase in the current account of the balance of payments contribute to an increase in the exchange rate in the long term. These phenomena fully correspond to the Russian reality.

Change of the current account balance correlates with the change in the exchange rate based on a balanced Federal budget. This correlation is not able to stimulate foreign economic activity and stabilize the growth of the country's economy. In addition, there is a need to create a significant amount of reserves.

In terms of the amount of reserves it should be understood that the likely expectation of an upper limit of how much reserves a country is willing to accumulate will lead to an anti-crisis balance of payments. The anti-crisis balance of payments is characterized by accelerated pre-crisis accumulation of foreign exchange reserves followed by collapse of monetary system which will be instantaneous when targeting the exchange rate and gradual when targeting the price level. On the one hand, China and Switzerland have recently experienced the negative effect of excessive accumulation of foreign exchange reserves far exceeding the optimal level (Kumhof & Yan, 2016), on the other – China imports large volumes of intermediate resources that will be used in the production of final goods for export. There arises a question about how harmful can this strategy of limited growth balance of payments is (balance-of-payments-constrained growth, BPCG) (Araujo, Paiva, & Costa Santos, 2019).

Thus, the analysis of changes in the balance of payments of Russia and identification of its significant indicators will reveal the direction of development of foreign economic activity and the options of stimulation of growth of the Russian economy.

2. Problem Statement

Classical economic theory of distinguishes from the aggregate structure of balance of payments the ratio of imports and exports of goods and services of a country which reflects not so much the potential of foreign economic activity but the level of development of the national economic complex. This level determines priorities of Russian and foreign residents in the process of choosing Russian or foreign goods and services at a certain exchange rate. In this instance the commodity structure of exports and imports of a country significantly depends on their elasticity (Boubakri, Guillaumin, & Silanine, 2019; Boldanov, Degiannakis, & Filis, 2016).

Representatives of the neoclassical theory believe that for a better balance of payments it is necessary to achieve elasticity of prices for imported goods for residents and for export goods for non-residents. This compensates the mutual decrease or increase in prices for imported and exported goods.

It should be noted that in case of devaluation of currency there simultaneously change exports and imports, and in case of a decrease of the cost of labor, production costs – only exports. On the basis of the ratio of production costs, difference of exchange rates of currencies it is possible to solve both the problem of pricing and inflation changes. Keynesian proponents believe that deflation leads to an improvement in the balance of payments by reducing cash in circulation, reducing government spendings and spendings on consumption and investments.

The monetarist balance of payments theory holds that a negative or positive balance of payments is an inflationary or deflationary public policy. Excess money leads to the "squeezing" of currency and the balance of payments deficit, shortage – inflow of currency. Positive balance of payments is related to lack of additional funds, designed, in particular, to ensure the growth of goods and services, and in General – development of the national economy.

The main difference between monetarist theory and neoclassical theory is that: first, the balance of payments is seen as a change in the money supply issued by the Central Bank rather than the commodity supply; second, it is focuses on public reserves, combining short-term and long-term capital flows. In the neoclassical theory the main reasons for the balance of payments imbalance are differences in the costs of production of goods and services which are eliminated by the free movement of factors of production.

3. Research Questions

The subject of the study is the balance of payments of Russia as an aggregated structure of indicators reflecting not only the ratio of imports and exports of goods and services of the country but also the level of development of the national economic complex. The level of development of the national economic complex determines the priorities of foreign economic activity of the country, including Russian and foreign residents, in the process of selection of Russian or foreign goods and services at a certain exchange rate.

Priorities of foreign economic activity affect the dynamics of individual indicators of the balance of payments shifting the balance of positive balance of payments in the positive or negative zone. Surplus (positive balance) – supplying abroad more goods than receiving from abroad together with accumulation

of liabilities in foreign currency, and negative balance is increase in total debt, lack of necessary reserves of foreign currency.

4. Purpose of the Study

The aim of the study is to identify active changes in the balance of payments of Russia, to determine the sources and patterns of these changes. The study is focused on the analysis of the consequences of changes in the inflow of foreign direct investment and the current account of the balance of payments of Russia, the source of exchange rate volatility, etc.

The paper searches for the reasons of demonetization of the Russian economy associated with changes in the balance of payments.

5. Research Methods

The main sections of the balance of payments are the current account, the capital account (capital account and financial account), net errors and omissions, and official reserves. The current account and capital account balances reflect the balance of official reserves (Melvin & Norrbin, 2017). A positive balance of payments means that more goods are delivered outside the country than are received and that monetary liabilities are accumulated in foreign currency. Negative balance of payments (deficit) – a country increases the total debt, there are no necessary reserves of foreign currency, the rate of the national currency falls, etc.

Growth of inflation expectations against the background of increase in the cost of factors of production leads to higher prices and price imbalances. The balance of payments is reduced to a deficit – export prices are high, which leads to its reduction (Kumhof & Yan, 2016).

A balance of payments is a simple statistical report that displays economic transactions between residents and non-residents over a period of time. An economic operation between institutional units is carried out by mutual agreement or by virtue of certain regulatory documents of a country in which the economic activity is carried out. The result of an economic transaction is an exchange of economic values or a transfer.

Growth of the aggregate of economic operations carried out by institutional units stimulates development of institutional sectors – Central banks, commercial banks, public administration bodies and other sectors. Other sectors are subdivided into financial institutions other than banks and non-financial organizations, households and non-profit organizations serving households.

In a balance of payments the current account balance shows the difference between savings and investments and is taken into account in calculation of GDP by the final consumption method. The difference between current account and capital account represents net lending or net borrowing and is equal to the financial account balance.

A significant aspect of the Russian balance of payments is the introduction of reserve assets (highly liquid foreign assets) as the final balance of the financial account. Reserve assets are the financial basis of foreign economic activity and are controlled by the Central Bank and the Ministry of Finance of Russia. Reserve assets are used to fund the balance of payments deficit, intervention in foreign exchange

markets (impact on the exchange rate). Contents of reserve assets – monetary gold, SpecialDrawingRights, reserve position in the International Monetary Fund, currency and deposits, securities, derivative financial instruments and other claims.

6. Findings

Analysis of changes in the balance of payments of Russia is associated with the assessment of growth rates of its indicators using cluster, neural network and nonparametric methods of analysis. To determine the weight of indicators and structural deviations of growth rate of the balance of payments we will evaluate the median and dispersion (Smirnov, Osipov, Babaeva, Grigorieva, & Perfilova, 2019), (Smirnov, Semenov, Kadyshev, Zakharova, & Perfilova, 2019).

As a result of hierarchical cluster analysis (average distance between clusters, squared Euclidean distance) of the growth rate of the balance of payments of Russia in the period 2005-2018 using the "SPSSStatistics" according to the International Monetary Fund (international monetary Fund, 2019) there were revealed two voluminous clusters "Current account" (excluding reserves and related items) and "Goods, credit (exports)". The strongest relationships in the balance of payments are observed in: "Current account (excluding reserves and related items)" and "Balance of goods, services and primary income"; "Goods, credit (export)" and "Debit (import) goods"; "other investments, assets and liabilities" and "Debt instruments"; "Reserves and related goods" and "Reserve assets"; "Services, credit (export)" and "Debit (import) services".

The results of changes in the Russia's balance of payments reflect synchronicity of changes in values relative to transactions with goods, services and income. The high dependence of the balance of payments indicators "Other investments, assets and liabilities" and "Debt instruments" indicates the active use of debt securities (bonds, bills of exchange and certificates) outside of operations with direct and portfolio investments. There is seen an increase in official reserves (cash and deposits), trade loans and advances, loans and borrowings, arrears, other assets and liabilities.

The balance of payments of Russia shows significant influence of the state on the financial and economic policy due to significant interrelations of "Goods, credit (exports)" and "Debit (import) goods", "Services, credit (exports)" and "Debit (import) services".

Reserve assets as the main source of funding of the balance of payments deficit and regulation of the national currency, which are under control of the Central Bank and the Ministry of Finance of Russia, actively affect the current account. In the "flexible exchange rate" mode (without intervention of the Central Bank). "Reserve assets" are a factor that constrains volatility of ruble and allows to reduce the balance of payments to zero.

If current account and the capital account are unbalanced then the Central Bank applies devaluation of the national currency which allows to stimulate exports and attract additional external loans. When this measure is exhausted, the reserve assets are used to pay external bills. The Central Bank of Russia has activated the "second tier of balance of payments protection – "Reserve assets".

As a result of neural network analysis (multilayer perceptron, batch learning) the growth rate of the balance of payments of Russia in the period 2005-2018 with the use of "SPSSStatistics" according to the International monetary Fund (international monetary Fund, 2019) data identified three levels of

importance: high level: investments and liabilities (other) and reserve assets; medium: stocks and investment funds, and financial derivatives and stock options, liabilities; low: debit (import) services and reserves and related products.

The results of neural network analysis correlate with the results of cluster analysis indicating priority of investing reserve assets in stocks and investment funds, cash currency and deposits, trade loans and advances, loans and borrowings, overdue debts, other assets and liabilities. The most important component of the balance of payments is the primary income, credit-wages, investment income, rent; and the secondary income, credit-personal transfers from non-resident households, taxes, benefits, bonuses and refunds.

Thus, a high priority for the development of the Russian economy is to actively invest in foreign shares of large companies and investment funds to obtain land and natural rents, as well as personal transfers from non-resident households. The medium level of importance is focused on financial derivatives and options (shares and liabilities), debt instruments, portfolio investments. The low level of importance of the Russian balance of payments indicators is characterized by debt obligations to non-residents for delivered goods and services, direct investments in assets.

As a result of nonparametric analysis (Kolmogorov's criterion, level of significance equal to 0.05) of the rates of growth of indicators of the Russian balance of payments with the use of "SPSSStatistics" according to the International Monetary Fund (international monetary Fund, 2019) data there are identified the acceptable and unacceptable hypotheses that allow to distinguish a significant cluster structure of the Russian balance of payments "Current account (excluding reserves and related items), "Goods, credit (exports)" and "Debt instruments").

The identified set of significant indicators of the Russian balance of payments indicates the active use of financial instruments by the Central Bank and the Ministry of Finance of Russia to stimulate export of goods and services. "Other investments, assets" and "Other investments, liabilities" have high level of importance, "Debt instruments", "Portfolio investments, assets", "Goods, credit (export)", "Services, credit (export)" – medium level, "Reserves and related products" – low level.

As a result of assessment of median and variance of growth rates of the balance of payments of Russia there are revealed (Table 01):

1) median values: high – "Reserve assets" and "Reserves and related products"; low - "Portfolio investments, liabilities" and "Capital account" (excluding reserves and related items)»;

2) dispersion value: high – "Account of operations with capital (excluding reserves and related items)" and "Account of operations with capital, debit"; low – "Debit (import) goods" and "Goods, credit (exports)", "Debit (import) services" and "Services, credit (export)".

Table 01. Median and variance of growth rates of the balance of payments of the Russian Federation, 2005-2018

Indicators	Median	Dispersion
Current account (excluding reserves and related items)	17.8	6304.2
Goods, credit (export)	16.5	599.3
Debit (import) goods	5.4	641.6

Balance of goods	4.6	1014.3
Goods, credit (export)	12.4	257.0
Debit (import) services	17.9	355.0
Balance of goods and services	9.3	1441.3
Primary income, credit	12.1	889.5
Primary income, debit	12.0	724.1
Balance of goods, services and primary income	11.9	4229.0
Secondary income, credit	14.0	948.4
Secondary income, debit	15.9	649.9
Capital account (excluding reserves and related items)	-99.0	22415020.2
Capital account, credit	3.3	11299.1
Capital account, debit	-15.1	14603353.5
Current and capital account balance	28.6	14939.3
Financial account (excluding reserves and related items)	-23.5	550279.7
Direct investments, assets	21.6	1909.0
Stocks and investment funds	18.3	2690.9
Debt instrument	-9.3	81124.1
Direct investment, liabilities	18.0	14261.3
Portfolio investments, assets	-26.2	32804.2
Portfolio investments, liabilities	-131.2	826777.2
Derivative financial instruments (except reserves) and employee stock options	-57.3	543689.9
Financial derivatives and stock options, assets	8.5	5952.0
Financial derivatives and stock options, liabilities	23.0	10508.9
Other investments, assets	-3.4	35464.4
Other stocks	-3.5	115425.1
Other investments, liabilities	-26.0	21304.0
Current, capital and financial account balance	37.5	204356.2
Net errors and omissions	-64.0	17241.8
Reserves and related products	65.4	99991.0
Reserve asset	68.8	99898.2

Source: authors based on data of the International Monetary Fund (The International Monetary Fund, 2018).

The median growth of the balance of payments can be represented by a function $y = -0.0239x3 + 1.0756x2 - 15.429x + 82.363$ ($R^2 = 0.975$) and dispersions – $y = 3E+06e-0.303x$ ($R^2 = 0.9426$).

Thus there is volatility in the growth rate of Russia's balance of payments indicators with a shift towards official reserves caused by significant changes in the volume of capital transactions. High negative growth rates of portfolio investments and capital account (excluding reserves and related items) against the background of consistently low growth rates of goods and services will contribute to demonetization of the economy.

7. Conclusion

Change in Russia's balance of payments reflects active use by the Central Bank and the Ministry of Finance of bonds, promissory notes and certificates outside direct and portfolio investment transactions as a source of replenishment of official reserves, allocation of trade loans and advances, loans and borrowings. This helps to synchronize changes in transactions with goods, services and revenues. Significant influence of the state on financial and economic policy is carried out due to growth of reserve assets under the control of the Central Bank and the Ministry of Finance of Russia.

The Russian balance of payments is dominated by "Other investments, liabilities" and "Reserve assets", of the medium one – "Shares and investment funds" and "Financial derivatives and stock options, liabilities", and the priorities – investing in foreign shares of large companies and investment funds, obtaining land and natural rents, as well as personal transfers from non-resident households.

In the current structure of Russia's balance of payments priorities investing in foreign assets against the background of volatility in the growth rates of the balance of payments indicators caused by significant changes in the capital account (high negative values of growth rates of portfolio investments and capital account), low values of current account growth rates will lead to the demonetization of the Russian economy.

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