The Relationship Between Financial Stability Indicators and Exchange Rate in Russia

Mikhail Golovnin

Institute of Economics of Russian Academy of Sciences, MV Lomonosov Moscow State University, Russia

Gaiane Oganesian

Moscow School of Economics, MV Lomonosov Moscow State University, Russia

Financial stability issues have taken on special importance after the global economic and financial crisis of 2007-2009 because of their macroeconomic implications both on national and global levels.

We treat financial stability as the stability of financial markets and institutions, their ability to resist to financial risks and economic shocks. We used a narrow definition, given by B. Gadanecz and K. Jayaram from Bank of International Settlements, who illustrate the financial stability as "the absence of excessive volatility, stress or crises" (Gadanecz, Jayaram, 2009). Garry J. Schinasi highlights the fact that it is necessary to evaluate financial stability in a continuum, because financial markets and institutions are not static (Schinasi, 2004). That's why we focus on financial stability issues for the Russian Economy for the period of past 12 years.

Financial stability problems for emerging markets are often connected not only with internal, but also external shocks enhanced by the globalization impact. Within the external shocks transmission process the special role is devoted to the exchange rate. Exchange rate fluctuations influence price dynamics; they determine the debt burden for borrowers, as large amount of debts in emerging markets are denominated in foreign currency; foreign exchange assets constitute the large part of domestic savings. That's why exchange rate fluctuations should influence the whole state of financial stability in this group of countries.

We can see the similar developments in Russian economy. During foreign exchange crises (in 2008 and 2014-2015) dollarization ratio ad foreign cash holdings sharply increased; banking system faced different difficulties, including outflow of funds; inflation soared, especially in 2015 after sharp depreciation of the ruble.

We focus on two research tasks: to define the factors behind exchange rate dynamics in Russia and try to assess the impact of exchange rate changes on financial stability indicators.

Among possible exchange rate determinants according to the literature and specific feature of the Russia economy as commodity (mainly oil and gas) exporting country we selected the following indicators:
- world oil price;
- short-term interbank interest rate;
- international reserves changes (instead of foreign exchange interventions data, because the latter are available only for shorter period of 2010-2015);
- monetary indicators.

As financial stability indicators we used non-performing loans ration for banking market and stock market index (RTS) dynamics for stock market.

In our research we applied linear regression analysis. Estimation includes quarterly data for the period 2006 – 2017 (for the model with non-performing loans data was available for 2010-2017), using the Newey-West standard error correction. All variables were expressed in growth rates in USD terms (over the same period previous year).

Exchange rate equation:
$$exchange\_rate_i = \theta_0 + \theta_1 brent_i + \theta_2 interest\_rate_i + \theta_3 reserves_i + \varepsilon_i \,,$$

exchange_rate – ruble to dollar exchange rate (in USD per one ruble).
brent– oil price (Brent),
interest_rate - short-run interest rate (Interbank Rate),
reserves - international reserves.

	Coeff.	t-Statistic	Prob.
Brent	0,24	5,84*	0,0000
Interest rate	-0,05	-2,16*	0,0362
Reserves	0,16	3,47*	0,0012

Non-performing loans equation:
$$non\_performing\_loan_i = \theta 0 + \theta 1 exchange\_rate_i + \theta 2 rts_i + \theta 3 corporate\_profit_i + \varepsilon_i ,$$

non_performing_loan – amount of non-performing loans,
rts - RTS index,
corporate_profit - amount of corporate profits.

	Coeff.	t-Statistic	Prob.
Exchange rate	-1,69	-2,58*	0,0163
RTS Index	3,11	4,83*	0,0001
Corporate profit	-0,49	-2,67*	0,0133

RTS Index equation

$$rts_i = \theta 0 + \theta 1 interest\_rate_i + \theta 2 exchange\_rate_i + \theta 3 M2_i + \varepsilon_i ,$$

M2 - monetary aggregate M2 in national definition.

	Coeff.	t-Statistic	Prob.
Interest rate	-66,9	-6,48*	0,0000
Exchange rate	-15,6	-2,31*	0,0258
Money supply	15,5	4,76*	0,0000

Main results:

1) Among exchange rate determinants the most important were oil price dynamics (which corresponds with common wisdom and observed facts), interest rates (according to classical exchange rate models) and international reserves changes, as the exchange rate was regulated before the end of 2014. Positive sign before the reserves variable can be explained by monetary authorities reaction on exchange rate changes (not the proactive policy)
2) Non-performing loans negatively depends on exchange rate and corporate profits dynamics. Though the link of dependence on RTS changes is counterfactual.
3) Stock market index dynamics is determined by interest rate, money supply and exchange rate changes. All the signs correspond with theoretical assumptions.
The results have an important practical implementation as the argument towards necessity of exchange rate regulation in Russia, which actually had been abandoned by the Central Bank at the end of 2014. Only in 2017 Ministry of Finance began to intervene on foreign exchange market.

Keywords: exchange rate, financial stability, Russian economy

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