

Some trends of the Russian sub-federal bond market development in the presence of the global challenges

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Abstract — The article demonstrates new trends in the development of the national market of sub-federal bonds as an impact of global factors. In the study, the methods of structural-dynamic analysis and the index of the depth of the sub-federal bond market depreciation proposed by the authors are used. It is shown that the national market of sub-federal bonds during 2013-2017 is characterized by a slight decrease in the total current value of sub-federal bonds, a total reorientation to bond financing in the national currency, an increase in the depreciation depth and a decrease in the market concentration level.

Keywords— *bond market, global challenges, sub-federal bonds, depreciable bonds, market concentration*

I. INTRODUCTION

Over the past few years, the national market for sub-federal bonds has objectively been forced to function under "stressful conditions" triggered by major changes, primarily in the global economy in general and in the international financial markets in particular. On the one hand, in 2014, the aggravation of the geopolitical situation in Ukraine led to the introduction of a "package" of economic and political sanctions that are still valid and expanding. This objectively narrowed the number of investors in sub-federal bonds, firstly, due to the "withdrawal" of the most conservative foreign investors (they completely withdrew funds from the Russian debt market) and, secondly, by transforming preferences of foreign investors who are distinguished by a higher level of "tolerance for risk" (this group of investors "switched" to federal bonds, which are characterized by a higher liquidity level). The imposed sanctions actually closed external capital markets for sub-federal borrowers, including those characterized by high credit quality.

On the other hand, the slowdown in economic growth, which turned into a recession in 2015-2016, combined with the collapse of the world oil prices and the dramatically increase of the national currency volatility, led to an increase in the Russian regions' demand for resources to finance budget deficits, which often had a "chronic" nature. The regions attracted financial resources, in particular, by placing bond issues.

The reduction in the number of potential investors in sub-federal bonds, while the sub-federal bonds issuers' demand for bond financing was increasing, led to a significantly growing interest of researchers to study the problems of the sub-federal bond market.

F. J. Fabozzi conducted a fundamental theoretical study of sub-federal bonds as one of the segments of the bond market [1]. O. S. Belomytseva was one of the first Russian authors who considered the general trends in the development of the domestic market of sub-federal bonds [2]. E. A. Ermakova, Yu. V. Semernina, and A. A. Shcherbakov conducted a structural and dynamic analysis of the Russian sub-federal bond market, and identified trends evolving in it in 2004-2014, but the authors did not cover the entire "sanction period" [3]. A. P. Ermak analyzed the results of the Russian bond market functioning in 2016, as well as factors that had a key influence on the market [4]. G. L. Glazkov focused attention to the market's specific features [5]. Later, a study of the specifics of the Russian sub-federal bonds market was also carried out by E. V. Tishina [6]. Yu. B. Zelensky considered the current structure of the regional debt [7]. Yu. M. Chebotar explored the potential of the sub-federal bonds as an instrument used for financing the budget deficit [8]. O. I. Larina and N. V. Moryozhenkova estimated the prospects for the sub-federal bond market development [9].

A special attention should be given to the study of the specifics of subfederal bonds, conducted by A. A. Shcherbakov [10]. The author distinguishes a number of distinctive features of these financial instruments: the limitation of the bonds' maximum circulation period (no more than 30 years); limitations for scope of the bond issue (compliance with the legally established restrictions on the maximum debt level for the subject of the Russian Federation, on the costs of the debt servicing, and on the maximum borrowing amount in the current financial year); preferential taxation of the incomes received on sub-federal bonds (particularly, tax privileges on incomes received in the form of bond coupons); low liquidity; low yield that imply a low level of risk inherent in these financial instruments. In the author's opinion, the specifics of sub-federal bonds as financial instruments largely determine the specifics of the development of this market.

Wherein, the impact that global challenges had on the development of the national market of sub-federal bonds was not explored in detail in the publications listed above. However, it is global challenges that have largely caused the development of new trends in the sub-federal bond market that previously were not typical for it. It is important to identify tendencies in the sub-federal bonds market's development provoked by the presence of global challenges in the world economy to promote a comprehensive understanding of the market's functioning mechanisms and, hence, to expand the possibilities of scientific forecasting and modeling conditions for expanding bond financing.

II. MATERIALS AND METHODS

To identify new trends that are typical for the domestic market of sub-federal bonds, we compared the market situation before the global challenges described above had been formed (as of December 31, 2013) with the market changes during the next four years (as of December 31, 2014-2017 years). We used the data presented by the RusBonds Internet project of the news agency "Finmarket" as a source of information on the national market of sub-federal bonds [11]. The data on the structure of the Russian sub-federal bond market in the period under review are presented in tables I and II.

The study was carried out using economic and statistical methods of structural and dynamic analysis, primarily with the use of relative statistical indicators (values) that correctly assess changes that have occurred in the national market of sub-federal bonds over the analyzed period of time. Estimation of the depreciable sub-federal bonds prevalence degree in the national market was carried out, among other things, by calculating the authors' indicator of the depreciation depth of the sub-federal bond market (D_{DSB}), defined by the following formula:

$$D_{DSB} = \frac{\sum_{i=1}^n N_A}{\sum_{i=1}^n N_O} * 100\%, \quad (1)$$

where N_A – current nominal value of the bond issue (adjusted for depreciation); N_O – initial nominal value of the bond issue; n – number of sub-federal bonds issues that circulate in the national market.

TABLE I. THE DISTRIBUTION OF THE QUANTITIES OF THE SUB-FEDERAL BOND ISSUES AMONG THE SUBJECTS OF THE RUSSIAN FEDERATION (AS AT DECEMBER 31 OF A CERTAIN YEAR) [11]

| № | The subject of the Russian Federation | Number of bond issues | | | | |
|----|---------------------------------------|-----------------------|------|------|------|------|
| | | 2013 | 2014 | 2015 | 2016 | 2017 |
| 1 | Magadan Region | - | 1 | 1 | 1 | 2 |
| 2 | The Republic of Sakha (Yakutia) | 4 | 4 | 5 | 5 | 5 |
| 3 | Republic of Bashkortostan | 2 | 3 | 4 | 3 | 2 |
| 4 | Mari El Republic | 1 | 2 | 1 | 1 | 2 |
| 5 | The Republic of Mordovia | 1 | 1 | 2 | 3 | 3 |
| 6 | The Republic of Udmurtia | 4 | 4 | 4 | 4 | 3 |
| 7 | Chuvash Republic | 3 | 2 | 1 | 1 | 1 |
| 8 | Nizhny Novgorod Region | 4 | 4 | 4 | 4 | 4 |
| 9 | Orenburg region | 2 | 3 | 4 | 4 | 4 |
| 10 | Samara Region | 3 | 4 | 5 | 5 | 5 |
| 11 | Saratov region | - | - | - | - | 1 |
| 12 | Ulyanovsk region | - | - | - | - | 1 |
| 13 | The Republic of Karelia | 4 | 5 | 4 | 3 | 3 |
| 14 | Komi Republic | 3 | 3 | 3 | 3 | 4 |
| 15 | Vologda Region | 2 | 2 | 2 | 1 | - |
| 16 | Kaliningrad region | - | - | - | 1 | 2 |
| 17 | Leningrad region | 1 | 1 | 1 | 1 | 1 |
| 18 | Nenets Autonomous Okrug | - | - | - | - | 1 |
| 19 | Saint Petersburg | 3 | 2 | 1 | 1 | 2 |
| 20 | Karachay-Cherkess Republic | - | - | - | - | 1 |
| 21 | Stavropol region | 2 | 2 | 2 | 3 | 2 |
| 22 | The Republic of Khakassia | 2 | 3 | 3 | 4 | 4 |
| 23 | Krasnoyarsk region | 3 | 5 | 7 | 7 | 8 |
| 24 | Irkutsk region | - | - | - | 1 | 1 |
| 25 | Kemerovo Region | 1 | 1 | 1 | 1 | 2 |
| 26 | Novosibirsk region | 1 | 2 | 2 | 3 | 4 |
| 27 | Omsk Region | 1 | 2 | 2 | 2 | 2 |
| 28 | Tomsk Region | 6 | 7 | 9 | 10 | 8 |
| 29 | Sverdlovsk region | 2 | 2 | 2 | 2 | 2 |
| 30 | Khanty-Mansi Autonomous Area (Yugra) | - | 1 | 1 | 2 | 3 |
| 31 | The Yamalo-Nenets Autonomous District | - | - | - | 1 | 3 |
| 32 | Belgorod region | 2 | 3 | 4 | 5 | 5 |
| 33 | Voronezh region | 2 | 3 | 3 | 3 | 2 |
| 34 | Kaluga region | 1 | 1 | 1 | - | - |
| 35 | Kostroma region | 2 | 2 | 2 | 1 | 1 |
| 36 | Kursk Region | - | - | - | - | 1 |
| 37 | Lipetsk region | 2 | 3 | 3 | 3 | 2 |
| 38 | Moscow region | 1 | - | - | 1 | 2 |
| 39 | Ryazan Oblast | 2 | 1 | 1 | 1 | - |
| 40 | Oryol Region | - | - | - | - | 1 |
| 41 | Smolensk region | 1 | 1 | 1 | 1 | 1 |
| 42 | Tambov Region | - | - | - | 1 | 3 |
| 43 | Tver region | 4 | 3 | 2 | 2 | 1 |
| 44 | Tula region | 2 | 2 | 2 | 2 | 1 |
| 45 | Yaroslavl region | 3 | 3 | 2 | 3 | 4 |
| 46 | Moscow | 16 | 13 | 11 | 9 | 6 |
| 47 | Krasnodar region | 2 | 1 | 2 | 2 | 2 |
| 48 | Volgograd region | 5 | 5 | 6 | 5 | 5 |

TABLE II. DISTRIBUTION OF NOMINAL VOLUMES (ADJUSTED FOR DEPRECIATION) OF SUB-FEDERAL BOND ISSUES AMONG THE SUBJECTS OF THE RUSSIAN FEDERATION (AS AT DECEMBER 31 OF A CERTAIN YEAR) [11]

| № | The subject of the Russian Federation | Nominal volume of issue, adjusted for depreciation, billion rubles | | | | |
|----|---------------------------------------|--|-------|-------|-------|-------|
| | | 2013 | 2014 | 2015 | 2016 | 2017 |
| 1 | Magadan Region | - | 1.00 | 1.00 | 0.70 | 1.40 |
| 2 | The Republic of Sakha (Yakutia) | 8.75 | 9.25 | 12.25 | 15.25 | 16.63 |
| 3 | Republic of Bashkortostan | 8.00 | 13.10 | 14.70 | 11.15 | 5.20 |
| 4 | Mari El Republic | 1.20 | 2.60 | 1.20 | 0.40 | 2.20 |
| 5 | The Republic of Mordovia | 3.00 | 3.00 | 5.40 | 9.80 | 8.30 |
| 6 | The Republic of Udmurtia | 7.80 | 6.20 | 6.90 | 10.15 | 9.00 |
| 7 | Chuvash Republic | 3.50 | 2.000 | 1.275 | 0.825 | 0.375 |
| 8 | Nizhny Novgorod Region | 27.50 | 23.50 | 28.90 | 31.60 | 38.30 |
| 9 | Orenburg region | 9.00 | 14.00 | 16.90 | 14.20 | 15.00 |
| 10 | Samara Region | 27.81 | 29.68 | 29.88 | 31.44 | 34.07 |
| 11 | Saratov region | - | - | - | - | 5.00 |
| 12 | Ulyanovsk region | - | - | - | - | 5.00 |
| 13 | The Republic of Komi | 4.75 | 6.75 | 5.35 | 3.95 | 4.05 |
| 14 | Komi Republic | 4.15 | 11.86 | 21.73 | 20.58 | 26.91 |
| 15 | Vologda Region | 6.608 | 4.935 | 2.802 | 0.92 | - |
| 16 | Kaliningrad region | - | - | - | 1.00 | 3.00 |
| 17 | Leningrad region | 1.30 | 7.90 | 7.11 | 5.53 | 3.95 |
| 18 | Nenets Autonomous Okrug | - | - | - | - | 2.00 |
| 19 | Saint Petersburg | 19.50 | 17.00 | 7.00 | 7.00 | 55.00 |
| 20 | Karachay-Cherkess Republic | - | - | - | - | 2.00 |
| 21 | Stavropol region | 10.00 | 7.75 | 4.75 | 8.80 | 6.80 |
| 22 | The Republic of Khakassia | 4.20 | 6.70 | 7.50 | 11.40 | 10.30 |
| 23 | Krasnoyarsk region | 33.31 | 43.79 | 53.66 | 60.66 | 64.03 |
| 24 | Irkutsk region | - | - | - | 5.00 | 5.00 |
| 25 | Kemerovo Region | 1.00 | 1.00 | 1.00 | 0.75 | 9.50 |
| 26 | Novosibirsk region | 5.00 | 12.00 | 12.00 | 15.55 | 16.10 |
| 27 | Omsk Region | 5.00 | 8.50 | 6.00 | 8.00 | 7.00 |
| 28 | Tomsk Region | 10.90 | 10.20 | 16.35 | 16.15 | 19.95 |
| 29 | Sverdlovsk region | 5.10 | 3.45 | 1.65 | 5.60 | 15.00 |
| 30 | Khanty-Mansi Autonomous Area (Yugra) | - | 14.00 | 14.00 | 15.10 | 17.20 |
| 31 | The Yamalo-Nenets Autonomous District | - | - | - | 20.00 | 26.50 |
| 32 | Belgorod region | 8.50 | 11.00 | 14.75 | 16.30 | 15.18 |
| 33 | Voronezh region | 10.00 | 15.50 | 12.20 | 8.80 | 5.55 |
| 34 | Kaluga region | 2.50 | 2.50 | 1.25 | - | - |
| 35 | Kostroma region | 6.90 | 5.40 | 3.50 | 2.20 | 1.40 |
| 36 | Kursk Region | - | - | - | - | 4.00 |
| 37 | Lipetsk region | 5.00 | 9.50 | 8.05 | 6.25 | 4.30 |
| 38 | Moscow region | 16.00 | - | - | 25.00 | 50.00 |
| 39 | Ryazan Oblast | 3.34 | 2.50 | 1.875 | 0.625 | - |
| 40 | Oryol Region | - | - | - | - | 5.00 |
| 41 | Smolensk region | 3.00 | 3.00 | 2.25 | 1.80 | 1.35 |
| 42 | Tambov Region | - | - | - | 1.60 | 8.10 |
| 43 | Tver region | 9.60 | 6.45 | 3.00 | 2.25 | 0.75 |
| 44 | Tula region | 8.50 | 6.50 | 8.25 | 6.00 | 2.75 |
| 45 | Yaroslavl region | 9.95 | 14.10 | 12.00 | 12.40 | 19.15 |
| 46 | Moscow | 495.0 | 435.0 | 375.0 | 315.0 | 210.0 |
| 47 | Krasnodar region | 14.00 | 8.40 | 8.40 | 5.28 | 10.48 |
| 48 | Volgograd region | 14.05 | 15.55 | 16.95 | 11.70 | 17.35 |

The above indicator allows one to compare the current nominal value of sub-federal bonds (in fact, the debt of issuers

at a particular point in time) and the bonds initial value (debt of issuers directly at the time of bonds placement at the market).

III. RESULTS AND DISCUSSION

The conducted study let us identify a number of trends in the Russian sub-federal bonds market that were caused by the global challenges.

First, sub-federal bonds denominated in foreign currency actually disappeared at the domestic market of sub-federal bonds. It should be noted that this segment of the national market of sub-federal bonds has never been characterized by significant volumes and representativeness of circulating issues. However, high credit quality issuers periodically placed bonds denominated in foreign currency trying to reduce the bond financing cost. Traditionally, such issues were placed among foreign investors who, while minimizing currency risks, were ready to "agree" to a lower level of profitability.

Nevertheless, at the end of 2013, at the market there was one issue of Moscow bonds (Moscow-08-2016-euro), denominated in euros, amounting to 407 million euros (or 18.3 billion rubles); and after its maturity (October 20, 2016), no issuer has placed sub-federal bonds denominated in foreign currency at the market. Moreover, judging by the rhetoric of regional officials, they do not plan to issue such bonds in the foreseeable future, that is, the national sub-federal bonds market began to focus exclusively on bond financing in the national currency.

Secondly, during the period under review, a depreciation depth of the national sub-federal bonds market has increased significantly. In the Russian practice, the overwhelming majority of issuers of sub-federal bonds prefer to issue depreciable bonds, i.e. bonds, the nominal value of which is paid to bondholders in accordance with a pre-established schedule. In the sub-federal bond market, depreciation bonds are definitely dominant: at the end of 2013, 6 out of 36 issuers of sub-federal bonds issued bonds redeemable at the same time (on the last coupon payment date), while by the end of 2017, only 3 out of 45 issuers placed such bonds at the market. At the same time, there was a sharp decrease in the nominal value of bond issues redeemable at the same time: from 531.20 billion rubles at the beginning of the analyzed period to only 214.45 billion rubles at the end of the period (by 316.75 billion rubles or 59,6% less).

We came up to a similar conclusion by calculating the depth depreciation indicator of the sub-federal bonds market described above ($D_{D_{SB}}$). The depreciation depth of the domestic market of sub-federal bonds was 95.6% at the end of 2013 and 84.1% at the end of 2017; that is, the current nominal value of sub-federal bonds issues compared to their original nominal value decreased by 11.5% during the four years under consideration.

Thirdly, in the presence of a decline in the total current nominal value of sub-federal bond issues (from 813.7 billion rubles to 790.1 billion rubles, or by 2.9%), an increase in the number of bond issues (from 100 to 123 issues or by 23%) resulted to a significant decrease of the national market

concentration level. Historically, the largest issuer in the sub-federal bond market was Moscow. This issuer accounted for 60.8% of the current nominal value of all sub-federal bonds issues in the market at the end of 2013. At the end of 2017, Moscow's sub-federal bonds market share, still the largest, was significantly smaller - 26.6% (or 2.3 times lower compared to the beginning of the analyzed period).

IV. CONCLUSION

Thus, we can state that, on the whole, global challenges have led to qualitative changes in the development of the Russian sub-federal bonds market, i.e., in the presence of a slight decrease (by 2.9%) in the aggregate current value of sub-federal bonds, we observe the market's total reorientation to bond financing in the national currency, an increase of the market's depreciation depth, and a reduction of the market concentration level.

Over the next few years, it is reasonable to expect further involvement of the identified trends (unconditional dominance of sub-federal bonds nominated in Russian rubles; a further increase in the depth of depreciation of the national market; a reduction in the market concentration due to decreasing share of Moscow bonds). The forecast through a linear extrapolation of these trends suggests a further reduction in the volume of the Russian sub-federal bonds market by the end of 2020 up to 772.4 billion rubles (a decrease by 2.2% compared to the end of 2017) with simultaneous increase in the number of circulating bond issues up to 140 (an increase of 13.8% compared with the end of 2017). We should note that, from the standpoint of the region sustainable development concept, we should assess positively the gradual increase in the number of constituent entities of the Russian Federation which use bond financing in the national market as it clearly indicates diversification of the sources of their financing.

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