

Public Bonds of the Regional Level in the Russian Federation

¹A.A. Ajupov, ¹A.N. Kiryushkina, ²M.O. Iskoskov, ³R.S. Ozernov and ⁴M.V. Selyukov

¹Kazan Federal University, 420008 Kazan, Russia

²Institute of Finance, Economics and Management, Togliatti State University
445667 Togliatti, Russia

³Institute of Economics and Management, Samara National Research University,
443086 Samara, Russia

⁴Surgut State University, 628400 Surgut, Russia

Abstract: Currently, many regions of the Russian Federation have big volumes of budget deficit. Also, regions receiving less funding from the federal budget. Their own income is limited. Subjects of the Russian Federation will use more often market mechanisms of financing budget deficit. That will lead to growth of the central regional government debt. The study examines practice of using the government bonds on regional level including the advantages and disadvantages instrument of debt financing before others. The researchers generalized and systematized the factors which determine the choice of regional bonds as tool to finance regional public debt and budget deficit.

Key words: The public debt of the RF subjects, state securities of subjects of the RF, the budget deficit of the RF subjects, budget deficit, government bond, emission activity

INTRODUCTION

The problem of stable economic development is relevant to all countries of the world. Therefore, leveling or partial elimination “loose” of development should be a priority for the development of both Russia and any other state. One of these “loose” Russian development are large size of the public debt of the regional budgets as well as a huge amount of deficit budgets. This situation may be due to the conducted fiscal and debt policy of the Russian Federation.

Even in the May’s the decrees of the Russian President set a number of tasks which require substantial funding from regional budgets. So, the biggest problem was the financial support measures. This problem saves now. Funding for a number of state programs also involves the use money from regional budgets. It is obvious that the implementation of these and other priority tasks threatens very heavy deficit to regional budgets.

The situation is aggravated by the fact that in a slowing economy which began with the mid-2012 and continues today, it increases the risk that the subjects of the RF budget revenues will be lower and below the planned level.

Financing regional budget deficits due to transfers from the federal budget is not possible. The federal

budget is also going through hard times (Sabitova *et al.*, 2015). This is related including a glowing geopolitical situation, the extension territory of the country and with the current economic sanctions against Russia.

Now, subjects of the Russian Federation use tools from the range of ways of a covering of deficiency of their budgets. However, some regions are not used and do not use some of the ways of the existing complex. For example, as of 01.01.2015, only 39 subjects of the Russian Federation carried out the registration of the securities issue.

It is expedient to note, that large-scale building of loans in any form increases a debt load of territorial subjects of the Russian Federation. In the long term, it can lead some regions to a “pre-bankruptcy” state (Arcalean *et al.*, 2010). The concern of the Russian Federation’s Financial Ministry is already caused by the regions having a central government debt of more than 50% of the tax and non-tax income.

Thus, relevance of a research is confirmed by the fact that use of any instrument of financing of budgetary deficiency will entail growth of government debt. One of such tools are public bonds. The research of assessment of efficiency of this mechanism in present economic realities is necessary.

In economic literature of Russia and other countries there are plenty of studies related to the problems of

public debt (Aguiar and Amador, 2014), public bonds (Joffe, 2012), centralization and decentralization (Arcalean *et al.*, 2010), imbalances of the budget systems (Sabitova *et al.*, 2015) inter-budget relations and alignment of the regions fiscal capacity level (Velenteichyk, 2013), etc.

So, for a full assessment of the need for bonds regional budgets is necessary to follow the dynamics of using this tool in various regions of Russia over the years and to identify the advantages over other instruments. Also necessary investigate factors which determine the choice of regional bonds as a tool to finance regional budget deficit.

MATERIALS AND METHODS

The theoretical basis of the study were the researches of Russian and Foreign scientists and experts, the theological concept of the different historical periods in the field of finance including debt in the field of economic theory, regional economy, state regulation of economy, formation and improvement of institutional forms, tools and technologies in the field of debt relationship.

The methodological basis of the research were the dialectical method of knowledge, system and process approaches, analysis and synthesis techniques, generalization, logical and statistical evaluation methods. Also methods of economic-mathematical modeling were applied. For Economic-Mathematical Modeling the Gretl 1.9.11 Software product was used. Application of the specified methods allowed to provide validity of the carried-out analysis, theoretical conclusions and the developed offers.

RESULTS AND DISCUSSION

For understanding of the current situation of volumes of regional government debt we will present it in dynamics from 2010-2015 in Fig. 1. The tendency of annual increase in total amount of a central government debt of regional is observed. If in 2011 in comparison with 2010 it growth rate made 6.95% then in 2014 in comparison with 2013 already 20.26%. Let’s note that similar dynamics can be connected with increase in account obligations of regional budgets in the last years (need of implementation of “May” presidential decrees, executions of state programs, etc.) and reduction share of transfers from the federal budget to regional budgets.

Deficit of regional budgets grows and for financing subjects of the Russian Federation even more often resort to loans including bonded that increases a debt load of regions (Marx and Rauh, 2012). Sees expedient to note, that many subjects of the Russian Federation in practice, adopt “scarce budgets” without indication of financing sources.

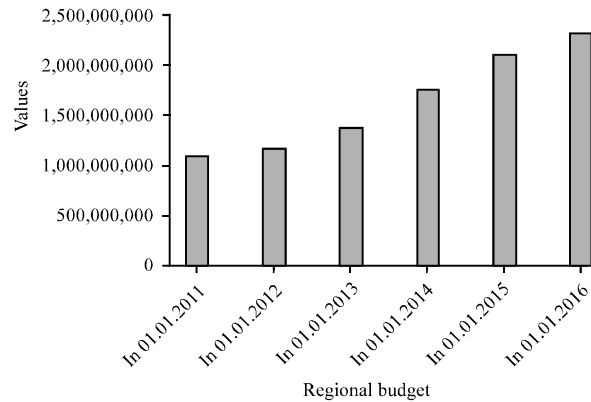


Fig. 1: Dynamics of total public debt of the Russian Federation subjects (thousand rubles)

It is also necessary to remember that the considerable regional public debt does not speak about the low economic potential of the subject (Rutkauskas *et al.*, 2014). For example, the government debt of the Tatarstan Republic is very big, however it involve big part of budget credit from the federal budget. This budget credit was given under only 0.5% for development of infrastructure and creation of objects of a universiade (according to the latest data in 2015 the percent on the budgetary credit was lowered to 0.1%).

At the same time with a double growth of a central government debt of territorial subjects of the Russian Federation in the studied period the nominal volume of the state securities in its structure remained at the previous level. Bond loans in structure of regional government debt in 2010-2015% in Table 1.

In contrast to the regional public debt, public debt denominated government securities RF subjects has not clear trend. Observed dynamics can be connected with small increase in number of the regions which are carrying out bond loans and unpopularity of use this tool in the majority regions in recent years.

Sees interesting to consider change’s dynamics of number subjects which are carrying out registration of issue securities and the number of these issues which are presented in Fig. 2.

On the basis of the submitted data, it is possible to draw a conclusion on a tendency of increase in emission active regions of the Russian Federation. If in their 2010 was only 18 then in 2014 their quantity made already 32.

Let’s note that for the entire period from 2010-2015 Russian Federation’s subjects having a bond debt are more than the regions which carried out registration of issue securities. It can be connected with existence of “a bonded debt” for the previous periods. Sees interesting

Table 1: Bond loans in structure of regional government debt in 2011-2015 (million rubles)

Indicators	01.01.2012	01.01.2013	01.01.2014	01.01.2015	01.01.2016
Debt denominated government securities RF subjects	343 878	373 151	450 654	442 143	432762

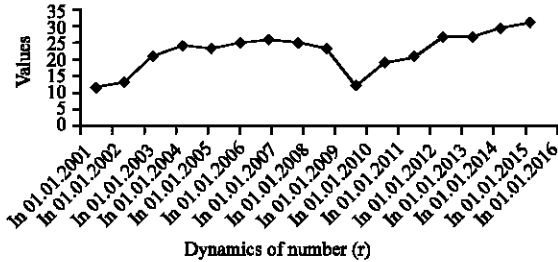


Fig. 2: Dynamics of Russian Federation’s subjects which are carrying out registration of issue state securities in 2010-2015

to note that from 2010 for 2015 almost all subjects of the Russian Federation carried out as a rule, one registration of issue securities.

It should be noted that as well as other bonds, securities of Russian regions can be nominal and to bearer, coupon and non-coupon to provide various forms of repayment including full repayment to a certain term, repayment with series (payment of all sum of a principal debt parts according to the schedule during circulation period of bonds-depreciation is long). At the same time, the Budget code of the Russian Federation establishes that from the point of view of urgency of the bond of territorial subjects of the Russian Federation are capable to be short-term (<1 year), medium-term (from 1-5 years), long-term (from 5-30 years inclusive) (Pinna, 2015). Issue documents can provide the obligatory centralized storage of documentary securities of territorial subjects of the Russian Federation and restrictions for owners.

Necessary to consider, the main advantages and shortcomings of implementation of issue of the state securities by the subject of the Russian Federation along with other instruments of financing of budgetary deficiency of regional budgets.

Bond loan traditionally is considered as an alternative to the bank credit (Peng *et al.*, 2014). At these loan’s forms of the capital in the market identical appointment-to attract the loan capital (Sidelnikova, 2011). However, unlike a bank loan issuance of securities is a direct appeal to a wide range of investors (Sharafutdinova *et al.*, 2014). Absence of the financial intermediary in the form of bank allows subjects of the Russian Federation to receive financial resources on more favorable conditions from the point of view of “cost” and “length” of money (Velenteichyk, 2013).

However, registration of the bank credit does not involve additional expenses (Schultz, 2012). In case of bonds, subjects of the Russian Federation have additional expenses which connected with the organization and carrying out placement of securities. It can be unprofitable for the “small” issuer.

One more complexity: for implementation of placement of bonded loans abroad subject of the Russian Federation needs to have “decent” ratings from the international rating agencies. Award of rating is carried out on the basis of the contract between rating agency and subject of the Russian Federation which conclusion demands considerable funds (Joffe, 2012). Recently in connection with an external geopolitical situation and economic sanctions the international agencies down grade the awarded ratings of Russian Federation’s regions to the level of “garbage”.

The following tool is budgets credits. It is provided on definite purposes as a rule, most often on repayment of obligations of the subject and for financing of significant projects (Rosa, 2014) (for example, the credit to the Republic of Tatarstan for creation and improvement of infrastructure for holding the universiade).

Let’s note that process of issue of subnational securities is long and legislatively difficult. Lack of the soil for successful entry into the market (low level of investment appeal of Russian regions) including the low level of social and economic development of the region, absence or “garbage” ratings from the rating Russian and foreign agencies can affect desire of the territorial subject of the Russian Federation to use this tool.

It is represented interesting to reveal the factors which causing possibilities of use by regions bonds for financing of deficiency of the budget. Most often in various researches such as factors are used: the Gross Regional Product (GRP) on one inhabitant of the region, VPR in basis prices inflation the size of means from placement of bonds the budget deficit of the region an indicator of the saved-up region debt (Feng, 2014).

Researchers, suggest to include social and economic aspect in the list of such factors. Level of the social and economic region’s development can be “measured” in the different ways. It is possible to carry levels of the tax potential and fiscal capacity to such ways. Level of the tax potential reflects an indicator an index of the tax potential (further INP) and level budgetary security-an Index of Fiscal Capacity (further IFC). INP and IFC are indicators

for analysis of possible size income in regional budget and therefore to ability of regional authorities to implementation of the functions.

Let's consider regions with bonded a debt in INP coal mine: $INP \geq 1$ at 10 subjects of the Russian Federation, $1 > INP > 0.7$ at 20 subjects of the Russian Federation, $0.7 > INP > 0.5$ at 7 subjects of the Russian Federation and $INP < 0.5$ at 2 subjects of the Russian Federation. Let's distribute by the similar principle such regions in IFC: $IFC \geq 1$ at 10 subjects of the Russian Federation, $1 > IFC > 0.7$ at 23 subjects of the Russian Federation, $0.7 > IFC > 0.5$ at 5 subjects of the Russian Federation. As INP and IFC are in close correlation with each other (IFC is calculated on the basis of INP) further will be considered only IFC. Thus, the majority of the regions having a bonded debt have high, average economic potential that allows to draw a conclusion that regions with high and average social and economic are inclined to use of bonded loans.

The question of influence of "economic specialization" the region on a possibility of use bonds by subjects of the Russian Federation is represented to us interesting. By research of the scientific publications devoted to features of "economic specialization" of various regions and also identification and check of influence of factors on volumes of regional government debt on issue activity of certain territories on budget deficit of various levels and statistical data it was revealed that regions with existence of chemical industry or in which mining is carried out are subjects of the Russian Federation in which registration of conditions of issue of bonds was carried out.

Therefore in the analysis of influence of factors on placement of bonds of subjects by creation of econometric model, we will include such explaining variables in its structure as IFC, development of chemical industry, existence of mining. As a productive indicator, we use the volume of a bond debt of the subject that will allow to explain extent of influence of dependent variables on the fact of placement by the subject of a bond loan. We will include in number of the explored regions that began to place the loans in the last 8 years.

For carrying out economic-mathematical modeling, subjects of the Russian Federation with the greatest central regional government debt in securities for the last years were chosen: city of Moscow, Moscow Region, Nizhny Novgorod Region, Republic of Sakha, Krasnoyarsk Krai, Samara Region and the most emission active regions: city of St. Petersburg and Tomsk region. Creation of model was carried out from 2011-2015 years.

Table 2: The matrix of correlation coefficients

Parameters	X1	X2	X3	X4	X5
X1	1.0	0.5	0.8	0.9	- 0.8
X2	0.5	1.0	0.4	0.4	- 0.2
X3	0.8	0.4	1.0	0.7	- 0.5
X4	0.9	0.4	0.7	1.0	- 0.8
X5	-0.8	- 0.2	- 0.5	- 0.8	1.0

As the explained variable Y was used the volume of a central government debt of i-number subject of the Russian Federation in n-number the period expressed in the state securities of regions as independent variables are used: X1: VRP in basis prices of i-number of the region in n-number the period; X2: the volume of budget deficit of I-number regional budget of n-number the period; X3: a central government debt of i-number subject of the Russian Federation in n-number the period; X4: an index of fiscal capacity i-number subject of the Russian Federation in n-number the period; X5: "the economic specification" region i-number in a section of the level of development of chemical industry and mining in the region. The appropriated value of the X5 variable consisted of ranging of the place of the specified "economic" specifications among all specifications of the region.

Before creation of model was made the matrix of correlation coefficients of dependent variables. It presents in Table 2. Correlation shows statistical interrelation (dependence) between two or more than sizes. The coefficient of correlation accepts value from -1 to 1. If on the module it accepts value < 0.7 then close correlation connection is observed. In this connection, it is necessary to exclude one of the correlating variables for improvement of quality of model.

Close correlation dependence between the X1 and X3 variables is observed; X1 and X4; X1 and X5; X5 and X4. Couple of factors of X4 and X3 are on the verge of the value defining narrowness of correlation communication. At creation of model for disposal of such variables use tests for excess variables. It is obvious that the X1 variable interdepending at once on three other variables will be excluded by carrying out one of such tests.

For creation of economic-mathematical model and assessment of influence factors on a productive indicator was used the Gretl 1.9.11 Software product. As a method was applied the method of the smallest squares (further MNK) with use of the test of excess variables by means of a consecutive exception variables with use of bilateral p-value. At application of MNK, we received the following model:

$$Y = -158836 - 0.00103924 \times X1 + 0.470750 \times X2 + 0.354601 \times X3 + 45904.6 \times X4 + 73527.2 \times X5 \quad (1)$$

Where:

- Y = Central government debt of i-number subject of the Russian Federation in n-number the period expressed in the state securities of region
- X1 = VRP in basis prices of i-number of the region in n-number the period
- X2 = The volume of budget deficit of i-number regional budget of n-number the period
- X3 = Central government debt of i-number subject of the Russian Federation in n-number the period
- X4 = An index of fiscal capacity i-number subject of the Russian Federation in n-number the period
- X5 = "The economic specification" region i-number in a section of the level of development of chemical industry and mining in the region

This model is characterized by the high value of determination coefficient (R^2) which shows that the model constructed by us, for 93.2% explains change of a dependent variable Y the standard error of the model $Se = 11018.53$ is insignificant.

Before the further analysis of model, it is necessary to pay attention to significance value of variables as the insignificant variable can entail an error of the specification of all model. About p-value at the X2-X5 variables shows their high importance and at X1: insignificance of a factor in model. Therefore, it is expedient to use one of tests for excess variables in particular the test of excess variables by means of a consecutive exception of variables with use of bilateral p-value. We receive model:

$$Y = -155452 + 0.445952 \times X2 + 0.332791 \times X3 + 42929.5 \times X4 + 73080.9 \times X5 \quad (2)$$

Where:

- Y = Central government debt of i-number subject of the Russian Federation in n-number the period expressed in the state securities of region
- X2 = The volume of budget deficit of i-number regional budget of n-number the period
- X3 = Central government debt of i-number subject of the Russian Federation in n-number the period
- X4 = An index of fiscal capacity i-number subject of the Russian Federation in n-number the period
- X5 = "The economic specification" region i-number in a section of the level of development of chemical industry and mining in the region

That is when using this test the X1 variable was excluded. The determination coefficient increased to 93.3% which shows that the model constructed by us for 93.3% explains change of a dependent variable Y the

standard error of model decreased to 10943.90 (is insignificant). All variable models have the high importance.

For testing of model sees necessary to carry out tests for a heteroscedasticity as its existence leads to obtaining inefficiency of the estimates received by means of MNK. In other words, the heteroscedasticity shows existence of communication in the casual remains that defines the admission of a significant variable at creation of model. The test of Vayt, the test of Breusha-Pagan and the test Koyenker showed lack of a heteroscedasticity of the casual remains of model. Also used Darbin-Watson's test which showed lack of autocorrelation in the model remains was carried out.

According to the carried-out analysis and modeling treat number of the factors defining the choice by subjects of the Russian Federation bonds as the instrument of financing budget deficit with high significance value the volume of deficiency of the regional budget; central government debt index of fiscal capacity; "the economic specification" of the region in a section of the level of development of chemical industry and mining in the region.

CONCLUSION

The serious imbalance of participants of the market is observed. Currently, from 85 subjects of the Russian Federation-potential issuers of bonds were placed by the bonds only 39 and their distribution on federal districts testifies to unevenness of development of this market (in particular, 77.71% of all market at the par value of the bonds which are in circulation and at the same time total share of 4 federal districts-far East, North Caucasian in total are the share of the Central and Volga federal districts, Ural and Crimean-on this indicator makes only 2.82%).

In our opinion, the market of subfederal bonds is characterized by very high level of concentration in particular, >50% of par value of all regional bonds which are in circulation fall to the share of one issuer (Moscow).

It is necessary to pay attention that the majority of regions with the high level of indicators of an index of the tax potential (as of 2015-0 subjects of the Russian Federation) and an index of fiscal capacity (as of 2015-5 subjects of the Russian Federation) use bond loans.

Bond loans along with the budget credits are less risky in comparison with other tools in structure of the central regional government debt. And unlike the last are more available.

In the study some advantages and shortcomings of use of subnational securities along with other debt instruments of financing regional budget deficits marked out.

The researchers generalized and systematized the factors which determine the choice of regional bonds as a tool to finance regional public debt and budget deficit. The list of factors is added with two factors: level of fiscal capacity of the region, “economic specialization” of the region.

Thus, use of subnational securities is the perspective direction of attraction of financial resources by the authorities of regions. Especially for economically “successful” regions which transition to bonded financing will be useful and economically effective.

REFERENCES

- Aguiar, M. and M. Amador, 2014. Sovereign debt. *Handbook Intl. Econ.*, 4: 647-687.
- Arcalean, C., G. Glomm, I. Schiopu and J. Suedekum, 2010. Public budget composition, fiscal (de) centralization and welfare. *Can. J. Econ. Rev. Can. Deconomique*, 43: 832-859.
- Feng, X., 2014. Local government debt and municipal bonds in China: Problems and a framework of rules. *Copenhagen J. Asian Stud.*, 31: 23-53.
- Joffe, M.D., 2012. Rating government bonds: Can we raise our grade?. *Econ. J. Watch*, 9: 350-365.
- Marx, N.R. and J.D. Rauh, 2012. Fiscal imbalances and borrowing costs: Evidence from state investment losses. *Am. Econ. J. Econ. Policy*, 4: 182-213.
- Peng, J., K. Kriz and Q. Wang, 2014. The two worlds of municipal bonds: Are lower-rated bonds punished more by financial crisis?. *Public Budgeting Finance*, 34: 18-38.
- Pinna, M., 2015. An empirical analysis of the municipal bond market in Italy: Sovereign risk and sub-sovereign levels of government. *Public Finance*, 35: 68-94.
- Rosa, C., 2014. Municipal bonds and monetary policy: Evidence from the fed funds futures market. *J. Futures Markets*, 34: 434-450.
- Rutkauskas, A.V., V. Stasytyte and N. Maknickiene, 2014. Government debt as the integral portfolio of assets and liabilities generated by debt. *J. Bus. Econ. Manage.*, 15: 22-40.
- Sabitova, N.M., C.M. Shavaleyeva and E.N. Nikonova, 2015. Horizontal imbalances of Russian federation budget system. *Asian Soc. Sci.*, 11: 248-252.
- Schultz, P., 2012. The market for new issues of municipal bonds: The roles of transparency and limited access to retail investors. *J. Financial Econ.*, 106: 492-512.
- Sharafutdinova, I.R., S.A. Kulakova and E.N. Nikonova, 2014. Issue activity of subjects of the Russian federation and municipalities: Tendencies of the beginning of the XXI century. *Mediterr. J. Soc. Sci.*, 5: 204-208.
- Sidelnykova, L.P., 2011. Variants while searching for alternatives in budget resources. *Actual Prob. Econ.*, 126: 238-248.
- Velenteichyk, N., 2013. Congruence of interests of the center and regions in the course of intergovernmental relations regulation. *Econ. 183 Anal.*, 6: 37-40.