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Diagnostics of Quality Characteristics of Long-Term Market for Realization of Infrastructure Projects: Condensation, Depth, Relaxation

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Abstract: In this study, we have considered the algorithm of financial planning of long-term sectoral cooperation during various periods of economic development of the Russian Federation for investigation of possible integration of financial and real sectors of economy in conditions of re-industrialization which was developed by the researchers of the study. For this purpose, we have studied three properties of long-term resource market, namely: "condensation" of the market is a range of indices of long-term financing of economy's real sector for each business model which is adhered to by the majority of country's credit organizations; market's "depth" is upper and lower level of long-term financing of economy's real sector which is adhered to by the banks with sectoral cooperation business models; "relaxation" of market is speed, with which the level of long-term financing returns to its average index in business model of sectoral cooperation after crisis events in country's economy. Planning of the abovementioned characteristics of long-term resource market is performed on the base of earlier detected credit organizations' groups of the Russian Federation with various business models of sectoral cooperation and potential possibilities if long-term crediting of economy's real sector in conditions of re-industrialization. Business models of cooperation between bank and real economy's sectors are distinct from each other with their resource potential as well as the level of sectoral cooperation.

Key words: Market of long-term resources, condensation, depth, relaxation, re-industrialization, real sector of economy, financial sector of economy

INTRODUCTION

Traditional systems of interaction between real and financial sectors demonstrates ineffective results. This is proved by weak dynamics of gross domestic product's growth (<3%), misaligned tendencies in profitability of sectors in one and the same conditions of risks for business activity (up to 30% in financial sector and <5% in real sector of economy), weak tendencies of capital's renewal in the industries that are not connected with raw material branch of economy (Anonymous, 2015). Considering active dynamics of innovational processes that provide reindustrialization, there is an urgent need in systematic profound theoretical and tactical study of systems that relate to cooperation between real and financial sectors of economical systems. Besides, we should presume that in conditions of re-industrialization in Russia it is important not only to consider separated study of innovational and traditionaleconomic processes and mechanisms of their provision but also to balance such processes depending on peculiarities of correlation of financial and real sectors of economy and cycles of economic climate (Brealey, 1996).

MATERIALS AND METHODS

In many models of market's microstructure, Kyle (1985)'s approach is used which consists in investigation of separate, more detailed characteristics of market which describe liquidity from various viewpoints and when united, they give quite an aggregate picture (Naumenko, 2012). Within the scope of this approach, three properties are detached. "Condensation", "depth", "relaxation" which are applied mainly to market's resource potential, however, it is possible to adapt such indices directly to cooperation of bank and real sectors of economy.

Business models of sectoral cooperation, calculated with an application of Kohonen neural networks, are groups of banks, united according to cooperation model

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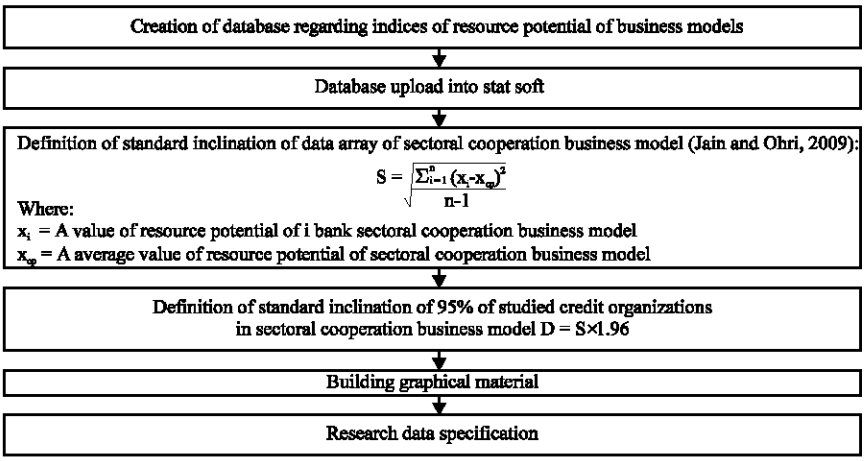

Fig. 1: Algorithm of planning of condensation of long-term resource market in the system of sectoral cooperation

with real sector of economy. The first and the second business models are the least effective and they are oriented at medium- and short-term sectoralcooperation; the third and the fourth models are based on long-term cooperation with real sector of economy.

"Condensation" of market shows how significant is inclination of long-term financing of real sector of economy from the medium one, approved in each business model, level depending on economic climate. The level of long-term financing in each business model in some moments of life cycle may be overstated or understated with regard to optimal level which was established during a long period of time (Mallett, 2012). Overstated level speaks of deceleration of cred lending and thus, development of real sector of economy as well as of absence if possibility to adopt new technologies and practices, decrease in branch's activity. Overstatement of the level mainly causes positive influence onto real sector of economy however, it increases the risks within the framework if the business model concerning its participants (Fig. 1).

Standard inclination of SD×1.96 aggregate covers only 95% of data which allows detecting the range of share of long-term crediting in balance currency of average representative of each business model with probability of 95% (Jain and Ohri, 2009).

In our opinion, market's depth is reflected by minimal and maximal level of long-term cooperation of bank and real sectors of economy. Market's depth describes the possibilities of widening of limits of long-term resource market in conditions of reindustrialization (Torsten, 2014). It is characterized by 5% of credit organizations which are included into business models but they are their extreme values (outlying cases) (Jain and Ohri, 2009).

For calculation of depth, we calculate maximum and minimum of each aggregate, let us denote median of

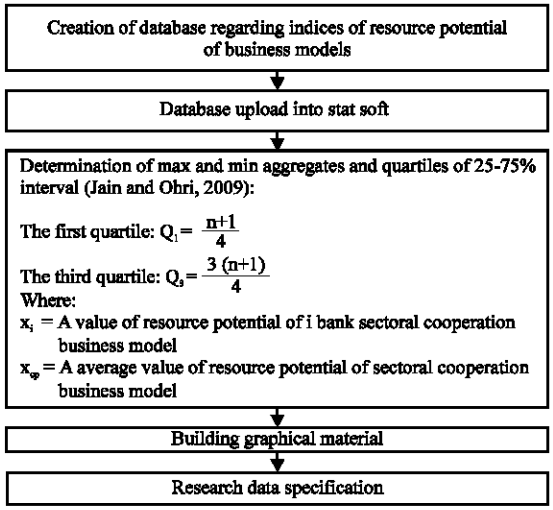

Fig. 2: Algorithm of planning of depth of long-term resource market in the system of sectoral cooperation

quartile and sample with interquartile distance of 25-75%. In this case, quartile will denote the position of 50% of banks that were included in sample information in each business model and show remoteness of part of market's condensation from maximal and minimal values. The first quartile divides data array into two parts: 25% of studied parameters that are less than the first quartile and 75% are more than the first quartile. The third quartile also divides the sample information into two parts: 25% of sample information is less than the third quartile and 25% is more than third quartile (Fig. 2) (Jain and Ohri, 2009).

Relaxation of market is an indicator of market's reaction on unexpected circumstances. After finding the speed of market's relaxation, one may define how effective

are actions of credit organizations and in some cases the actions of government and Central Bank of the state in non-standard conditions (Brealey, 1999). The more relaxation speed is the more efficient and effective is the policy of reaction of bank market and reaction of state in general onto non-standard functioning conditions (Wade, 2010). Speed of relaxation is defined as a time interval between the moment if inclination of long-term financing level from general tendency in business model and return to it.

RESULTS AND DISCUSSION

Average level of long-term interaction of the first business model varies at point 0.2 for credits from 1-3 years and in the range of 0.05-0.1 for the credits for >3 years.

Condensation of market for credits from 1-3 years is quite stable and changes from 0 to 0.4-0.5. Condensation for credits that with >3 years term during studied period is gradually increasing to 0.3. In general, for long-term crediting of banks from the first business model, we may observer widening of condensation borders during periods of economic growth and narrowing during crisis year (Fig. 3).

At calculation of market's depth, we have detected that the first business model has quite high maximum which equals about 0.8 however, quartile's focus is on the range of 0.1-0.3 for credits with a term of 1-3 years. Here, we observe coincidence of tendency of market's depth and its condensation.

With the reference of resources with a term of 3 and more years, we see an opposite situation: growth of maximal values during periods of instability at quartiles' range of 0.0-0.2, the highest 0.55 and the lowest maximal point of 0.3 (Fig. 4).

Similar situation speaks of quite high possibilities of the business model with reference of widening volumes of long-term financing within the limits of found boundaries, since 5% of credit organizations with the first business models widened borders of long-term financing in the process of their life cycle (Anonymous, 2009).

Second business model is characterized with violent fluctuation of medium value and condensation of market of long-term financing for the period of 2009-2010 (Fig. 5).

Average value varies from 0.1 (for credits with a term of 1-3 years) to 0.05 (for credits with a term of >3 years). Market's condensation in 2009 is subject to the highest volatility. For credits with a term of >3 years, there is a

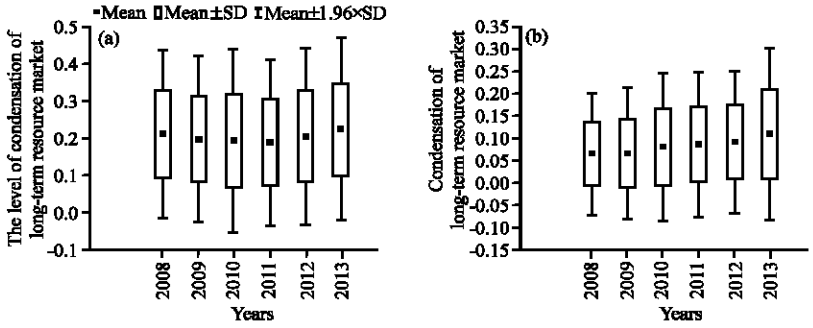

Fig. 3: Condensation of long-term resource market in the system of sectoral cooperation of the first business model: a) resources with a term of 1-3 years; b) resources with a term of 3 and more years

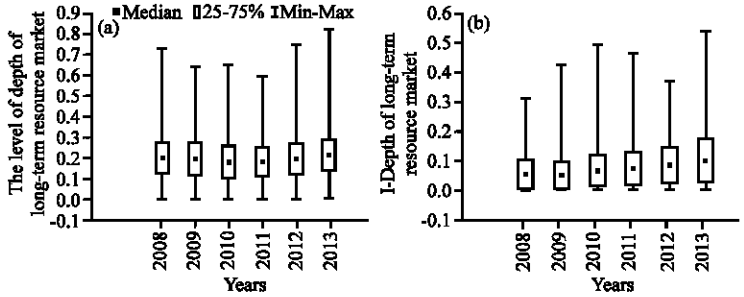

Fig. 4: Depth of long-term resource market in the system of sectoral cooperation of the first business model: a) resources with a term of 1-3 years; b) resources with a term of 3 and more years

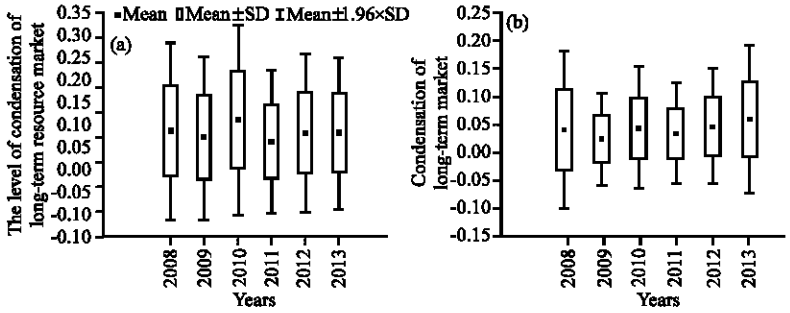

Fig. 5: Condensation of long-term resource market in the system of sectoral cooperation of the second business model: a) resources with a term of 1-3 years; b) resources with a term of 3 and more years

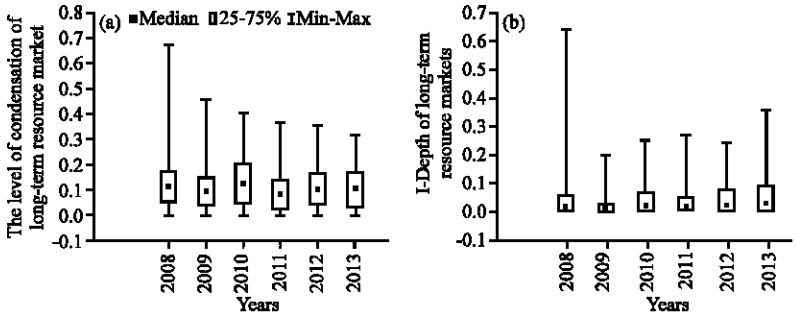

Fig. 6: Depth of long-term resource market in the system of sectoral cooperation of the second business model: a) resources with a term of 1-3 years; b) resources with a term of 3 and more years

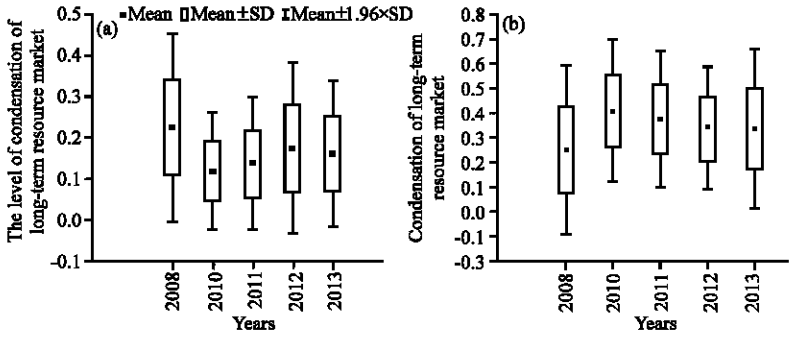

Fig. 7: Condensation of long-term resource market in the system of sectoral cooperation of the third business model: a) resources with a term of 1-3 years; b) resources with a term of 3 and more years

reduction of financing volumes while for credits with a term of 1-3 years in 2010 after crisis of 2009, we may observe increase of average value of the market. Condensation values varies from 0-0.3 for credits of up to 3 years and 0-0.2 for credits of >3 years.

The second business model has a high level of market's depth for the period of 2008 and later this value becomes lower. Credits' quartiles from 1-3 years change on 0-0.2 while the highest value of market's depth was 0.7 (2008) and the lowest one about 0.3. Quartiles per credits with >3 years reach 0.1. Maximal value of market's depth is also reached in 2008 and it equals 0.65; the lowest value of upper border equals 0.2 (Fig. 6).

The first and the second business models which are characterized by low level of long-term cooperation have a tendency to narrowing of small credit levels with >1 year period during economic instability periods and widening in relatively stable economic conditions.

Average value of long-term financing of the third business model has multidirectional tendencies with regard to credits with a period of 1-3 years, there is a sharp decrease in average value within crisis period of 2009 and 2013 while for credits with the period of 3 years, we may see increase of average value during the same periods (Fig. 7).

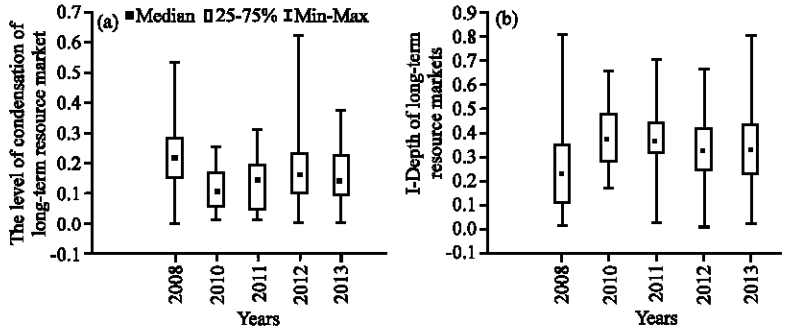

Fig. 8: Depth of long-term resource market in the system of sectoral cooperation of the third business model: a) resources with a term of 1-3 years; b) resources with a term of 3 and more years

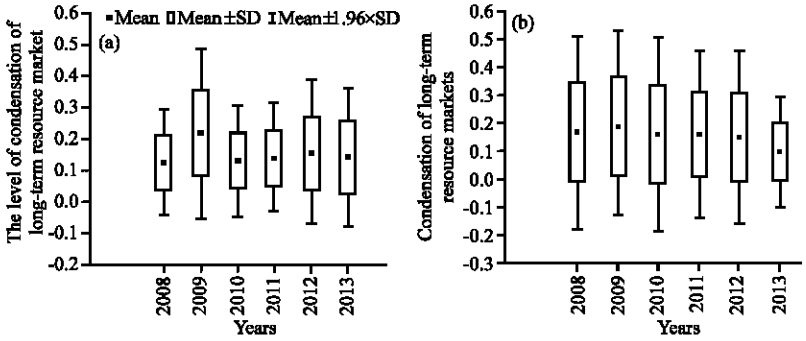

Fig. 9: Condensation of long-term resource market in the system of sectoral cooperation of the fourth business model: a) resources with a term of 1-3 years; b) resources with a term of 3 and more years

Range of average value without considering of outlying cases is 0.1-0.2 fir credits with period with up to 3 years and 0.3-0.4 for credits with periods that are >3 years.

Condensation of market repeats the dynamics of average value, while per credits with periods of 1-3 years, we may observe substantial narrowing of the range and the highest fluctuation point reaches 0.45, the lowest one reaches 0.25 and condensation values range from 0-0.45.

As for the credits with the time period of >3 years, the range is 0-0.7. The highest point was reached in 2010, after the crisis of 2009 when country's credit organizations are back into the business model.

The third business model has the least inclinations of market's depth from quartiles in post-crisis period. At the same time, the quartiles are in the center with regards to the depth (Fig. 8).

Thus, in the first two business models 5% of banks had the possibility of widening of long-term cooperation during all life cycle while in the third business model 5% of banks were either acting within the framework of gender financial model or were divided into two contralateral groups: the ones that widened financing or the ones that narrowed it.

The largest value of market's depth per credits with the time limit of up to 3 years is 0.65, the least is 0.25 at quartile in the range of 0.05-0.3. As for the credits with the time limit of >3 years, the depth reaches 0.85 while the least value of the depth corresponds to 0.7 at quartile of 0.1-0.5. It should be noted that in this business model, there is the largest value of upper border of market's depth per credits with the time limit of >3 years.

In the fourth business model, we may note significant increase of average value per credits with the time limit of up to 3 years during 2009 and its further stabilization within the range of 0.1-0.2. As for the credits with the time limit of more than 3 years, we may see a tendency of lowering average value as far as it approaches to 2013; in general, similar range of 0.1-0.2 is kept (Fig. 9).

Condensation of market of long-term financing is subject to widening in periods of economic instability with reference to credits with the time limit of 1-3 years and narrowing to beginning of crisis of 2014 per credits with the time limit of >3 years (Deng and Hou, 2014). Condensation is characterized with the following ranges: 0-0.5 per credits with the time limit of up to 3 years (the

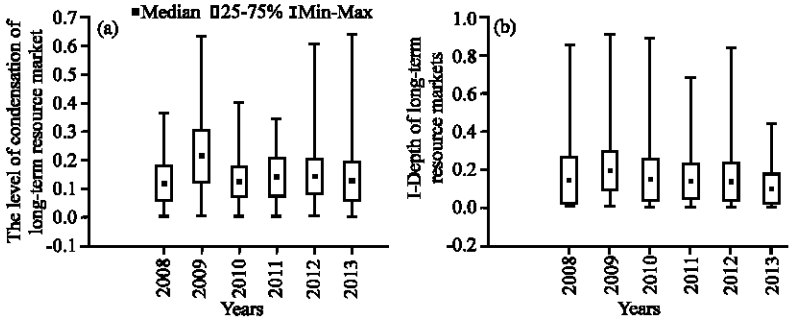

Fig. 10: Depth of long-term resource market in the system of sectoral cooperation of the fourth business model: a) resources with a term of 1-3 years; b) resources with a term of 3 and more years

highest point is 0.5 (2009), the lowest one is 0.3) and from 0-0.55 per credits with the time limit of >3 years (the highest point is 0.55, the lowest one is 0.3 (2013)).

The depth of the fourth business model is somehow similar to the first and second business models (Fig. 10). Quartiles are located closer to lower border of market's depth, at the same time the upper limit of depth significantly exceeds 75% of quartile's value.

Thus, with reference to credits with the time limit with up to 3 years, the highest point of the depth reaches 0.65, the lowest 0.35 at quartile in the range of 0.05-0.3. As for the credits with >3 years, like in the third business model, we observe the highest point of market's depth 0.9, the lowest value of depth is 0.45 at quartile from 0-0.3.

Summary: On the base of indicators of market's condensation, depth and relaxation, we have defined peculiarities of life cycles of long-term cooperation in various periods of economy's development (Barkham *et al*., 2015): during periods of instability in economic climate there is a narrowing of long-term resource market of >60% of country's banks; there are possibilities to widen limits of long-term financing of real sector at all stages of economy's development which speaks of presence of large amounts of underutilized resources of financial sector (additional sources of financing may become households' finances, foreign investments (Dubenetskii, 2014)); market's relaxation occurs during 2 years. These peculiarities allow comparing life cycles of banks' business models and branches of economic management for their more effective integration.

CONCLUSION

In business models of the first and second types, we observe narrowing of condensation range within the periods of economic instability. The third and fourth business models are characterized by widening of condensation range during economic crises.

Per results of studying of market's depth of ling-term financing, we note that with regard to the first, second and fourth business models 5% of credit organizations widened the level of long-term credits up to quite high values. In the third business model, all credit organizations either adhered to general value of market's depth or 5% of credit organizations were divided contrarily: they widened or narrowed limits of volumes of long-term cooperation.

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REFERENCES

Anonymous, 2009. Resource constraints for infrastructure investment. Eco. Political Weekly, 44 (12, 21): 25-31.

Anonymous, 2015. Federal State Statistics Service: Main statistical indices. Official website of Federal State Statistics Service. http://www.gks.ru.

Brealey, R., 1999. The Asian crisis: Lessons for crisis management and prevention. International Finance, 2 (2): 249-272.

Barkham, R. Frodsham and M. Simulating, 2015. the cyclically adjusted returns to UK property lending. J. Property Investment and Finance, 33 (1): 66-80.

Brealey, R.I., 1996. Cooper and M. Habib,"Using project finance to fund infrastructure investments". J. Applied Corporate Finance, 9: 3.

Dubenetskii, Y.N., 2014. Reindustrialization: Conditions, goals and stages. Studies on Russian Economic Development, 25 (4): 329-334.

Deng, Z. and L. Hou, 2014. Financial, under development, distorted lending and export market survival. J. Intl. Trade Eco. Dev., 23 (5): 600-620.

Jain, T.R. and V.K. Ohri, 2009. Statistics for Eco., 8th Edn: 10: 355.

Kyle, A.S., 1985. Continuous auctions and insider trading. Econometrica, 53 (6): 1315-1336.

Mallett, J., 2012. What are the limits on commercial bank lending?. Advances in Complex Systems, 15: Suppl. 2.

Naumenko, V.V., 2012. Restructuration of large investment portfolio in conditions of low liquidity of the market: thesis of Ph.D in Eco.: 08.00.10/Moscow, pp: 191.

Torsten E., 2014. Understanding the challenges for infrastructure finance. BIS Working papers no. 454, pp: 23.

Wade, R., 2010. After the crisis: industrial policy and the developmental state in low-income countries. Global Policy, 1 (2): 150-161.