# Financial Engineering in a Mechanism of Public-Private Partnership in Realization of the Regional Investment Projects

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### Abstract:

Under the conditions of limited economic growth and risk of budget deficit the concept of financial engineering allows corporate structures with state participation optimizing financial resources movement, attracting additional sources of financing and minimizing cost of their usage.

On the basis of financial engineering instruments the corporations solve the tasks of diverse complexity in the field of financial transactions, in particular with securities, make a balanced decision when developing financial and investment projects.

Keywords: Public and public partnership (PPP), financial diagnostics, investment, risk, strategy, financial engineering, regional investment projects.

**JEL Classification Codes:** G 28, G32, G31, G38, H70.

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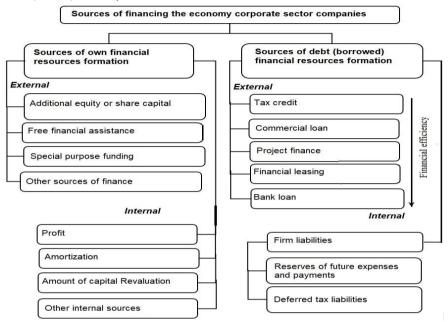
### 1. Introduction

Relevance of the subject of this research is defined by the need of search of the new tools and technologies providing financial stability of the Russian companies. Financial engineering regarding the modeling of the strategy of corporate structures financial resources management is a combination of financial tools that differ in risk and profitability parameters, in order to achieve a balance of these parameters all over the complex of financial resources. In present-day conditions, the ratio of risk and profitability for all sources and tools of attracting financial resources should be the main principle of modeling the pool of attracted resources, according to the researchers (Babenko, 2017; Japparova and Rupeika-Apoga, 2017; Shekhovtsov *et al.*, 2017; Denisova *et al.*, 2017).

Financial resources of the corporation include own, borrowed or attracted funds, used by the corporation with the purpose to fulfill current financial obligations (financing of expenses, covering losses, payments on credit indebtedness or performing other duties). These funds can serve as an investment component reinvestment or venture investment or take the form of a deposit to be used for another need. Specificity of finance, not only of corporate structures, appears in their virtualization, that is, unlike money having a commodity form, they have taken the form of more economic relations arising between subjects of the market economy depending on the goal orientation. The peculiarity of financial resources management lies in the fact that the corporation forms a strategy optimal (regarding the sources of financing) for it in order to obtain funds for business financing (Figure 1). It is possible to determine efficiency of the financial strategy in all business processes of corporate management by means of diagnostics. When the selected strategy justifies the expected result and corresponds to the corporation's targeted business models, it is reasonable to conduct financial and economic activities in accordance with this policy principle (Sibiryatkina, 2016).

Financing of corporations using own funds can be described as self-financing, which involves extracting funds from the corporation by means of the profit generated by it. However, in addition to profit, there are other options for generating revenues, for example, additional contributions to the authorized capital. Background for the capital growth may be individual, but such contributions (money or property) allow increasing both capitalization of the corporation, and its attractiveness for external investors, and sometimes normalizing the distorted financial situation of the corporation. Subsidies, grants and funds of development can be selected as tools for financing corporations. Subsidies, as a tool for the implementation of the special-purpose financing, means receiving additional funds to finance current operations in exchange for fulfilling a number of conditions. Essentially, similar to subsidies the grants are provided free of charge, but with a subsequent report on the targeted use of funds, for the purpose of business development, financial recovery of the corporation, scientific research and R&D work, etc., (Kulibanova, 2015).

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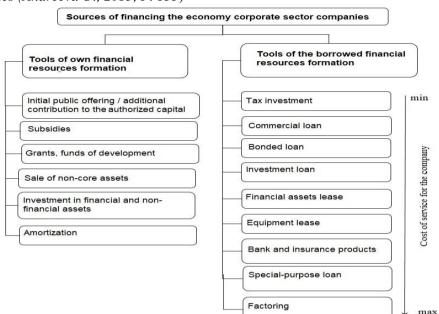


*Figure 1.* Sources of Financing the Economy Corporate Sector Companies (Andreeva O., 2015, P. 134)<sup>5</sup>

Funds of development can be considered as one of the sources of gratuitous loans program implementation. These loans are lent for the projects related to the introduction of technology, development of not only innovative products, but also import substituting. In the context of economic uncertainty, sale of non-core assets is considered as common practice. Sale of such assets (apartments, dormitories, kindergartens, entertainment centers) in terms of crisis is difficult, but allows large corporations releasing money and using them more efficiently in the structure of core assets (Chernyatin, 2015).

So far the Ministry of Economic Development of the Russian Federation has prepared a project of core and non-core assets optimization for large state corporations. It is assumed that the selected methodology will be profitable both for the budget (dividends can grow), and for the corporation itself due to reducing costs. Such corporations as Russian Railways, Rosseti, Rosneft are introducing this methodology, and according to the results of the first experience, the revenues from cost optimization amounted to 19.3 billion rubles and 534 million rubles respectively by 2016, and the Rosneft Corporation plans to sell non-core assets only in 2017 (Bazanova, 2017).

<sup>&</sup>lt;sup>5</sup>Compiled by the authors on the basis of: Andreeva O.V. (2015). Financial Instruments and Technologies for the Russian Economy Recovery Growth / O.V. Andreeva, V.G. Shelepov. Rostov-on-Don: Federal State Budgetary Educational Institution of Higher Education "Rostov State Transport University", 2015. P. 134.



*Figure 2.* System of the Tools of Financing the Economy Corporate Sector Companies (Andreeva O., 2015, P. 135)<sup>6</sup>

Further, the tools for the borrowed financial resources formation will be outlined. First, this is tax financing (tax deferral in the form of tax holiday, an investment tax credit, regulation of rates) that can form temporary firm liabilities. The corporation has the right to dispose them until the moment of deferred liabilities repayment. In terms of financial efficiency, this form of lending is more preferable for the corporate sector than other sources of financing since it is tax financing that does not require additional fees for use (Sergeeva, 2012).

Attractiveness of a commercial loan or a commodity loan as it is called sometimes, for the corporate sector is that there is no need to pay for the product immediately after it is shipped, i.e., the corporation has the right to use installments and pay after some time. The idea of a bonded loan and an investment loan is that the first option involves multiple issuance of bonds and their placement among a multitude of bondholders, without requiring collateral security. This is beneficial both for the issuing corporation, as it will be able to accumulate funds of private investors and other individuals for a rather long period, and for the investor receiving a fee in the form of dividends (Semernina, 2013). Investment loan gives the borrower the right to dispose funds in the long run in order to implement long-term projects for a certain fee and based on a targeted nature. In some situations, it is possible to agree that the

<sup>&</sup>lt;sup>6</sup>Compiled by the authors on the basis of: Andreeva O.V. (2015). Financial Instruments and Technologies for the Russian Economy Recovery Growth / O.V. Andreeva, V.G. Shelepov. Rostov-on-Don: Federal State Budgetary Educational Institution of Higher Education "Rostov State Transport University", 2015. P. 135.

use of a bond loan will be more preferable for a corporation than an investment loan. Development of long-term financial policy in the corporation assumes the availability of long-term financial tools, in present-day conditions it can be financial leasing. The leasing scheme assumes that the lessee uses the equipment of the leasing corporation, transferring interest for the exploitation to its account. The borrower of the equipment has the right to buy it at a residual value at the end of the term. At the same time, leasing transactions can be concluded with regard to financial assets or with respect to the use of equipment.

# 2. The role of Public and Private Partnership (PPP) institution in attraction of financing

Let us consider the role of public and private partnership institution in attracting funds for major infrastructure projects. Public and private partnership has gained its widespread recently. For the first time it was applied practically in England in the 1980s. As it turned out, this mechanism of interaction is considered as an effective tool for solving infrastructure problems, and certainly has a beneficial effect on state social and economic indicators.

Construction of modern transport and engineering infrastructure in developed and emerging countries determines strategic necessity to find new tools for funding infrastructure facilities, which seems to be extremely important for specialists in this field. For example, according to the estimations of the International Economic Forum (IEF) specialists, the global infrastructure deficit is about 1 trillion US dollars a year (Oliver Wyman Infrastructure Investment Policy Blueprint, 2017).

Formation, improvement, and exploitation of transport infrastructure facilities have been considered as state privilege for many years. However, the infrastructure of the national economy sectors of the developing countries, including Russia, requires an early "recovery". The extent of our country enhances the need of the economy in established sustainable infrastructure, having sufficient level of development and optimal quality of the services provided, since the reverse process determines the economic growth rate.

According to the rating, in the context of the World Economic Forum, Russia occupies the 123rd line in the world rating on the quality of highways. In the same list, Gabon is 121st, Sierra Leone is 122nd, Lebanon is 124th and Costa Rica is 125th. In addition, there is an assessment on the quality of railway (25th), port (72nd), aviation (65th) and infrastructure (Schwab, 2017). Therefore, today the list of priority tasks of the state, which is not ready to finance fully implementation and modernization of infrastructural areas, is headed by the search of new sources of funding. Private investment based on the implementation of public and private partnership (PPP) can be used as such sources. Further, many other countries of the global world started adopting such experience, in particular Russia, where the definition of public and private partnership was mentioned for the first time in

Federal Law No. 627-100 of December 25, 2006 "On St. Petersburg's Participation in Public and Private Partnership" (Gagarin, 2013). Definition of public and private partnership (PPP) is limited by a number of key characteristics, it also involves transport infrastructure:

- joint operation, pursuing mutually beneficial cooperation on a contractual basis;
- long terms of cooperation (from 15 to 20 years and more);
- public and private partnership unites resources of the parties, co-financing involves implementation of expensive projects with maximum efficiency and minimum expenses for each party;
- share subsidies for reconstruction and construction of railway infrastructure;
- public and private partnership implies a parity distribution of risks (financial, market, macroeconomic), revenues and expenses;
- combination of public and private capacities determines high potential of innovative approaches to infrastructure management as a part of PPP;
- participation in reconstruction and construction of railway facilities for users of railway transport services;
- stimulation by the state of transport corporations to increase investment activity (Arzhanik, 2014).

Undoubtedly, creation of so-called alliance between state and private business should be the starting point for the Russian economy growth, since the practice of participation in PPP serves as the most powerful factor of investment attractiveness for both state being in search of new financing tools and private capital seeking to increase its capitalization. In general, it will lead to a positive synergistic effect. However, unstable economic dynamics, non-transparent co-investors' behavior, as well as dysfunctionality of regulatory and legal framework concerning PPP, limit this tool's availability for the Russian market. To this end, it is admitted that the institution of public and private partnership contractors' interaction is initiated at the first stage of the infrastructure projects development in terms of Russian realities. Therefore, in the state's own interests it is necessary to focus on the problems of institutional, legal, investment and financial nature, including ensuring transparent cooperation (Andreeva, 2015).

Successful implementation of PPP depends largely on properly selected tools and technologies based on analytical work through the formation of the KPI system, reflecting each progress in the projects implementation and the importance of different criteria for the parties involved. Infrastructure bonds may be a promising tool for attracting long-term financing. The practice of placing them has been known abroad for a long time. However, in Russia such tools are not implemented in all sectors of the national economy. For instance, the Russian Railways Corporation (RZD) receives additional funding for the construction of high-speed railways and the infrastructure projects development due to obtaining permission to place infrastructure bonds. After evaluating the tools for attracting additional financing, let

us move directly to the practical and applied aspect of the PPP application in the railway transport.

The main PPP projects in the railway sector are connected with the construction of brunch lines. These are so-called capillary lines connecting the railways of public service with industrial enterprises, ports, terminals, and mineral deposits. Modern PPP projects contribute to the elimination of limiting areas in the exploited railway network in Russia and to the attraction of new mineral deposits to the economic turnover. Consequently, this encourages development of large industrial facilities through construction and use of railway network, creation of which is impossible without state participation.

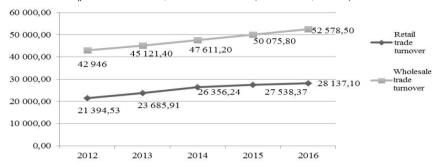
The PPP institution can be used in construction of technological, cargo-generating, high-speed railways, and reconstruction of existing railways, with the purpose to increase their carrying capacity. The long-term investment program of Russian Railways Corporation is the most spending in the Russian Federation. The volume of this program will amount to over 1 trillion 800 billion rubles for the next three years. The government plans to invest these funds in the construction of new transport infrastructure. The norms specified in the law limit the state in attraction of private capital as co-financing in construction of railway infrastructure facilities, since the use of private corporations financing sources leads to the formation of private ownership in federal facilities. In other words, private capital is proposed to be invested in state property. Similar problems occurred in the Russian Railways Corporation, and as it turned out the source of dysfunctionality was found in actual legislation, requiring radical changes in development of public and private partnership institution (Petrakov, 2017).

Unlike the established world experience in the application of private and state partnership in the attracted financing, the Russian public and private partnership institution is only forming its position in the mechanism of financing investment projects. The state and state-owned companies interested in additional investment are faced with a number of unsolved problems related to the finalization of issues in the actual legislation. At the same time, the settlement of these problems should be on the priority list, since the sooner the sources of dysfunctionality are eliminated, the faster effective implementation of infrastructural measures begins.

Analysis and interpretation of social, economic, and statistical indicators of the Russian economy functioning are necessary to assess the risk load of the studied corporation with the purpose to identify the targeted threshold of risk when forming a pool of attracted financial resources. Profitability of transport industry is determined by the level of business activity of the real economy sector within the country and the volume of cross-border operations. It is possible to affirm that the higher the turnover of domestic trade, the wider the range of services provided by the transport sector. In terms of this, it is reasonable to consider and interpret the information in Figure 3 on the dynamics of retail and wholesale trade turnover as

key indicators characterizing the amount of cumulative revenue from the sale of goods or services to the population for large and mid-sized domestic corporations, and to form an estimate regarding the impact on cargo turnover by types of transport.

**Figure 3.** Dynamics of Annual Turnover of the Retail and Wholesale trade in the Russian Federation for 2012-2016, billion rubles (Petrakov, 2017).

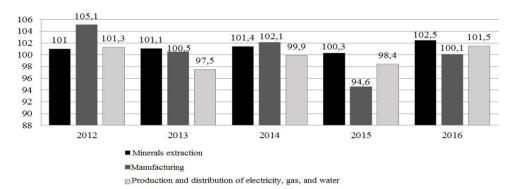


The linear schedule of both retail and wholesale trade demonstrates an increase in annual turnover during 2012-2016 in the Russian Federation. The turnover of retail trade in 2016 reached the value of 28,137.10 billion rubles, exceeding the value of 2015 by 560 thousand rubles. The turnover of wholesale trade in 2016 also increased to 52,578.50 billion rubles, compared with the annual turnover in 2015 showing an increase of 2,503 rubles. The indicators of trade show a simultaneous increase. If in January 2017 the retail trade turnover amounted to 2,205 billion rubles or 103.7% in comparable prices by January 2016, hence the turnover in 2016 was at the level of 2,126.2 billion rubles (Retail Trade, Services to Population, 2017). The same order can be observed in the wholesale trade monthly values dynamics, since in January 2017 it increased and amounted to 4,087.7 billion rubles, then in 2016 in the same period it amounted to 3,463 billion rubles (Retail Trade, Services to Population, 2017).

A change in the production annual turnover by types of economic activity runs without sharp fluctuations, which is confirmed by the Figure 4 below. On this Figure you can trace minor deviations in the mining annual turnover dynamics. Figure 4 shows production indices by types of economic activity for the needs of which the goods are transported through the transport system infrastructure. A tendency to reduction was evident only in 2015, dropping to 100.3%. In 2016 the situation improved and the value reached 102.5%. Dynamics of the manufacturing industries annual turnover, as well as annual turnover of production and distribution of electricity, gas, and water are characterized by uneven rates of change. Namely in 2012, the values were at 105.1% and 101.3% respectively by types of activity, in 2013 and in 2015 the parameters declined to 100.5% and 97.5%; 94.6% and 98.4% respectively, on the contrary in 2014 and 2016 they showed an increase to 102.1% and 99.9%; 100.1% and 101.5% respectively. It could be that the introduction of

sectoral sanctions against the Russian Federation contributed most to this phenomenon.

**Figure 4.** Dynamics of the Production Annual Turnover by Types of the Economic Activity in the Russian Federation for 2012-2016, % (Industrial Production – Federal State Statistics Service, 2017).



Let us point out the degree of influence of the retail and wholesale trade annual turnover and production indices on the volumes of cargo turnover by types of transport.

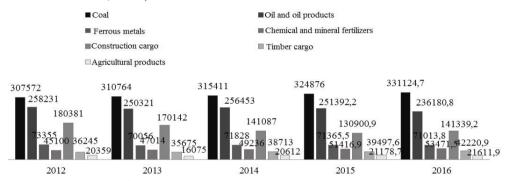
**Table 1**. Cargo Turnover by Types of Transport, for 2016-2017 (Cargo Carriage – Federal State Statistics Service, 2017).

Carriage of cargo	January 2017,	% by	January 2016, % by
by transport	mln. tons	January 2016	January 2015
railway	203,3	111,1	97,1
road	15,9	111,2	97,0
sea	3,5	83,7	159,4
road	0,6	125,7	103,8

According to the data shown in Table 1, the volume of cargo turnover by types of transport similar to volumes of retail and wholesale trade turnover, as well as production indices, withstand unstable dynamics without sharp fluctuations. In general, the retrospective analysis has allowed determining the degree of influence of the world economic system events concerning each type of transport. As a result, it was revealed that recent events that enhanced indignation of business environment did not cause serious rearrangements in the transport service system. The highest figures for cargo turnover belong to railway transport, which is quite explicable in terms of its high carrying capacity. Therefore, it seems to be promising to consider dynamics of cargo turnover, oriented to railway carriage as one of priority ways of transportation.

As shown in Table 1 in January 2017 the value was noted at the level of 203.3 million tons, with regards to the corresponding period in 2016 as a percentage of 111.1%, therefore, the volume of transported cargo in 2016 amounted to 182.9 million tons. In its turn, the value in January 2016 with regards to the corresponding period of 2015 is 97.1%, from this it can be concluded that actual volume of transported cargo in 2015 was 188.4 million tons. At the same time, for several reporting periods the total volumes of the cargo carried by the railway were formed from the following products (Figure 5):

Figure 5. The Volume of Cargo Carried by the Railway Transport for Corresponding Reporting Periods for 2012-2016, thousand tons (Federal State Statistics Service, 2017).



Information presented allows stating that the demand for the logistics services of railway transport will grow. Characteristics of number values in the diagram in Figure 5 make it possible to evaluate their change similar to the principles of a mathematical progression, namely, a sequential increase in the resulting values. The exception is separate transportation works, transportation of oil and oil products, ferrous metals, and construction cargo, in the dynamics of which there are minor deviations. There are several reasons for this. First, in the conditions of currency instability and falling oil prices, many corporations are determined to optimize total costs, including by reducing the volume of goods transportation in order to minimize risks. Secondly, in terms of economic pessimism, industrial enterprises "reduce their appetites" spending less money on purchase of raw materials.

Russia reduced the imported goods supply, according to the import substitution program, directly influencing the volume of transport services. The slowdown of the loading pace makes it necessary for the railway transport corporation to implement certain measures and efforts.

Experts consider the possibility of providing discounts on the part of the Russian Railways to its partners for high-yield cargoes. In this situation, there is an understanding that bonus programs can lead to a decrease in the railway carriage profitability. Costs on transportation services will increase expenses of the

corporation; therefore, it is necessary to consider the possibility of finding new sources of financing.

The importance of implementing these activities is accompanied by simultaneous competition from pipeline transport, which in fact is not inferior in its capacity than rail transport. The statistic data confirms this fact, pointing out that the transportation of goods by pipeline amounted to 108.6 million tons in January 2017, as regards to the corresponding period in 2016 in percentage of 104.0%, therefore, the volume of transported goods in 2016 amounted to 104.4 million tons (Transport in 2017 – Federal State Statistics Service, 2017). This fact admits the presence of competitive advantages of the pipeline transport in carriage services provision.

In addition, the volume of goods carriage by any transport, particularly railway, depends directly on the Russian Federation foreign trade structure, dynamics of export and import. Currently, the Russian market is suffering a change of the transported goods structure in favor of low-income items, because of this, the profitability of rail transportation can lower expectedly. For railway carriers this financial risk is exaggerated by competitive pressure from pipeline transport and air transport. In favor of achieving parameters of effective strategy for managing financial resources, the Russian Railways corporation should soon change the type of financial policy from aggressive to moderate, and then to conservative, since generation of financial income flow is not relevant to the level of risk load, which increases the risks of financial and investment objectives achievement.

## 3. Regional public and private partnership and the investment projects

Currently, the priority areas for attracting investment as a part of the public and private partnership mechanism are the following: transport and logistic sector; information and technology cluster; real economy sector (shipbuilding, pharmacy, and manufacture); wholesale and retail trade.

Special investment contracts including allowances for investors, up to the full clearance of the profit tax can be considered as the tools fixing the investment perspectives for the Russian transport and industrial complex development. Such benefits will be especially welcomed by large investors working in the Russian market, for example, the "Hyundai" company. If supporting tools are accepted and special investment contracts are widespread in the Russian economy, then implementation of such tools will ensure the infrastructure investment attraction in the transport and industrial complex. These projects include Aeroexpress infrastructure projects and the light rail tram lines building, the second stage of Pulkovo Airport reconstruction, the projects of a hotel chain construction and the creative spaces (creative industry) development.

As a part of the V International Conference "Foreign Economic Activity as a Factor of Effective Development of Small and Medium-sized Enterprises in the Russian

Federation Constituent Entities" held at the beginning of December 2017 in the Southern Federal District (Rostov-on-Don), the Rostov Region Governor V.Yu. Golubev noted that the export is gradually becoming one of the drivers of the region's economic development. According to the results of 2016, the Rostov Region was included in the top ten exporting regions, taking the first line among them in terms of export growth rates – 115.1%. The foreign trade turnover of the region in 2016 amounted to \$7.7 billion, export \$5.5 billion, and import \$2.2 billion. The foreign trade balance surplus amounted to \$3.3 billion. The region reached such indicators without presence of oil and gas fields in the region (Kommersant, 2017).

In the long-term the export development and support will remain one of the priorities in the region's economy development. In 2017 the Rostov Region became a pilot region for the introduction of the Export Business Standard as a part of the Russian Federation's "International Co-operation and Export" Project. To implement the standard, the Export Council under the Rostov Region Governor has already been established. Special ministries will be dealing with joint implementation of the project for the regional export standard introduction. The draft of the new strategy for the Rostov region development until 2030 will include special section on the region's export strategy, considering all-Russian and world trends. According to the National Rating of the Investment Climate in the Russian Federation Constituent Entities, in 2017 the Rostov Region was included in the top 20 regions with the most favorable business conditions.

In addition, the region took a rightful place in the rating of innovative Russian regions, being included in the top 20. The government's measures on the business development and support allowed achieving positive results. A regional fund for the industry development was established. With help of this institute, industrial enterprises can receive loans at 5% interest per year.

A new credit policy from the Regional Business Support Agency has allowed excluding debt on loans and setting a low loan rate of 7% interest per year for industrial entrepreneurs. In 2017, the agency increased the capital and it amounted to almost 1 billion rubles. In terms of the portfolio of microloans for business, it was declared the largest non-profit microfinance company in the country. In order to stimulate demand for the goods of the Don producers in the region, a regional procurement portal of small volume has been introduced. The savings amounted to almost 7% for four months of the portal's existence.

An important role in improving the business climate was played by changes in the establishment of control and supervisory activities, for example, the total number of inspections concerning business decreased by 20% in 2017. The number of unscheduled inspections was halved at the municipal level. Increasing the competitiveness of the region in the struggle for investment and localization of new projects will become the main goal for the region next year. The first step on the way of economic development and investment climate improvement will be the reduction

of energy costs through the tariffs optimization. Changes will affect also the state support of business: from March 1, 2018, a program of easy loans will be launched at 5% interest for exporting entrepreneurs-producers.

In addition to financial support, the entrepreneurs will get the opportunity to become the residents of areas in Gukovo, Donetsk, and Zverevo having investment attractiveness. The issue of the development of the territory adjacent to Platov airport will be resolved separately. In the Rostov region, an agglomeration of the territories of advanced development "The Don Ring" with competitive preferences for new production projects can be created. Given the proximity of these cities to the M-4 highway and a new airport complex Platov, the region notes the opportunity of new investment projects localization.

Along with arranging conditions for business development, it is necessary to pay attention to the development of human capital and technologies for non-financial business support. In particular, one may talk of the establishment of a business center in universities, the multifunctional centers for providing state and municipal services for business and a specialized online subcontracting platform.

For instance, on the northern part of Russia St. Petersburg is an important center for the investment projects development, playing one of the key roles in the transport and logistic system not only of the north-western region but also of the whole country. Because of the geographical position, the main routes connecting the Russian market with western markets pass through the city. Proximity of St. Petersburg to the countries of the European Union and the access to the Baltic Sea stimulates development of not only ground and air, but also water transport. St. Petersburg provides part of the transit cargo carriage from Europe to Asia.

Several transit corridors pass through the city. North-South (the connection between the Baltic states and India via Iran), the Pan-European Corridor 9 (the border with Finland – St. Petersburg – Moscow – the border with the Ukraine) and its branches; St. Petersburg - border with Belarus (to Vitebsk) and the border with Lithuania – Kaliningrad. The transport and logistic complex of St. Petersburg provides both export of Russian raw materials, products of enterprises and stable supplies of imported goods, materials and equipment to the country.

### 4. Conclusion

Thus, the study of the financial engineering functionality in addition to the modeling of corporate strategies for attracting financial resources has allowed drawing the conclusion that the analytical support of financial engineering, as a process of selection and balancing financial tools attracted by the corporation, allows reducing the level of risks and costs on their hedging. Corporate structures should form for themselves the most optimal configuration of financing tools, depending on the scale

of operation, financial stability, cost of financing tools servicing belonging to the industry segmentation and the type of the used production technology.

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