To the question of the construction investment impact on the business regional activity

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Abstract. The scale and effectiveness of investment activity is mainly associated with the creation of an attractive investment climate in the region, which reflects a combination of factors that allow the investors to safely invest in order to provide the materials, resources and get guaranteed benefits with high material output. Construction has always been distinguished by capital and material consumption, cycle time, the use of special equipment and technologies, as well as a special management system to attract and implement investments. But even with the correct calculations, investments may not bring the expected results due to lack of business and entrepreneurial resources, including those at the regional level. But on the other hand, investment processes in general, and in construction in particular, form the business activity of the region and business entities. The purpose of the study is to clarify the methodology for assessing the investments impact (general and in construction) on the business activity level in the region. The tasks of identifying the level of investments’ influence on the parameters of business activity in the region and conducting testing of the proposed developments on the Crimean region example were solved. As a result, a definition of business activity in the region was developed with the allocation of the regional socio-economic system parameters’ blocks with a justification of the investment activity characteristics, including in construction. An approach to assessing the business activity of the region is proposed, within the framework of which the correlation dependence of the investments influence on the regional business activity level is calculated using the example of the Crimean regional complex. The identified parameters of the investments' impact flows both in construction, material production, and in innovation, can serve as the basis for developing a set of measures to stimulate the investors regarding the required indicators of the socio-economic development of the territory.

Introduction

The development of the economy and increasing the efficiency of the regional functioning in the context of transformation processes in Russia require the study of entrepreneurial trends, the level of the resource use and innovation and investment processes. In this case, a number of theoretical approaches that take into account assessments of the region’s investment potential as a separate component of the economic potential can be used, as well as a generalization of the territorial socio-economic development parameters through the prism of the investment activity development degree.
In foreign and domestic scientific literature, the approaches to studying the problems of investing in processes are quite diverse, there is no single theoretical concept that reveals the issues of analysis and the investment availability assessment for the economic entities’ development. A significant contribution to the determination of patterns and the development of mechanisms for managing the development of systems was made by such well-known foreign scientists as I. Ansoff [1], G. Birman [2], M. Porter [3], F. Fabozzi [4], W. Sharp [5], J. Schumpeter [6], V. Leontyev [7] and others. Among the Russian scientists, according to the results of the investment potential and investment aspects study, it is necessary to note Anisimova Yu. P., Balbekova A.I., Vasilyeva A.B., Zavlina P.N., Ivanova V.V., Kovaleva V.V. [8] and several others.

It has been proved [4, 9, 10] that the countries that provide favorable conditions for effective investment and innovation activity win the global economic competition.

Assessing the relationship between the development of the economy, the investment processes in general (and investment in the construction complex in particular), it should be based on the fact that in the system, the influence of elements (subsystems), as well as elements (subsystems), can be distinguished among themselves, it is possible only taking into account the level of the studied system development or by the characteristics of the processes occurring within the system, or by its effectiveness.

As the assessment base for the socio-economic system of the region, both the final result of the system’s functioning and the parameters of the interaction process of all (or each type) of the region’s resources can be used. In this case, the need arises not only for the material components of the business process, but also for a special characteristic of economic activity — the activity of both the subjects and the entire business system. Funds, resources can be attracted in the right proportions, but not bring the required results due to the lack of business, entrepreneurial resources or potential. Therefore, in assessing the state of processes in the regional system, the concept of “business activity of the region” can be used as a characteristic in the framework of its functioning model, taking into account the investment component, including in the construction complex.

The dynamics of the change in the general indicator for the level of investment activity in the region \((A_u)\) indicates the tendency for a decrease in the investment component in the formation of the business activity indicator in Crimea.

Materials and methods
Given the need to justify the level of the regional systems investment processes and business activity of mutual influence, the aim of the study was to clarify the methodology for assessing the impact of investments in general, and in construction, in particular, on solving the socio-economic problems within the framework of the business activity in the region, testing the proposed developments using the Crimean region example.

Discussions and Results
In the work, as a system’s effectiveness, the category of “business activity” is considered, which was practically not subjected to the scientific generalization in the domestic scientific literature during the pre-market period, and currently the term “business activity” is used by various economists from the perspective of four hierarchically related levels: individual level (the subject carrying out economic activities; household), micro level (the individual enterprise level), mesoscale (regional level), macro level (the state level).

The business activity consideration at the macro level [10] involves the allocation of four phases in the business cycle of macro systems: “recession (crisis)” - lasts from several months to several years; “depression (stagnation)” - can last from one to three years and is a process of finding equilibrium at a new, lower level (in volume and timing) of social reproduction; “recovery” - the phase is characterized by an increase in business activity, an increase in investment, a rise in prices, an expansion of production and employment, and an increase in interest rates; “raise (upgrade)” - characteristic: a significant expansion of production; growth in investment, stock prices, interest rates, prices, salaries;
many new enterprises appear, small business develops, new technologies are introduced.

Some activities tend to anticipate a shift in the main phases of the business cycle. This statement, at least earlier, was true for the stock market. On average, until the late 1980s, the peak in the stock market outstripped the peak of business activity by about six months. Since the late 1980s, the established relationship between the behavior of the stock market and the economy as a whole has become much less obvious due to the fact that the stock market began to experience only slight fluctuations against the background of a general upward trend. Moreover, in the 1990s, the situation when the stock market activity made it possible to predict the state of the economy as a whole changed to the opposite. At the same time, the discrepancy between the stock market and the economy was becoming more and more obvious: the reports on the favorable economic situation in the country often generated a negative reaction on the stock exchanges. This behavior of the stock market was mainly due to the investors’ concerns that good economic news portends inflation.

Another factor correlating with the business cycle is the overall level of investment in the economy - until the 1960s, an increase in the level of investment more or less corresponded to the phase of economic recovery, or upgrade. However, since the mid-1960s, despite the fact that the economic cycle has not been disrupted, the volume of investments, expressed as a percentage of GDP, has been steadily declining, although with certain fluctuations. In the period 1964-1969, net investment amounted to 4.3% of GDP, then this indicator decreased and in 1985-1989 fell to 2.6%, and during the economic recession of 1990-1991 - to 1.4%. Some economists argue that the gradual decline in net investment did not lead to a corresponding decrease in business activity just because the increased personal consumption relied heavily on credit. Other economists believe that, despite slight fluctuations in the overall slowdown in economic growth, which take the form of an economic cycle, a century-old tendency to lower ups has clearly manifested since the 1960s. Indeed, since the 1960s, the duration of ups and peaks in the economy decreased [11].

A generalization and critical analysis of the Western and domestic scientific schools’ studies on the problems of business activity in macro processes allowed us to determine the regional business activity as the process of the regional socio-economic system structural elements’ interaction, motivated to ensure the efficient use of the territory resources under the conditions of the economic activity regulators’ system [12, 13]. Consequently, the business activity of the region is determined by the processes of the efficient resources use, the functioning of the production, social, financial, information, environmental subsystems of the region, and the possibilities for investment and innovation. At the same time, managing the investment activity of the modern region is becoming one of the main factors in the strategic management of its activities and may have a significant impact on the regional complex competitiveness.

This assessment is based on the following information on the level of socio-economic development of the region, the indicators of which are grouped in 10 blocks in accordance with the justified elements of business activity in the region:

Block 1 “Use of the region’s resources”,
Block 2 “Activity in the services’ production and creation in the region”,
Block 3 “Investment activity of the region”,
Block 4 “Innovative activity of the region”,
Block 5 “Activity of the regional infrastructure”,
Block 6 “Social activity of the region”,
Block 7 “Economic activity of the region’s population”,
Block 8 “Active financial sector in the region”,
Block 9 “Entrepreneurial activity in the region”,
Block 10 “Ensuring environmental safety of the region”.

In the framework of the developed methodology, the assessment of the region’s business activity involves collecting information on the level of socio-economic development of the region (carried out according to official state statistical and unofficial information), the regional socio-economic development mathematical indicators’ processing is performed by calculating the paired correlation
coefficients between the gross value added per capita (GVA\textsubscript{PC}) and the characteristics of each block of the business activity in the region (requires use the CORREL function of Microsoft Office Excel); the calculation of the change rate (indices) of the characteristics that make up the blocks of business activity in the region; the calculation of a general indicator for each element of business activity in the region (\(A_i\)) - carried out taking into account the existing restrictions \(r_{x_j\cdot x_k} > 0.70\).

\[ A_i = a + \sum_{i=1}^{10} r_{x_j} \cdot GR_{x_k}, \]  

where \(A_i\) – denotes the general indicator of the \(i\)-th element of business activity in the region;  
\(i\) – is the number of reasonable elements of business activity in the region;  
\(a\) – is a free member of the regression equation;  
\(r_{x_j\cdot x_k}\) – defines the pair correlation coefficient between the features;  
\(GR_{x_k}\) – is the chain growth rate of the level of the corresponding characteristics of the business activity in the region.

The significance of the region’s business activity elements is determined by calculating the correlation coefficients (\(w\)) between the generalizing characteristic of the block containing the indicator \(GVA_{Q\cdot PC}\) (\(A_Q\)), and the generalizing characteristics for the remaining blocks (\(A_i\)).

In the end, the calculation of a generalized indicator of the business activity in the region \(L_{BA}\) - according to the formula (2) taking into account the obtained values of the correlation coefficients \(w_{A_Q\cdot A_i}\) and the elements of business activity \(A_i\) (1).

\[ L_{BA} = a + \sum_{i=1}^{10} A_i \cdot w_{A_Q\cdot A_i}, \]  

Thus, the generalized indicator of the business activity level in the region \(L_{BA}\) reflects and allows to take into account the following elements of the regional functioning process: use of the region’s resources, activity in the production and creation of services in the region, investment activity of the region, innovative activity of the region, activity of the region’s infrastructure, social activity the region, economic activity of the population in the region, activity of the financial sector in the region, entrepreneurial activity, environmental safety in the region.

In accordance with the subject of this study, an assessment of the impact of investment activity is made, including investment in construction, on the business activity level in the region.

The investment activity should be considered not only as an independent subject of study, but also as a special aspect of economic activity in general, and in construction in particular. Therefore, block 3 “Investment activity of the region”, in our opinion, is an important component of the business activity of the regional system and is estimated by the following indicators:

- volume of investments in the fixed assets per person in actual prices;
- the volume of the work performed under the construction contracts for 1 person;
- foreign direct investment per person;
- commissioning of the fixed assets for 1 person;
- the investments volume in fixed assets (in housing construction) per capita of the region;
- commissioning of the total area of residential buildings - total area of the commissioned residential buildings (\(\text{m}^2\)) per 1000 population of the region (investigated in the Crimean region).

The analysis of the indicators characterizing the investment activity in the Crimean region for the analyzed period revealed a negative trend: for example, in 2013 compared with 2012, all indicators characterizing investment activity in the region decreased. The largest decrease was noted in the rate of change in the investments volume in the fixed assets in housing construction at actual prices per person (-50%), the commissioning of fixed assets per person (-38.7%), the volume of investments in fixed capital per person at actual prices (-36%).
Figure 1. The dynamics of the investment change rate in fixed assets per capita in the Crimean region in 2004-2013

A general indicator of investment activity in the region \( (A_U) \) calculated:

\[
A_U = 0.0012 + \sum_{U=1}^{n} r_{GVA_{PC}U} \cdot GR_{XU},
\]

where

- \( A_U \) – is the general indicator of investment activity in the region;
- \( n \) – defines the number of indicators characterizing the investment activity of the region;
- \( r_{GVA_{PC}U} \) – defines the correlation coefficient between the indicator of gross value added per capita and the corresponding indicator of investment activity in the region;
- \( GR_{XU} \) – shows the growth rate of the chain level of the investment activity corresponding indicator in the region.

For \( A_U \), the regression equation of the generalizing indicator is constructed based on the calculated pair correlation coefficients (Table 1) \( u_{ij} \) (where \( i \) is the number of the indicator block, \( j \) is the number of the indicator in the block) between the indicator GVA_{PC} and the indicators of the Block 3 “Investment activity of the region”:

\[
A_U = 0.0012 + 0.835 \cdot u_{31} + 0.664 \cdot u_{32} + 0.694 \cdot u_{33}.
\]

Table 1. Pair correlation coefficients between the indicator GVA_{PC} and the indicators characterizing the investment activity of the Crimean region in 2004-2013.

| Designation | Indicator’s Name                                                  | Correlation coefficient |
|-------------|-------------------------------------------------------------------|-------------------------|
| \( u_{31} \) | Volume of investments in fixed assets per person in actual prices | 0.835369                |
| \( u_{32} \) | The volume of work performed under construction contracts for 1 person | 0.664757                |
| \( u_{33} \) | Foreign direct investment per person (at the beginning of the year, cumulatively) | 0.694288                |
| \( u_{34} \) | Commissioning of fixed assets for 1 person                      | 0.41571                 |
| \( u_{35} \) | Volume of investments in fixed assets in housing construction at actual prices per person | 0.42393                 |
| \( u_{36} \) | Commissioning of the total area of residential buildings, m² per 1000 population | 0.413966                |

According to the Table 1, it can be noted that the indicators of investment activity in the region, which are closely correlated with the indicator GVA_{PC}, have a direct impact on the business activity.
level of the Crimean region.

**Table 2.** Dynamics of a general indicator for the element of business activity “Investment activity in the region” ($A_u$) in the Crimean region in 2004-2013.

| Indicator’s Name | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|------------------|------|------|------|------|------|------|------|------|------|------|
| $A_u$            | 2.09 | 2.89 | 2.35 | 2.92 | 2.71 | 2.82 | 3.05 | 2.93 | 2.52 | 1.54 |

Table 2 presents the results of calculating the generalized indicator of the investment activity in the Crimean region in 2004-2013, obtained on the basis of the initial data and the formula for calculating the generalized indicator (formula 4).

Dynamics of the general indicator change on the level of investment activity in the region ($A_u$) indicates the decline in the investment component in the business activity indicator formation in the Crimea. This situation is explained by a significant decrease in 2013 compared with the previous year of all the characteristics of investment activity, which could negatively affect the functioning of the main subsystems of the Crimean region, since the innovative activity and investment activity in modern conditions of the society development are the important factors for the regional economic complex effective functioning.

In order to confirm this conclusion, the task was to analyze the dynamics of the business activity level indicator in the Crimean region (Table 3), which characterizes the effectiveness of the region’s functioning.

**Table 3.** The dynamics of the business activity level indicator in the Crimean region ($L_{BA}$) in 2004 – 2013.

| Indicator’s Name | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|------------------|------|------|------|------|------|------|------|------|------|------|
| $L_{BA}$         | 100.0| 140.9| 100.9| 124.3| 128.5| 114.5| 120.2| 122.0| 123.7| 85.7 |

According to the results of the business activity level dynamics analysis in the Crimea, it is clear that during 2004-2013, its dynamic changes were observed (Table 3):
- a significant increase in the integral indicator of business activity was noted in 2005: it amounted to 40.9% compared to 2004;
- whereas in 2006, compared with the previous year, the socio-economic situation in the region worsened, and the business activity indicator decreased by 40 points compared to 2005, or by 28.4%.
- in the future, cyclical fluctuations of the integral indicator are also observed: growth in 2007-2008 and 2010-2012, a fall in 2009 and the strongest fall in 2013. Moreover, in 2013, the generalizing indicator of the business activity in the region decreased by 38 points, or 30.7%, to a record low since 2004 - 85.7 points.

Analyzing the dynamics of the business activity level in the Crimean region and general indicators of investment activity in the region (Tab. 1, 2, 3), it should be noted that:
- there is a close relationship between the business activity components in the region (the correlation coefficient between the business activity level in the region with the investment activity of the region was 0.85, which indicates the investments impact strength on socio-economic processes in the region);
- the trends of the studied indicators clearly showed the effect of the investment on the change in the innovation process: investment growth causes an increase in innovation activity with a certain delay, and a decrease in investment volumes leads to a sharper decrease in the level of innovation, which reflects the investment activity role in the regional economy development.
Summary
In the context of the economy globalization, the countries that provide favorable conditions for the effective investment and innovation can be competitive. The country has a systemic problem of providing the investment, both for the economy as a whole and for the construction complex [14], the reasons for which are not only insufficient development of the stock institutions, but also the shortcomings of the state policy implementation to optimize the investment climate, in particular in the region.

When solving the regulatory problems, it is important to have a holistic picture of the regional socio-economic system state, and for the assessment both the final results of the system’s functioning and the parameters of the interaction process of all the resources in the region, including the level of regional business activity, taking into account the investment component and the state of the construction industry, can be used.

The business activity of the region should be considered as a process of the regional socio-economic system structural elements interaction, motivated to ensure the efficient use of the resources (including the high level of material return) of the territory under the economic activity regulators system conditions. Moreover, investment activity is the main element of the business activity in the modern region, which has a significant impact on the regional complex competitiveness.

To improve the investment processes’ management in this paper, we propose an approach to assessing the region’s investment activity in the framework of the region’s business activity analysis which takes into account a system of indicators in accordance with the domestic statistical accounting capabilities.

The results of the business activity and investment activity dynamics level analysis, including investments in construction, using the example of the regional complex in the Crimea, confirmed that there is a close relationship between these indicators, indicating the investment component’s influence strength in general and in construction in particular, on the level of socio-economic development in the region as a whole.

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