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## **EVALUATION OF INTERACTION BETWEEN HOUSING INVESTMENTS AND MACROECONOMIC INDICATORS**

**Аннотация.** В рыночной экономике недвижимость является товаром, связывающим финансы участников рынка, есть потребность в развитии механизмов инвестирования в жилищное строительство, благодаря которым учитывались бы интересы инвесторов, и также запускались процессы оздоровления экономики страны. Имея в виду особенности и преимущества инвестиций в рынок жилищного строительства, а также его большой мультипликативный эффект, авторы уверены, что именно развитие и совершенствование процессов инвестирования в рынок жилищного строительства позволит «запустить» оздоровление экономики страны. Данное предположение доказано результатами исследования взаимовлияния инвестиций в жилищное строительство и основных экономических показателей деятельности страны. Математическая оценка взаимовлияния была получена с помощью метода корреляционного анализа. Методом прямого отбора были выделены 6 показателей, наиболее тесно связанных с показателем инвестиций в жилищное строительство. В результате оценки доказано, что инвестиции в жилищное строительство находятся в тесной взаимосвязи с основными показателями деятельности страны.

**Ключевые слова:** инвестиционная деятельность, инвестиции в жилищное строительство, мультипликативный эффект, корреляционный анализ, метод прямого отбора, взаимовлияние.

**Abstract.** In a market economy there is a need to develop mechanisms for investment in housing, through which to take into account the interests of investors, and also start the process of economic recovery in the country. Due to the features and benefits of investment in the housing market, as well as its high multiplier effect, it is believed that developing and improving the processes of investment in the housing market would "start" the economic recovery. This assumption has been proved by the results of the interaction

between investments in housing and basic economic indicators of the country. Mathematical evaluation of interference was obtained by correlation analysis. The six indicators most closely associated with the indicator of housing investment were identified by direct selection. The evaluation has demonstrated that investments in housing are in close relationship with the key performance indicators of the country.

**Key words:** investment, investment in housing, multiplier effect, correlation analysis, method of direct selection, interference.

Investment processes are the most important ones in the market economy. By the example of developed countries one can say that the degree of investment activity development is an important factor in the economic growth of the country. Russia is significantly expanding the investment activity, which entails the inclusion of the processes occurring in the real market into economic processes. There is a need to develop mechanisms for investment in housing construction, through account which of the investors' interests could be taken, and also the processes of economic recovery of the country could be started. In addition, investments made in the construction industry produce a huge multiplier effect, since with the development of housing related industries will develop. Also important is the fact that one of the criteria for assessing the development of the country is the life quality of the population, the most important indicator of which is housing, as well as its accessibility.

However, the theory and practice of investment in housing construction is new to Russia, therefore, investing in real estate is of great interest to market participants, but it causes difficulties due to the lack of the required theoretical and practical information for making informed investment and financial decisions. Analysis of the literature showed that issues related to the impact of investment in housing construction on the overall economic growth and effects of the housing market on the important indicators of the country has not been studied well. Also, effective methods of decision making under uncertainty have still been scarcely explored.

The economic situation in Russia is difficult because of an economic slowdown. Due to the features and benefits of investment in housing construction market, the authors believe that the development of the real estate market, in particular, housing market, would launch the process of economic recovery in our country. To start the process of economic

growth, there should develop the housing construction market, precisely because it has a large multiplier effect equal to 2.05. Thus, the development of real estate market starts the development processes in the economy.

All of the processes occurring in the country influence on each other. Therefore, the aim of our study is to assess the degree of interaction between housing investments and the main macroeconomic indicators.

To estimate the interference, 35 macroeconomic indicators characterizing the level of development of the country from 1995 to 2014 was selected. We used a correlation analysis for a mathematical evaluation of interference. The results showed that 23 out of the 35 indicators have a significant correlation coefficient, which indicates a high degree of correlation between the level of housing investment and basic macroeconomic indicators.

As a result, significant correlation coefficients were rather many. Therefore, among the indicators that have a meaningful correlation coefficient with the index of investment in housing construction, the most important indicators for the analysis of interference have been chosen by direct selection (Forward Selection), based on the particular F-test. A qualitative characteristic was based on the Cheddok scale shown for the selected indicators: for example, the value of the correlation coefficient from 0.7 to 0.9 on a Cheddok scale indicates a high degree of loyalty to the assumptions of the mutual influence and the value from 0.5 to 0.7 - a prominent tightness of connection between the studied variables.

**Table 1.** The maximum list of indicators related to the level of housing investment (the results of the direct selection method)

<b>Variable</b>	<b>Indicators</b>	<b>Correlation coefficient</b>	<b>Connection tightness</b>
x2	Gross domestic product at 2008 prices	0,9455	Very high
x14	Total area of residential buildings in construction in progress	-0,8282	High inverse
x19	Investment in fixed assets by economic activity	0,9947	Very high
x27	The mean price of 1 sq. m total area of apartments on the secondary housing market	0,9405	Very high
x34	Deposit rate, except for demand deposits	-07149	High inverse
x35	The rate on loans	-0,6162	Noticeable inverse

The analysis revealed that the rate of investment in housing is linked not only to the indicators of the housing market, but also to GDP, the mean level of investment in the country and the indicators of the banking sector.

Thus, it can be concluded that the development of the housing market by increasing the flow of investment may be "point of growth" for the economy.

In the future, the authors are planning to build a model of optimal control investment flows through regulation of the rate on loan so that due to the high multiplier effect the housing market revitalization of the economy should started and, consequently, demand for loans would grow, making banks' activities profitable. Also, based on the experience of foreign colleagues we will develop effective methods for making an investment decision in the housing market under uncertainty of initial data.

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