



The implementation technique of investments monitoring into the economy's real sector

Monitoreo de las inversiones en el sector real de economía: metodología de ejecución

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ABSTRACT:

Monitoring, as an organized and constantly operating system for information collection and analysis and analytical surveys implementing, is updated when assessing the region state and its development trends. The paper purpose is to develop a technique for monitoring the funds invested in the region real sector. The statistical method, methods for analyzing the dynamics of socio-economic indicators, methods of comparisons, groupings, tabular and graphical methods of visualizing data were used as research methods. According to the technique developed by the authors, the stages and elements of real investments monitoring in the region are systematized in the paper.

Keywords monitoring, technique, implementation, region, real investments, socio-economic development.

RESUMEN:

El monitoreo como un sistema organizado y de acción permanente de recogida y análisis de información y realización de investigaciones analíticas se actualiza al evaluar el estado y tendencias de desarrollo de la región. El objetivo del artículo es elaborar la metodología de realización del monitoreo de los recursos invertidos en el sector real de la región. Los métodos de investigación utilizados son el método de estadística, métodos de análisis de la dinámica de los índices sociales y económicos, de comparación, agrupación, técnicas de tablas y gráficas de visualización de los datos. En el artículo, de conformidad con la metodología, elaborada por el autor, están sistemizados los etapas y elementos de monitoreo de las inversiones reales de la región.

Palabras clave región, inversiones reales, desarrollo social y económico, monitoreo, metodología.

1. Introduction

1.1. The problem relevance

The region sustainable development is ensured by the effective functioning of its real sector, which is based on industry. For the purpose of its development, an active regional investment policy is needed to implement major investment projects to create both innovative technologies and innovative products that ensure the region's production potential growth and its competitiveness increase in general.

Implementation of investment policy, especially in the real sector, requires compliance with a number of organizational and management measures to choose the direction of investment, identify sources of financing, choose alternative real projects and assess their effectiveness. But it should be noted that the general situation of the Russian industrial complex functioning, despite the strategies existence for its development, is complicated by the conditions of non-stationary nature, which leads to stagnation in a number of sectors, which is also exacerbated by existing sanctions against the Russian Federation (Galiullin et al., 2017; Zhukovskaya et al., 2017). In connection with the foregoing, the constant monitoring is necessary, as a set of guiding and adjusting actions for the selection, implementation and monitoring of investment in the economy real sector, facilitating the adoption of appropriate decisions in the field of regional investment policy.

1.2. Literature review

When developing an investment policy for the purpose of further monitoring, first of all, it is necessary to be guided by the laws on investment activity in the Russian Federation and its regions. At the Russian Federation level, the law on investment activity in the Russian Federation, implemented in the form of capital investments (Law, 1999), at the region level (on the example of the Republic of Tatarstan), the law on investment activities in the Republic of Tatarstan (Law, 1998). In the listed documents the legal, social, economic conditions of investment activity, objects and subjects of investment activity, their rights and duties are defined.

An important aspect in the implementation and selection of strategic directions for the region development is the documents that determine the Russia and its regions development vector. At the regional level, such documents is a strategy for socio-economic development of the republic (Strategy, 2015), which is aimed at ensuring the innovative component of the region and providing, in turn, interaction of investment and innovation policies.

As it was mentioned earlier, the investment policy implementation in the Russian Federation regions is complicated by the non-stationary conditions of its functioning, which most significantly affect its real sector. The reasons for these conditions, manifested in the form of crisis phenomena, are presented in the work of V.N. Livshits (2013).

Monitoring of investments is carried out with the purpose to develop administrative decisions on perfection of investment activity in the region in view of its development strategic problems. These aspects were considered in the works of G.M. Kvon (2012, 2014, 2015).

The monitoring scheme, as a system providing for a set of preparatory measures and analytical actions (the monitoring object selection, the information received processing, its analysis, results interpretation, etc.) is presented in the work of the authors O.B. Bigdai & Zurabov (2014)

Innovative development of the region requires not only the progressive methods of production organization introduction, but also the improvement of financing investments system in innovation. In this connection, it becomes necessary to analyze and monitor the financial indices of industrial enterprises. B.A. Demilkhanova (2015) presents a set of indicators in her

work: financial resources monitoring, financial potential use, financial structures cooperation, etc.

The methodical aspects of the projects (programs) effectiveness evaluation that are an integral part of the monitoring procedure are presented in the Guidelines for the Evaluation of Investment Projects Effectiveness (Methodical Recommendations, 1999) and in the Guidelines for the Evaluation of Investment Efficiency presented in the work of V. Berens & P.M. Khavranek (1995).

The paper by I.E. Ilyina (2016) considers the need to monitor investment costs for R & D in the technologies development implemented at the expense of budgetary funds. The paper justified the continuity and regularity of this process with the aim of public investments effectiveness ensuring in the real sector development.

Approaches to investment activities monitoring implementation may vary depending on the investment type. Two approaches are considered by A.N. Plotnikov (2012) in his work, depending on the type of their management: it is a budgetary approach, in which the control of investment costs expenditure is carried out according to the established limits and the project approach, under which the investments are allocated to a separate project with planning horizons establishing. The authors point out that a third approach can also be applied relating to investments of those companies where there is un-ambiguity in obtaining an economic effect.

2. Materials and Methods

2.1 Objectives of the study

In the course of the conducted research, the authors solved the following tasks:

1. Analysis of the region industrial complex and real investments (on the example of RT).
2. Development of real investments monitoring technique.
3. Formation of conclusions.

2.2 Theoretical and empirical research methods

In the course of the study, various methods were used: a statistical method, methods for analyzing the dynamics of socio-economic indicators, methods of comparisons and groupings, tabular and graphical techniques for visualizing data.

2.3. The study stages

The study of the problem was carried out in three stages:

- at the first stage, a theoretical analysis of existing methodological approaches to conducting procedures for analyzing, monitoring and implementing investments in the real sector of the economy was carried out;
 - at the second stage, the main indicators that are the main monitoring objects have been selected, allowing to characterize the region economy real sector from its investment point of view, their analysis for the period 2012-2016 was conducted;
 - at the third stage, an algorithm for monitoring was developed, a graphical monitoring model is presented as a set of main monitoring units; the obtained results are summarized, the well grounded conclusions are drawn.
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3. Results

3.1. Brief description of the real sector investment indicators in the Republic of Tatarstan

The region real sector (on the example of the Republic of Tatarstan) and its functioning is a composite characteristic of the republic overall social and economic development, the main indicators of which were presented in the work of G.M. Kvon (2017). In this paper, the region real sector indicators are presented, characterized by such aspects as the industrial production structure of the Republic of Tatarstan (for 2016), as well as the index of industrial production, investments in fixed assets (indicators are given in the dynamics for 2012-2016).

It is necessary to consider the above indicators, presented in Table 1 and Table 2. The initial indicators are based on the data of statistics' territorial bodies (Official statistics, 2016)

Table 1
Structure of industrial production in the Republic of Tatarstan in 2016

Industries	Share (%)
Mining	22,5
Manufacture of food products	9,3
Production of petroleum products, chemistry and petrochemistry	36,2
Mechanical engineering	21,2
Other manufacturing industries	4,2
Production and distribution of electricity, gas and water	6,6
Total:	100

The structure of industrial production is traditionally characterized by a significant share of the extractive (22.5%) and petrochemical (36.2%) industries, which together account for 58.5% of total industrial production in the region.

In addition, a significant share belongs to machine building (21.2%), which is the basis for the region development.

Table 2 presents the indicators that should be the main objects of analysis and monitoring: this, as it was already mentioned above, is the index of industrial production, investment in fixed assets.

Table 2
Dynamics of monitoring real investments' main indicators

Indicators	2012 yer.	2013 yer.	2014 yer.	2015 yer.	2016 yer.
1. Investments in fixed assets, million rubles.	470 751,46	525 730,45	542 781,13	617 128,12	642 494,10
Including by sources of financing, %					

- own funds	47,48	51,69	63,03	67,26	66,44
- attracted	52,52	48,31	36,97	32,74	33,56
2. The volume of shipped industrial products, bln. rubles.	1 468,0	1 549,2	1 678,6	1 868,9	1 966,5
3. The index of industrial production of RT in% to the previous year	106,90	101,70	101,30	101,50	103,50
4. The index of industrial production of the Russian Federation in% to the previous year	103,40	100,40	101,30	99,20	101,30

The data in Table 2 confirm that there is a positive dynamics of industrial production in the region, which is especially noticeable in comparison with the same indicator in the Russian Federation for the period under study (Kvon, 2017). The volume of shipped products in the region is increasing, the volume of shipment according to 2016 was 1966, 5 billion rubles, which by 498.5 billion rubles. (or 33.96%) exceeds the volume of 2012.

Investments in fixed assets in the RT in absolute terms are also characterized by growth. The volume of deposits in 2016 reached 642 494.1 million. rubles, the growth over the analyzed period amounted to 171 742, 64 million rubles or 36.48%.

Despite the increase in the absolute amount of investments, there is a decrease tendency in this indicator. When calculating investments in fixed assets as a percentage of the previous year, there is a slowdown in growth rates (Kvon, 2017). When analyzing the terms of investment policy implementation, given in the author's paper, this indicator was 100% in each of the last three years (2014, 2015, and 2016). The monitoring results confirm that there is no real growth of investments in the region.

When analyzing investment resources, it is necessary to understand the funding sources origin. The dynamics of sources testifies to the growth of own funds in comparison with attracted ones. In 2016, the structure of the sources was 66, 44% - own funds and 33, 56% -attracted ones. The corresponding structure of 2012 is characterized by the reverse ratio: 47.48% - own sources and 52.52% - attracted.

3.2. Development of the mechanism for real investment's monitoring

The dynamics' analysis of real investment indicators is not enough, although they can give a preliminary assessment of the current situation. A comprehensive monitoring program is required, as a set of specific procedures. In the work of G.M. Kvon (2015), methodological aspects of real investment's monitoring were presented, however, they need further elaboration and further development taking into account the research of other authors on this issue.

Conducting monitoring requires a huge number of interrelated parameters and factors (relevant information, evaluation indicators, choice of survey methods, etc.), therefore, we consider it advisable to present the monitoring system in the form of the following enlarged scheme consisting of units: analytical, methodical, organizational, and Software and hardware (Fig. 1):

Figure 1



It is appropriate to consider separately the functional content of each unit (**Table**).

Table 3
Structure of investments monitoring into the economy's real sector

Monitoring unit (subsystem)	Functions being implemented	Unit content
1.Analytical	The results analysis and processing	<ol style="list-style-type: none"> 1. Search and analysis of information sources (databases, normative and periodic literature, standards, legal information, marketing research, scientific and technical translations, etc.). 2. The selection of monitoring indicators and their standards definition (basic indicators of the regional social and economic development, investments in fixed assets, industrial production rates, the structure of investments in fixed assets by types, by sources of financing). 3. Analysis of research results (implemented investment projects and programs, the amount of disbursed funds, investment projects ranking (programs) for performance indicators, used resources) 4. Simulation of the regional socio-economic state (compiling a forecast of the region development directions in the real sector and its surrounding structures). 5. Analysis of opportunities and threats to the region development (SWOT and PEST analysis implementation to build a development strategy) 6. Indicators monitoring, comparing them with regulatory ones and recommendations development for making management decisions
2.Methodical	Selection of monitoring methods (or their combination)	<ol style="list-style-type: none"> 1. Quantitative methods: <ul style="list-style-type: none"> - analysis of time series; - regression analysis; - methods for analyzing the dynamics of socio-economic indicators; - methods of comparison; groupings; analysis of trends; - the moving average method; - methods for evaluating investment projects (NPV, IRR, PI, DPP); - methods for assessing investment risks (break-even point, sensitivity analysis, scenario analysis). 2. Qualitative methods:

		<ul style="list-style-type: none"> - observation; - method of expert evaluation; - study of specialists opinion; - SWOT and PEST analysis method; - methods for analyzing information.
3. Software and hardware	Selection and use of software and hardware for information registration and processing	<ol style="list-style-type: none"> 1. Instrumental software (DBMS, editors, debuggers, auxiliary system programs, graphic packages). 2. Software for information technology: <ul style="list-style-type: none"> - Microsoft Office, which includes: text and tabular processor, DBMS Access, Power Point and other programs; - Accounting programs, - programs for developing business plans, evaluating and implementing investment projects: Alt-Invest, Project Expert, etc.); - reference and legal systems Consultant, Garant), etc. 3. Technical means of information technology (computers of a certain configuration and architecture).
4. Organizational	Selection of the monitoring process organization elements (formal management and informal impact)	<ol style="list-style-type: none"> 1. The organizations status identifying (departments, units) involved in monitoring real investments. 2. Development of the above-mentioned entities organizational structure, definition of functions and liability system. 3. Defining subjects and objects of management 4. Establishment of interactions scheme in the investigated area 5. Establishment of formal and informal links for investment monitoring purposes

The presented results will allow giving a comprehensive analysis of the region investment policy implementation by the sectors and spheres of the economy real sector activity, to form an assessment of the current situation in investment activities for individual industries in the region.

4. Discussions

Monitoring is a complex and very time-consuming process, so a number of difficulties can arise when developing a monitoring technique. It is not enough to monitor investments in the whole region. The monitoring object is a real investment, therefore, its analysis should be carried out separately for each project (or program), in a spatial and temporal slice, as emphasized in the work of D. Yu. Fraimovich (2016). The author also indicates the need to take into account the details of investment in terms of their impact on the socio-economic system (enterprise, region, etc.) and delimit them in the spheres. In addition, it should be noted that different regions react differently to investments in fixed assets. In this regard, there is a need to rank the regions because of different innovative susceptibilities to this process, which is associated with different degree of depreciation of fixed assets. When analyzing projects and programs in real regional projects, it is necessary to monitor the effectiveness of investment projects implemented by different regions.

A separate issue is the choice of a method for assessing the effectiveness of investment,

especially if it concerns budgetary funds. In this regard, when monitoring in terms of evaluating the programs (and projects) implemented, one can use the recommendations of R. M. Melnikov (2016). The author points out the shortcomings of public investment assessing the Russian practice effectiveness, which does not pay enough attention to the subsequent monitoring of the project results. The paper proposes to use the best foreign practice for evaluating investment projects and programs.

The region innovative development, due to the scientific and technological achievements introduction in the real sector, requires the mechanisms development and implementation to enhance investment and innovation. Monitoring should not be limited to analyzing the results obtained and developing recommendations for the region. The monitoring results can contribute to the development of other programs aimed at region further development. So, P.M. Vcherashniy & I.R. Ruig (2016) proposed a method for estimation the regions innovative activity, which allows the monitoring of further investment and innovation development of the study area.

5. Conclusions

The sustainable development of regional economic systems is complicated by the presence of objective threats from the external environment, in connection with which there is a decrease in investment activity. Sharp and poorly predicted changes in many macroeconomic indicators, the dynamics of which do not correspond to the normal economic cycle, i.e. non-stationary economy, lead to a reduction in public investment, as well as foreign investment, especially in the real economy, which does not allow fully to ensure the existing potential of the industry in the regions. In this regard, the role of organizational and adaptive measures, especially the monitoring system that allows developing preventive measures and adapting to changes is growing.

Monitoring, as a purposeful systemic observation of investments and investment activity in the region, will provide timely the management bodies with relevant information on ongoing investment processes, on the changes that are taking place, and help to correct the resource provision for investment projects and programs and adjust the investing directions in the real sector of the economy as a whole.

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