

Analysis of methodical assessment tools of investment attractiveness of high-tech business as activator of innovation development

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Abstract — The paper analyzes methodological approaches of the assessment of the investment attractiveness of a high-tech business in the current conditions of the development of the economic systems. The authors have taken up and shown the main problems of formation of the investment attractiveness of the high-tech sector from the point of view of its impact on the quality of the investment development of the state economy, as well as on the building of innovative systems of various levels. The authors contributed to giving such economic definitions as an "investment attractiveness", a "high-tech business", an "innovation and investment driver". The authors studied the factors of the domestic and foreign origin, which have the greatest impact on creation of the conditions for increase of the investment attractiveness of a high-tech business. The authors studied the problem of attraction of investments in a high-tech sector. The implementation arrangements of public and private partnership as an integrator of increase of the efficiency of functioning and investment attractiveness of a high-tech business have been analyzed. The paper reflects the nature of the relationship between the effectiveness of innovation and investment activities of the economic system and the possibility of forming and developing high-tech business in it as an active element of the innovation system. Methodical approaches to the assessment of the investment attractiveness of a high-tech business with the aim of ensuring its sustainable development and functioning as an activator for innovative and investment development of the economic systems have been analyzed.

Keywords — *Investment attractiveness; high-tech business; innovation development*

I. INTRODUCTION

Nowadays modern Russia has to confront many external challenges and threats of an economic, geopolitical, ideological nature, which are often created artificially, in order to contain the speed and quality of the social and economic, technical and

technological, innovation-driven and investment development. However, despite the fact that there are unsolved problems that weaken the development potential of our country, today Russia is steadily and successfully moving towards the creation of an innovative economy based on the latest knowledge and technologies. And it is innovations and high technologies that play a key role that are the factors of success in the development of the national economic system.

Thus, the role of the high-tech sector of the economy is exceptional due to the existence of undeniable prospects for the development of high-tech business, its qualitative characteristics, the potential and specific character of the development, the existence of a special status - an innovation-investment driver for the development of the economic systems. In order to develop a high-tech business, the authors are doing a scientific and research search and approbation of mechanisms that integrate the progressive growth of its quality indicators.

In order to increase the investment attractiveness of a high-tech business, the activator of public and private partnership in various forms is being actively implemented. This concept covers many different types of cooperation, differing by a scale, structure and purpose at which they are directed. In the international practice, public-private partnerships are defined by such characteristics as the presence of formal relationships between the participants, common objectives and a clearly expressed interest of society; participation of the government as a partner, but not a regulator; involvement of all parties in the management and financing process [1]. In economically developed countries, the mechanism of public and private partnership has long been recognized as an effective tool for strengthening the contacts between the key players in the innovation system and it is actively developing.

However, today it is especially important not only to achieve the stability of functioning of the domestic economy, in particular, industry, but dynamic, progressive development, a sharp jump to a qualitatively new level of production, first of all science-intensive, meeting the standards and high demands of the world markets, increase of the innovation activities, competitiveness and investment attractiveness [2, 3].

Some scientists in the context of macroeconomic and microeconomic development consider it expedient to evaluate innovation attractiveness of high-tech industrial enterprises as a possible "growth impact", in other words, take into account its innovation attractiveness as a factor of increasing investment attractiveness, which should be reflected in the methodology for its evaluation.

II. METHODS

The principal methodological and methodical approaches, used while studying problems and prospects of the investment development of a high-tech business, were worked out in the works of foreign and domestic authors, namely P. Draker, R. Cantillon, A. Marshall, J. Schumpeter, G. Markowitz, N. D. Kondratieva, S.Yu. Glazyeva, V.Ya. Gorfinkel, M.A. Bendikova, I.E. Frolova, A.I. Tatarkina, O.A. Romanova, V.V. Akberdina, G.I. Latyshenko and others.

Conceptual aspects of creation of a new industrialization as a separate type of social transformations on the basis of innovations were first described in the works of J. Galbraith and received further reflection in the concepts of D. Bell's postindustrial society and E. Toffler's super-industrial civilization, and also in the writings of A.A. Bogdanov, A.V. Zverev, J. Van Dein, N.D. Kondratiev, B.N. Kuzyka, G. Mensha, S. Kuznets, E. Toffler, H. Freeman, Yu.V. Yakovets.

Objective laws, problems and development prospects, the influence of the regional segment of the national innovation system on high-tech business are presented in the works of the scientists of M. Miller, F. Modigliani, S. Ross, B. Terborg, V.V. Bocharov, Yu.A. Doroshenko, D.A. Endovitsky, I.V. Somina, E.N. Chizhova, A.G. Ivasenko, A.A. Rudychev, P.P. Taburchak, G.I. Gumerova, E.Sh. Shaimieva and others.

III. OBJECTIVES

In the present-day economic science, there are various approaches to the definition of a "high-tech business", an "innovation and investment driver" and the "investment attractiveness", which is explained, as a rule, by the peculiarities of high technology applications, the dynamic development of science and technology, and the need to improve the methodological tools of assessment of the investment attractiveness of high-tech companies.

The term "investment attractiveness" is used by economists to assess the properties of the investment activity, usually at the stage of analysis of its state and prospects, in order to some extent to characterize them qualitatively and show the possibility of conducting successful investment activities. Investment attractiveness is such a feature that can be applied to the economic systems of macro, meso- and microlevels, i.e. and to the region (sector of the economy), and to a specific investment object (a separate economic entity, a financial tool)

due to the fact that the attractiveness reflects the degree of correspondence of a particular investment object to the specific goals of a particular investor.

Arguments for investing in high-tech companies will not be convincing enough for a strategic investor if its development in the scale of the national economy is in an unsatisfactory state. Despite the anticipated financial profitability of investment, it is difficult to attract capital in the required amount without a specific quantitative and qualitative assessment [4, 1].

In modern economic literature, a single approach to the definition of the essence of the notion of the "investment attractiveness" has not been worked out yet. The common view is that the concept of the investment attractiveness means the presence of such investment conditions that affect the investor's preferences in the choice of an investment object [4, 5]. Based on the approaches of domestic and foreign scientists to the explanations of such definitions as "high-tech business" and "investment attractiveness", let us present the author's definition of these economic categories. So, the investment attractiveness is the properties of the economic system to generate and realize potential opportunities and competitive advantages in attracting investment resources in order to transform novelties into innovations, including a high tech industry. A high-tech business is a business based on advanced technologies, characterized by high risks, the need to use substantial investments and the possibility of generating super-profits. The role of high-tech business as an activator for the innovation and investment development of the economic systems is obvious. At the same time, by the innovation-investment driver, we mean a set of methods and tools of innovative and investment genesis that ensure the progressive development of high-tech industry, strengthening of innovative and investment potentials, the flow of investment and the effectiveness of the process of commercialization and transfer of innovation, scientific and technical results.

According to domestic scientists [4, 10], when carrying out the investment prospects of high-tech business, it is necessary to use the provisions of system theory and the system approach [8, 7] as a concept that most fully and adequately describes the principles of the systems' functioning, including an economic system. Then if we assume that the sector of high-tech companies is an n -th order system, the elements of this system are the enterprises (emitters) of this sector. The key concept of the general theory of the systems is the concept - "system". The basic principles of the general theory of the systems come to the following items [4]:

1. The structural presentation is connected with the allocation of the elements of the system and the links between them.
2. The functional presentation of the systems is the allocation of a set of functions (purposeful actions) of the system and its components aimed at achieving a specific goal.
3. The macroscopic presentation is understanding of the system as an indivisible whole, interacting with the external environment. The microscopic presentation is based on the consideration of the system as a set of interrelated elements. It supposes the disclosure of the structure of the system.

4. The hierarchical presentation is based on the concept of a subsystem obtained when breaking up a system which has the system of properties that should be distinguished from its element - indivisible into smaller parts (from the point of view of the problem being solved).

Thus, a very important point in considering one of the methods for assessing the investment attractiveness of the high-tech companies sector is to consider it as a system consisting of the numerous elements, namely, the companies in this sector. Thus, the proposed method of definition of the investment attractiveness is based on the definition of the capitalization of each enterprise of the sector separately and as the total market value of the companies operating in this sector. The system can be presented as a set of subsystems of different levels, constituting the system of hierarchy, which is closed at the bottom only by elements [4, 8].

There are other methods for assessing the investment attractiveness of high-tech companies as an activator of the innovation development, in particular, the assessment of the risk of the investment under domination of the economic approach, which is replaced by a set of criteria for profitability (securities) and risk (in fact, their volatility) for the past period under prevalence of the classical approach of Markowitz [4, 3]. However, it is worth paying attention to the certain shortcomings of these methods.

The Markowitz theory is a purely technical approach based on profitability and its fluctuations over the past period, which does not take into account the fundamental indicators of the company's activities.

As the actual Markowitz theory, its further "improvements" assume the availability of a possibility of broad diversification of its portfolio often on an international scale. It is quite difficult for a Russian investor. In addition to the complexity of investing in foreign securities, due to the lack of development of the legislative base and the lack of service, a wide diversification of investments in the Russian securities is also rather problematic because of the low liquidity of the vast majority of shares.

For these reasons, one often used not the Markowitz model in its pure form, but other models - market, factorial, valuations of the financial assets, and others, which largely "remove" the above shortcoming of the Markowitz model [9].

TABLE I. THE MAIN APPROACHES DURING DETERMINATION OF THE INVESTMENT ATTRACTIVENESS OF A HIGH-TECH BUSINESS

Approach	Who applies	Used criteria (main differences)	Advantages	Disadvantages
Markovits' s model	Portfolio managers	An expected value and a standard deviation of profitability	There is no need to take into account the fundamental indicators. An individual selection of the portfolio upon investor's requests	Isolation from the real state of affairs of the economy

Market-oriented model	Portfolio managers (especially in co-op share funds and insurance funds)	An expected value and a standard deviation of profitability, and also the floor of profitability of the market index	It takes into account the movement of the stock market on the whole	Isolation from the real state of affairs of the economy
The model for assessment of the financial assets	Portfolio managers	The profitability of an asset is linked to its degree of risk	It estimates the likely change in the rates of shares	Isolation from the real state of affairs of the economy
Factor models	Portfolio managers, strategic (long-term) investors	It establishes a link between the profitability of a security with the main general economic factors	Accountability of the main macroeconomic indicators	The need of the periodic processing of the models due to a change of key factors as time goes by
The model of the arbitral pricing	Portfolio managers realizing active trade policy	It is aimed at creation of a more profitable portfolio of securities in comparison with the existing one without increase of the risk	Insensitivity in general to none of the factors. Change in the portfolio does not increase the risk and does not require additional resources	The number and the nature of the key factors are not defined. The periodical revision of the model with the change of key factors is necessary.
Fundament al analysis	Direct and Strategic investors	The criteria used in the analysis of the financial and economical activities of the company	The assessment is based on the actual rates of the activities of the company	It does not take into account the situation in the stock and financial markets
he model of a "fair price" on the basis of discounted cash flows	Portfolio managers, private investors	It is used the comparison of calculated coefficients and cash flows	It is aimed at determination of the value of the company, coming from peculiarities of the company itself and macroeconomic situation	The complexity of an accurate estimation of the discount rates and future cash flows
Comparati ve estimate	Strategic investors, private medium-term and long-term investors	It is used a number of comparable indicators reflecting the main features of the company	It takes into account the correlation of the indicators of some companies of the same industry	The subjectivity of the influence" of different indicators. The situation in the financial market is slightly taken into account

When carrying out a comprehensive assessment of the investment attractiveness of a high-tech business, it is important to take into account the necessity to do an analysis of the three most important components [6, 9]:

1. Macroeconomic analysis is carried out in terms of assessment of the overall state of the economy, its potential

impact on industry revenues, individual companies and on profit received from securities.

The main indicators of the business cycle, which are closely monitored, include: the gross national product (the market value of all products produced in the country, including services, within one year) and the volume of the industrial production (output in the industrial, manufacturing sector of the economy).

The other main economic factors that influence the general economic activity are: state tax policy (taxes, state expenses, management of the public debt); monetary policy (emission and interest rates, money supply management); other factors (inflation, investment in business development, consumer expenditures, cost and availability of the energy resources, foreign trade, exchange rates).

2. The sectoral analysis is carried out by comparing the main sectors of the economy with a view of selection of the priority industry, while taking into account the data obtained at the first, macroeconomic, analysis stage.

The main issues in the assessment of industries are as follows:

- What is the nature of the industry? Is the industry monopolistic or does it include many competing enterprises?
- Is the industry regulated and how friendly do the "regulating authorities" treat it?
- What is the importance of the technological development? Are those being done in the industry and what is the probable value of the important technical achievements for the industry under consideration?
- What economic drivers are of particular importance for the industry? Is the demand for goods and services of the industry correlated with the main variable indicators of the economic situation and, if so, what are the prospects for the growth of these indicators. How important is a competition with foreign companies for the prosperity of the industry?
- What are the main financial and industrial problems of the industry? Is the ratio of materials, finance and labor forces within the industry adequate? What are the planned investments and needs of the industry?
- What is the role of the trade unions in the industry? Are labor relations healthy within the industry?

When evaluating the prospects of investing in a particular industry, the concept of a growth cycle is often used, which consists of several stages. One of the main concerns of an investor is to avoid buying shares of the companies which are in the last phase of their growth cycle.

3. Fundamental analysis of the financial and economic activities of the enterprise is carried out on the basis of the statement that the cost of shares is affected by the effectiveness of the function of the emitter's company. However, the value of a security depends not only on the profit that it promises, but also on the size of the risk. The fundamental analysis allows to take into account these problems and clear them up in the process of the stock evaluation.

- When studying companies, the research is done on the following sections [9]:
 - competitiveness of the company;
 - the structure of the assortment and sales trends;
 - coefficients of profitability and profit of the company;
 - composition and liquidity of the company's resources (the structure of the assets).
 - The structure of the company's capital (the structure of the financial resources) is the structure of the permanent, long-term sources of financing.

When conducting a financial analysis of the company's activities, the calculation and the analysis of coefficients play a key role. The main financial ratios can be divided into five groups: a property position, liquidity, financial stability, business activity, profitability. It should be noted that when assessing the investment attractiveness of a high-tech business and making an investment decision, it is necessary to forecast the estimates of possible cash flows and determination of the value of either the entire enterprise on the whole or the corresponding asset.

IV. CONCLUSION

In conclusion, we note that the process of creation, improvement and application of the methodological approaches for the assessment of the investment attractiveness of a high-tech business as an activator for the innovation development of the economic systems that meet the current trends in the development of the world community is an important tool for increasing the efficiency of attractiveness and use of investment, intensification of the innovation activity, launching of science-intensive products into the world market that meet the highest requirements, should be priority for innovation and investment development. Application of the successful practice of an enterprise and functioning of high-tech industries will stimulate meeting the demand for science intensive products by the internal forces, strengthening the investment attractiveness and creation of the effective innovative potential, an investment attractiveness that, of course, one must be able to assess properly.

V. SUMMARY

Summarizing the main results, it should be noted:

1. It is advisable to evaluate innovations as a possible "momentum of growth" when assessing the investment attractiveness of high-tech industrial enterprises.
2. When assessing the investment attractiveness of a high-tech business, it is necessary to use the provisions of system theory and the system approach.
3. Macroeconomic analysis is conducted in terms of assessing the overall state of the economy.
4. The sectoral analysis is carried out by a method of comparison of the basic branches of economy with the purpose of a choice of a priority branch.

5. Fundamental analysis of the financial and economic activities of the enterprise is carried out on the basis of the statement that the cost of shares is affected by the effectiveness of the operation of the emitter's company.

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