KEY PROBLEMS AND WAYS OF INNOVATIVE DEVELOPMENT OF UKRAINE’S ECONOMY

This paper provides an evaluation of innovative processes of economic development of Ukraine. Problematic and positive factors of the competitiveness of Ukraine have been considered. The innovation level of entities of national economy of Ukraine has been defined. Possibilities of innovation implementation have been studied. The development directions and peculiarities of innovative investment in Ukraine have been defined. General strategy tasks for innovative development of Ukraine have been proposed. The choice of strategy for innovative development of Ukraine’s regions has been substantiated.

Introduction

The innovative development of national economy is a key to its competitiveness and improving of living standards.

World experience shows that important conditions for achieving a higher level of Ukraine’s competitiveness are as follows: promoting the creation and acquisition of new knowledge as a major basis of effective competition; development of domestic competition which promotes innovative activity; creating competitive advantages through the use of innovation and new technologies, knowledge and information; capability of individual companies and the industry as a whole to innovate, improve and modernize; awareness of the fact that keeping competitive advantages can only be through continuous introduction of new innovations and improvement of existing ones; creating favourable environment to encourage the development of advanced industries, new industries and businesses.
Ukraine`s transition to an innovative development model of national economy is reflected in a number of legal documents, namely in the laws of Ukraine “On scientific and scientific-technical activity”, “On priority directions of innovation activity in Ukraine”, “On joint investment institutions”, “Financial leasing”, “On securities and stock market”, in the norms of Civil, Commercial, Customs and Tax codes [2, 9].

However, there are significant systemic barriers to forming an innovative model of Ukraine`s development, including the following: lack of research funding and innovations introduction; imperfection of the legal system of regulation and stimulation of innovation; inconsistency of a corporate structure, emerging in Ukraine, with essential requirements of innovative development; lack of an effective system of priorities in the scientific and technological field; slow formation of the modern large-scale market for innovative products and services; unavailability of public administration for substantive activities aimed at the development of an innovative society.

Lack of alternatives for innovative paradigm of restructuring the national economy is conditioned by the necessity to increase Ukraine`s competitiveness in the global environment by overcoming resource constraints and raw material orientation of the economy.

**Chapter 1. Evaluation of innovative processes of economic development of Ukraine**

At the present stage of world economic development the main feature of the country`s competitiveness is considered to be its innovation – the ability for continuous development, update and changing activity based on mastering innovation, use of science and technology, information and intellectual potential.

Structural changes and modernization of industry require stable institutional environment and provision of adequate investment attractiveness. Considering the Global Competitiveness Index (GVI) for 2015, Ukraine occupied the 79th place among 140 countries (in 2014 – 76th place, in 2010 – 84th position among 102
countries) [21, 28]. Most of all Ukraine lost its position in the indicators that characterize the development of market infrastructure, macroeconomic environment and financial markets. In particular, in terms of “competition” Ukraine took 122th place, in “availability of financial services” – 123th place, in “strength of banks” – 140th place, in “inflation changes” – 134th position. The most problematic factors for doing business in Ukraine are defined as follows: access to finance (123th place), financing through local capital market (118th place), easy loans access (87th place), availability of venture capital (102th position).

Positive changes have occurred in the economy due to factors that characterize higher and vocational training (54th place), quality of educational system (74th place), technological availability, including new technologies (96th place), foreign direct investment and technology transfer (117th place), modernization of production process (68th position), quality of scientific and research institutions (74th place), companies` costs for research and development (54th position).

Analysis of innovative activity in 2015 indicates an extremely low value for number of domestic companies engaged in innovative activities, which is lower than in the period of 2012-2014 years (Table 1). However, despite the reduction in a number of innovative active enterprises, in 2015 industrial enterprises spent on innovations 13,813.6 million UAH (Rg 2012-2015 – 120.32%), including purchase of machinery, equipment and software – 11,141.23 million UAH (or 80.65% of total innovation expenditures), which is 9,919.8 million UAH more than in 2014 (66.46%), for domestic research and development – 1834.0 million UAH (13.27% of total innovation expenditures, Rg 2014-2015 – 150.15%), for acquisition of other external information – 84.9 million UAH (0.61%, Rg 2014-2015 – 179.87%).

In 2015 there were sold enterprises` innovative products for 217.8 million UAH more than in 2014. Increase in sales volume of innovative products that are new to the market and set for export amounted to 65.62% or 1,789.1 million UAH. Despite the above positive trends in the increase in spending on innovation and sales
volume of innovative products by industrial enterprises, there is a threat to the state innovation security at the end of the researched period.

Table 1. Innovation activity in the national economy of Ukraine*

<table>
<thead>
<tr>
<th>Indexes</th>
<th>Years</th>
<th>As of December, 31st</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2012</td>
<td>2013</td>
</tr>
<tr>
<td>Innovative active enterprises, units</td>
<td>1758</td>
<td>1715</td>
</tr>
<tr>
<td>Innovation costs, million UAH</td>
<td>11480.5</td>
<td>9562.6</td>
</tr>
<tr>
<td>- for purchase of machinery, equipment and software, million UAH</td>
<td>8051.7</td>
<td>5546.3</td>
</tr>
<tr>
<td>- for domestic research and development, million UAH</td>
<td>965.1</td>
<td>1312.0</td>
</tr>
<tr>
<td>- for acquisition of other external information, million UAH</td>
<td>47.0</td>
<td>86.9</td>
</tr>
<tr>
<td>Sales volume of innovative production that is new to the market, million UAH</td>
<td>14512.6</td>
<td>12391.2</td>
</tr>
<tr>
<td>- including sales beyond Ukraine, million UAH</td>
<td>7597.5</td>
<td>6567.7</td>
</tr>
<tr>
<td>Sales volume of innovative production that is new to the company, million UAH</td>
<td>21645.1</td>
<td>23500.4</td>
</tr>
<tr>
<td>Introduced innovative products, units</td>
<td>3403</td>
<td>3138</td>
</tr>
<tr>
<td>Implemented new technological processes, units</td>
<td>2188</td>
<td>1576</td>
</tr>
</tbody>
</table>

*Source: composed by the author on the basis of data from [24, p. 378-408]

Sales volume of innovative production, which is new to the company, number of implemented innovative products and new technological processes still follow a downward trend (Rg 2012-2015 – 72.83%, 92.15% and 55.62% respectively).

During 2012-2014 the development of innovative projects at non-innovative enterprises has been influenced by such factors as lack of reasons to implement innovations (82.2%) and significant obstacle factors (17.8%) (Fig. 1).

As for the economic activities, 9.5% of companies carried out technological innovations (including 5.2% of product innovations and 7.2% of process innovations). 8.6% of enterprises carried out non-technical innovations (4.7% are
organizational innovations, 6.4% are marketing innovations). In 2015 a number of implemented innovation technological processes (new or improved methods of processing and production) amounted to 1217 units, most of which have been implemented by enterprises of Kharkiv (17.4%), Sumy (15.2%), Zaporizhia (9.4%), Dnipropetrovsk (6.3%) regions and of Kyiv city (12.5).

Fig. 1. Allocation of non-innovative enterprises in accordance with reasons that hindered the implementation of innovation during 2012-2014*

* Source: composed by the author on the basis of data from [16]

In the 2012-2014 the highest share of innovative enterprises belonged to processing industry (20.3%), electricity, gas, steam and conditioned air (18.6%), media and telecommunications (16.3%); to enterprises producing machinery and equipment (25.3%), other vehicles (12.3%) and food (7.8%) in 2015 [20].

The main fund-raising source for reproduction (support/expansion of core activities) of domestic enterprises are bank loans and own funds (Fig. 2).
More than a half of total amount of financing capital investments in industrial enterprises accounts for their own funds, which at the end of 2014 reached a value of 70.5% (in 2010 – 60.8%). Over the period of 2010-2014 the increase of own funds share was accompanied by a simultaneous decrease in the share of bank loans and state budget funds at 1.24 and 2.14 times (from 12.3% to 9.9% and from 5.8% to 2.7% respectively). Due to the difficult economic situation and high level of instability demand for loans by non-financial corporations is rather high in 2015, but creditworthiness and solvency deteriorated (Fig. 3).

The total amount of new loan agreements with enterprises (excluding overdraft) decreased in 2016, in comparison with the previous period, at 1.03 times and is 810,12.5 billion UAH. For the period 2012-2015 there is a shortage of investment money in the economy. So, from the total loans granted in 2012 only 73.7 billion UAH (12.17%) had been spent on investments, and in 2015 it was 110,01billion UAH (13.96%). The cost of credit remains unattractive to borrowers. In 2012 the interest rate on loans in general was 14.5% in the whole economy, in 2015 – 17.1% per annum.

**Fig.2. Structure of fixed capital investments by source of financing, %**

*Source: composed by the author on the basis of data from [24; p. 204]*
a) interest rates for new loans to non-financial corporations, %  

b) loans to non-financial corporations, billion UAH

Fig. 3. Interest rates and structure of loans by maturity provided by depository corporations to non-financial corporations in 2012-2015 *

* Source: composed by the author on the basis of data from [19]

For long-term loans (for over 5 years) the rate was lower than for the short-term ones (up to 1 year), 12% and 13.9% in 2012, and 10.1% compared to 16.4% in 2015. Lower cost of long-term loans compared to short-term ones does not significantly increase the number of the former ones (Rg 2012-2015 – 149.26% and Rg2012-2015 – 130.80%, respectively). The cost of loans for mining and processing industries is lower than the average one in the economy and is 11.2% and 15.7%, respectively (Fig. 4).

But lower lending rate does not mean priority of industrial loans, including investment loans. But it’s linked only with poor solvency of industry to return loans, especially long-term ones, and is due to its low profitability compared to other areas of activity. As for the problems with loans to non-financial corporations, the NBU estimated that at the end of November 2015 loans arrears of enterprises to financial corporations amounted to 171.8 billion UAH or 21.8% of total loans issued by financial corporations to businesses. However, loans in hryvnia were less than a
quarter (23.81% or 40.9 billion UAH.) Whereas the majority (76.19% or 130.9 billion UAH) were the loans granted in foreign currency [5].

- a) loans to non-financial corporations, b) interest rates for new loans to non-billion UAH

\[ \text{Interest rates and structure of loans by economic activities, provided by depository corporations to non-financial corporations in 2015*} \]

* Source: composed by the author on the basis of data from [19]

The main problematic debtors are processing industries, whose share in the total amount of loan arrears of non-financial corporations amounted to 41.64% (71.5 billion UAH), wholesale and retail trade, repair of motor vehicles – 27.22% (46.8 billion UAH), enterprises engaged in real estate activities – 8.23% (14.1 billion UAH).

The financial result of enterprises in the form of profit before taxation by the types of activities for the period of 2012-2013 reduced to 72.60 billion UAH, and at the end of 2014 there was a loss of 523.58 billion UAH. The level of profitability of production operational activity of enterprises by such types of activities as “Industry” was (-)1.6% in 2014 and for “Wholesale and retail trade; motor vehicles and motorcycles” was (-)12.8% [22; 25, p. 133-197].

Aggravating shortages of long-term investment resources in Ukraine`s economy are partly covered by foreign investments. The share of foreign investments
in the structure of investment sources is considered to be the smallest, compared with others. And within 2010-2013 years it tended to decrease. Whereas in 2010 it amounted to 2.1%, in 2013 it dropped to 1.8%. As of 12.31.2016 Ukraine received 43.37 billion USD, which is 13.68 billion USD less in comparison with 2014 and confirms the fact of decline in foreign investments.

Industrial distribution of foreign investments is unsatisfactory from the standpoint of the progressive restructuring of the country’s manufacturing industry (Fig. 5).

![Fig.5. Structure of foreign direct investments (FDI) in the economy and industry of Ukraine by economic activities*](image)

*Source: composed by the author on the basis of data from [26, p.186]

At the end of 2015 the share of FDI in agriculture, industry and financial sector had to reduce and correspond to 1.15%, 30.62% and 27.36%. This trend was reinforced by the stagnation of industrial production, high risks of capital loss, reduction of capital and branches of foreign banks, lack of relevant information on the market environment, low agricultural productivity and increasing number of loss-making enterprises. The growth of investment in information and telecommunication technology, professional, scientific and technical activities (Tg – 123.43% and 186.24% respectively) creates favourable conditions for the emergence, development
and operations of groups of people who are bearers of intellectual, artistic and creative capital.

The highest amount of personnel involved in carrying out research and development, that resulted in innovation in 2012-2014, was available at both technologically innovative and non-innovative large enterprises (32.9% and 20.7% respectively); 18.1% of enterprises with technological innovations collaborated with other companies and organizations, including universities and research institutes. In 2015 0.6 billion UAH were spent by enterprises on staff training for the development and implementation of new or significantly improved products and processes, operations for market innovation and other work related to the creation and implementation of innovations. Ukraine occupies the first position in Europe in IT sector, which employs about 90,000 persons and comprises more than 1,000 IT companies, 100 research centers of global companies from various fields (telecommunications, software, gaming industry and e-commerce [27]). However, only with high-tech means of production the added value may be made. During the 2012-2014 16% of innovative enterprises cooperated with enterprises of Ukraine by geography location of partners. Thus, 5.7% are the European countries, 1.3% – China and India, 1.2% – the USA. In other countries, there are 3% of enterprises-partners dealing with innovation issues.

According to the data in Fig. 3, Ukraine`s industry is represented by primitive forms of production inherent in the primary economic and technological society and the raw-materials orientation. Thus, despite a slight decrease at the end of 2015, foreign investments in processing industry amounted to 85.32%, while in metallurgy only to 39.98%. The proportion of mining industry increased at 1.2 times, from 8.12% in 2010 to 9.34% in 2015, production and distribution of electricity – at 2.4 times (1.95% and 4.74% in 2010 and 2015 respectively). Having such distribution of foreign investments as in economy, so as in industry, will not contribute to positive structural changes in production [17, p. 15-18; 18].

For Cyprus, the largest investor of Ukraine, the majority of investments as of 31/12/2015 account for financial and insurance activities, which is 27.09% (or
3,182,200,000 USD). Its contribution to the industry is 22.04% (2588, 6 mln USD), particularly in the processing industry is 79.90% (2.0633 billion USD). The Netherlands share of investments in IT and telecommunications is 32.07% (1.7997 billion USD), in the industry of Ukraine it is 30.16%. 76.71% (1.2982 billion USD) of its amount account for processing industry. Foreign direct investments (equity) of Germany in processing industry amount to 99.24% (4.8188 billion USD) [26, p 188]. Summing up the foregoing, we can conclude that foreign countries are not interested in the development of Ukrainian production, especially the industrial one.

Chapter 2. Areas of innovation development of Ukraine`s economy

Strengthening of structural deformations in the Ukrainian economy as a result of faster growth of raw materials branches has led, as mentioned above, to a decrease in technical capacity of industry, an increase in cross-sectoral and territorial disparities, reduction of exports and progressive growth of imports, deficiency of foreign currency earnings. All of that demonstrates a loss of competitive advantages of the national economy on global markets.

The growing problems in the industrial sector of Ukraine`s economy force to search new approaches to the economic development. The most acceptable solution here is to develop a macro-economic policy considering the interests of enterprises of the real economy sector, the formation of a national industrial policy and strategic forecasting [15].

Global experience testifies that industrial policy cannot be independent from the state economic regulation. The main goal of this intervention is to ensure sustainable economic development, low inflation rate, high employment and innovation activity.

The main task of a new industrial policy of Ukraine is formation of the corporate sector, receptive to innovations in all sectors of the economy, the development of high technology industries. It should be noted that among the European Union countries minimum rates of innovation activity are with Portugal (26%) and Greece (29%). But even these figures are twice higher than in Ukraine.
And compared to the leading countries such as the Netherlands (62%), Austria (67%), Germany (69%), Denmark (71%) and Ireland (74%), the gap from Ukraine has increased almost fivefold.

The impact of the innovation factor on the economy must occur by aligning state innovation policy with scientific, technical, fiscal, monetary, industrial and trade policy and with achievement of common interests and establishing coordinated relationship between society, the state, the government, business and other public and academic institutions.

*State innovation policy* is a set of forms and methods of the state operations aimed at creating mutually related institutional mechanisms, resource support and development of innovation, the formation of motivational factors for enhancing innovation processes [13].

*State regulation of innovation is carried out by:*

- identifying and supporting priority areas of innovation of the state, sectoral, regional and local levels;
- developing and implementing national, sectoral, regional and local innovation programs;
- creating the legal framework and economic mechanisms to support and stimulate innovation;
- protecting the rights and interests of innovation businesses; financial support for the implementation of innovative projects; stimulating commercial banks and other financial institutions that lend loans for the implementation of innovative projects; preferential taxation of innovation businesses;
- supporting the operation and development of modern innovation infrastructure.

An important focus for innovation investments in Ukraine was the creation of a legal framework that has been made to ensure the formation and carrying out the national coherent science and technology policy, effective functioning and development of the research and development area, enhancing its relations with
production in terms of the transition from prescriptive management to market relations.

Initial legal prerequisites of state investment and innovation policy are proclaimed in the Constitution of Ukraine. In particular, Article 54 guarantees to citizens the freedom of scientific, technical and other kinds of creative activities, protection of intellectual property and their copyrights. The article states that the state promotes the development of science and establishment of scientific ties of Ukraine with the world community. All contemporary legal and regulatory framework of Ukraine in the innovation field could be divided into two subgroups.

The first subgroup is represented by the laws of Ukraine that define the basic principles of state policy in the field of investments and innovation [1]. Thus, the Law of Ukraine “On Principles of State Policy in the field of science and scientific and technical activity” launched the legal framework for innovation in Ukraine. Adopted in 1999, “The concept of scientific-technical and innovative development of Ukraine” played a very important role, too [10]. According to “The Concept” the basic principles and priorities, mechanisms for accelerating scientific and technical policy of Ukraine have been formed. The basic legal document is the Law of Ukraine ‘On innovation activity”, according to which entities of all forms of ownership in Ukraine implementing innovative projects and enterprises with innovation status have the right to state support. The Law of Ukraine “On investment activity”, which was one of the first laws adopted in Ukraine, described the concept of innovation as a specific form of investment. The Law of Ukraine “On innovation activity priorities in Ukraine” defines the legal, economic and organizational principles for formation and implementation of priorities for innovation in the country. They would oblige the executive authorities at all levels to promote the activities aimed at their implementation, and the concentration of financial, economic and intellectual resources of the regions. The Law of Ukraine “On special investment and innovation procedures of technology parks” defines the legal and economic framework for the implementation and operation of special investment and innovation procedures for technology parks.
The second subgroup of regulatory and legislative acts is aimed at regulating internal economic relations (environmental safety of innovation, copyright protection and implementation of patent activity, regulation of foreign investment, certification, licensing, etc.): the Law of Ukraine “On scientific and technical activity”, “On the scientific and technical expertise”, “On state regulation of activities in technology transfer”, “On special investment and innovation procedures of technology parks” and other legislative acts aimed at supporting Ukraine’s economic development through innovation.

In 2009 the Strategy of innovative development of Ukraine for 2010-2020 in the context of global challenges was drawn up. Its mission is to identify, study and create new mechanisms for implementing state innovation and investment policy related to coordinated changes in all levels of the national innovation system, designed to radically increase its impact on economic and social development by creating favorable conditions and improving the sustainability of domestic economy to external pressure caused by globalization and neo-liberalization of economic life [11].

Taking into consideration peculiarities of investment and innovative processes in Ukraine’s regions, basic objectives of innovation strategies include the following [23]:

- creation of scientific, technical and institutional prerequisites for radical technological upgrading of economy;
- using of credit and investment mechanisms to encourage the development of high-tech sectors of economy; the establishment of industries that implement technological modes V and VI; share increase of modern high-tech products that can compete in local and global markets of goods, services, technologies;
- operation of regional innovation infrastructure facilities, such as science parks, technology/innovation transfer centers clusters, together with priority sectors of economy, the policy of attracting foreign and domestic investment in cluster formation;
- cooperation programs with the World Bank, the European Bank for Reconstruction and Development and other international financial institutions to attract funds for a quality upgrade of economic framework and the policy of regional development;
- creating conditions for cooperation between local participants of innovation process; attract domestic investors, risk-sharing between the participants of innovative programs;
- creating departments for economic development in regional (local) administrations.

According to the author, implementation of the following strategies will contribute to the Economic Development of Areas, depending on the type of investment and innovation development in a group of regions.

1. **Strategy of “increasing” (high level of investment attraction)** is a set of long-term measures aimed at ensuring a gradual increase in potential investment and innovation development based on high technologies; production of new competitive products; using its own scientific and technical and industrial and technological potential; obtaining foreign experience; implementation of new scientific and industrial policy; creation of R&D centers; using the contract system for hiring experts in science and technology.

2. **Strategy of “increasing” (average investment attraction)**:
- concentrating resources for the development of fundamental and applied researches and development; development of high-tech industries with significant export potential (aircraft, machine-tool construction, electronic, medical and printing industries);
- increase in production of consumer goods of high technical complexity;
- meeting domestic effective demand in advanced information services;
- zooming in and expansion of advanced technologies in the middle and final stages of the technological cycle;
- widespread use of recycling and involvement in the production of industrial, construction and household waste;
- rapid formation of innovative infrastructure attracting industrial, banking and commercial capital – a combination of “education-science-production” stages.

3. **Strategy of “transfer” (mainly medium or low level of investments)**: implementation of organizational and economic measures aimed at development of production of new generations which is in demand abroad by purchasing licenses for highly advanced technologies, followed by the creation and development of its own scientific-technological and industrial potential. The strategy consists of the following areas: production development, compensating torn technological chain and creating required closed production cycles in the economy of regions; growth of competitive products due to technical upgrading of production facilities; creating new high-tech jobs in engineering, metal processing, machine-tools construction, instruments manufacture and medical sector; increasing integration of science, education and production, improving the quality of trainings in high-tech areas.

4. **Strategy of “borrowing” (low level of investment attraction)**:
   - production of high-tech products previously produced in developed countries, by using its own innovative capacity of the region;
   - rational combination of entrepreneurial and public sector;
   - increase in output of high-tech competitive products.

The modernization of the economic structure of regions on the basis of innovation is possible under the following conditions: accelerated development of regional mechanisms to support scientific and technological activity and innovation reallocation of labor; improving the sectoral structure of industrial production through the development of high technology, environmentally friendly production; technical re-equipment of enterprises of light, food and processing industry; development of production based on its own raw materials using low-waste high technologies.

**Summing up, we should note the following:**

1. Investment environment and innovative potential identify areas of using own or borrowed resources. A key issue is a study of using innovation as a means of
economic development, state regulation and support of innovative processes, justification and appropriate strategies to achieve this goal, method of implementation and financial support.

2. State support through direct financing causes essential budget constraints and is not consistent with innovation priorities. The fact of detachment of financial sector from servicing long-term investment production needs, the existing finance mechanism, which is dominated by self-financing, reduction of external sources of attracting funds, providing mining, low- and medium-technology industries with significant funds, put brakes on existing technological structure of the economy, progressive structural changes, which determines the need to improve mechanisms for funding science, technology and innovation activities.

3. One of important levers to provide economic transformation of Ukraine is an interaction with the European Union economy, the development of beneficial directions of Ukraine’s integration into the production space of the EU [12, 14], and that is: partnership to establish processing plants in Ukraine for to supply the finished product which is of high demand on the world market; integration into the value-added chain in the EU through the supply of spare parts and accessories; development of priority sectors of the industrial sector, high technology sector, such as agricultural machinery, transport engineering, energy and aerospace systems, IT. These branches will contribute to the growth of industry and the national economy of Ukraine.

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