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THE STRATEGY FOR ECONOMIC STRUCTURAL REFORMS AND INNOVATION DEVELOPMENT OF UKRAINE

The economic, scientific, technological, and innovative status of Ukraine and the government policy in this area have been analyzed from the standpoint of scientific, technological, competitive gap and technology (innovation) negotiability. A strategy to create a new diversified innovative economy through scientific and technological transfer from international companies which are the world technological leaders has been proposed.

Key words: transfer, competitive gap, diversification, priority, novation, investment, and strategy.

I. SUBSTANTIATION OF STRUCTURAL AND INNOVATION STRATEGY

The innovativeness of economy as an indicator of technology (innovation) negotiability is a framework for modern economic and social development that guarantees competitive advantage and rise in living standards.

Today, two types of development are distinguished:

1) Advance as a result of long-term personal and collective development (the European countries, the United States);

2) Advance as a result of overall transfer of technologies, socio-political and economic development models from donor to recipient countries (Japan, South Korea, Turkey, China, etc.) in various forms. The success of these countries is supported by the fact that they have finally joined the world market and are developing simultaneously and jointly with other advanced countries.

1. Ukrainian Retrospective

The Russian Empire, the Soviet Union (and Ukraine as a constituent thereof) always were recipients and received the development pulses from the donors, i.e. Western countries. Starting with the times of Peter I, the social development of country in the military, administrative, cultural, and scientific fields was patterned in accordance with European models. From the second half of the 19th century till 1914, foreign capital originated from developed Western countries had the share of about 70% of industrial capacity of the Russian Empire. In the 1920s–1930s, the USSR industrialization was implemented thanks to the leading role and international mediation of *Albert Kahn* design office (USA) which operated under the brand of *Gosproektstroi*. During this period, new industrial potential of the Soviet Union was established by Western companies and engineering experts (Europe and USA). When the USSR incurred enormous economic, property, and human losses in the World War II, its economy was

reconstructed thanks to the reparations imposed on Germany and its allies. These reparations implied exporting from these countries to the USSR advanced manufacturing facilities, products, technical documentation, and specialists. This transfer of industrial experience and potential boosted a rapid growth in the Soviet economy, in the 1950s–1960s, and gave a false confidence in the socialist system as advantageous one. However, the socialist system with centralized management made it impossible to develop this potential effectively. This led to economic stagnation, caused a research and technological gap between the Soviet Union and the advanced economies in the civilian sector (insofar as unlike European countries, Afghanistan could not be a donor in the field of science and technology), hampered the development, adversely affected competitiveness of the closed Soviet economy, and was the main reason for the collapse of socialism in the Soviet Union and of the Soviet Union itself, in 1991.

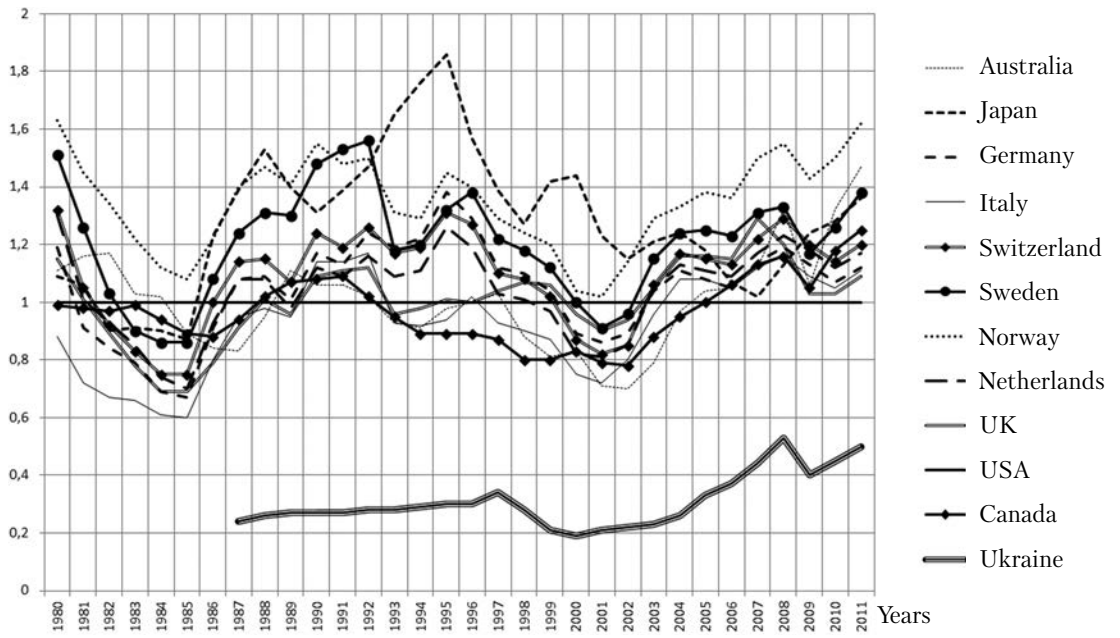
So, over the past centuries (at least, since the European Renaissance and the Industrial Revolution in Europe) the Russian Empire and the Soviet Union were cultural and technological recipients, with almost entire domestic intellectual product being based on Church Slavonic (old Bulgarian) language. Both the Russian Empire and the Soviet Union are an example of inconsistent and incomplete modernization reforms. These inconsistency and incompleteness did not allow them to gain a foothold in the developed world, led to the periods of self-isolation to overcome which the country paid extraordinary efforts and suffered from enormous losses or having failed to do this, collapsed. Any reference to the experience of independent industrial development of the USSR as an example to be followed by Ukraine is incorrect insofar as in the USSR there was no independent industrial development.

2. Ukraine. Period of Independence

Ukraine inherited from the Soviet Union a specific social mentality, a scientific and technological gap, an outdated manufacturing sector, an underdeveloped consumer sector, and an economic management system based on centralized planning and assignment of tasks and resources, and, consequently, completely excluded the market targeting from management at micro level. So, in addition to scientific and technological gap, Ukraine inherited a management gap as well. That is why, under market conditions, the majority of enterprises failed not only to develop new goals in the market in terms of self-organization and self-development, but also to maintain the established industrial cooperation, either. The scientific, technological, and management gaps constitute a competitive gap that leaves the Ukrainian enterprises trailing far behind the international companies from advanced economic world. This confirms the thesis that in the market conditions, the economy sustainable development is possible either after long-term individual evolution or thanks to transfer of modern technologies and management culture from advanced economies.

In the 1990s, the enterprises and industries survived due to relatively simple production of semi-products with minimal cooperation and foreign sales markets for standard goods, as the Ukrainian export was based on steel, metallurgical, and chemical products. Despite the moral and physical deterioration of industries they were competitive thanks to low wage as compared with other countries and undervalued national currency. These industries were the pillars of the whole Ukrainian economy, inasmuch as high-tech enterprises and industries with complex cooperation were underdogs, as a result of competition or management failure, or even were lost. For these reasons, the Ukrainian economy was largely deindustrialized and even less diversified than in the USSR, with Ukraine's real GDP drastically falling by almost 60%, in 1990–1999. Export is the face of any economy.

Although, in the 2000s, there was reported a restorative growth of Ukrainian economy caused by a rise in world prices for Ukrainian exports and underestimated exchange rate, because of competitive gap Ukraine did manage neither to overcome



Note: according to the WB data

Fig. 1. Relative deviation of PPP from nominal exchange rate; nominal exchange rate is 1

the economic consequences of 1990s nor to recover lost industries nor to create new modern sectors. The economy deindustrialization and the lack of diversification imply that the development and consumption in the country are driven by import instead of domestic production and entail intensified demand for it. Consequently, the hryvnia exchange rate is 2-3 times weaker than purchasing power parity (PPP) (see Fig. 1).

According to the State Statistics Service of Ukraine, in 2000, the ratio of imports to GDP accounted for 58%, while in 2010, it made up 53%. Import is based on FX revenues from undiversified export generated by undiversified economy. Because of critical dependence on foreign economic activities Ukraine is particularly vulnerable to external economic crises which entail a slump in exports, industrial output, GDP, and imports, the hryvnia devaluation, and, finally, a further drop in living standards which are low, as it is. The hryvnia rate is the most important indicator of the socio-economic situation in Ukraine, because it shows how many times the country has to overpay for necessary imports. Deviation of the hryvnia nominal exchange rate from PPP implies Ukraine's low socio-economic status in terms of import consumption, as compared with the advanced economies, and wage difference between the export and the domestic sectors (see Fig. 1). Exchange rate regulation is a key tool for macroeconomic management of undiversified economies. However, having been misused it led to artificial crises of 1998–1999, 2008, and 2012–2013, which revealed the same problems in the economic management at both the macro and the micro levels. So, Ukraine reaps the consequences of its deindustrialized, undiversified, and undeveloped economy.

Deindustrialization of Ukrainian economy has led to low industrial output, GDP, and income per capita; high unemployment; and relatively poor social status. According to the World Bank data, in 2010, Ukraine's GDP per capita in terms of PPP was about USD 6 720. It could be an indicator of population's poverty as compared with advanced economies (Sweden: USD 47 198; USA:

USD 39 029; Germany: USD 37 260; UK: USD 35 904; France USD 33 820; Japan: USD 33 753; and China: USD 7 600). In Ukraine, given the labor migration, the unemployment rate reaches about 30% of the working-age population. It should be noted that the total population dropped from 52 million to 45.7 million, within the period from 1991 to 2011.

The undiversified Ukraine's economy (as a result of narrow specialization) cannot provide the country with modern range of consumption goods manufactured by its own production facilities, devaluates the national currency, and leads to rise in prices for necessary imports (Fig. 1).

Therefore, the main socio-economic problem of Ukraine is poverty generated by deindustrialized, undiversified, and technologically backward economy. Insofar as potential for its growth has been exhausted, the main resource for its development is its diversification at today's competitive technological level, which, actually, means the creation of new economy.

3. The Current Government Policy in the Sphere of Economic Structure and Innovation

Both the scientific community and the state legislative and executive power of Ukraine never argued the statement that further socio-economic development should be driven by active implementation of scientific and technological achievements in production, consumption, and innovative activities. However, they never discussed in a comprehensive and serious manner the economy diversification and other related reforms. This fact testifies to the lack of a clear structural policy as such. The last legislative act related to this subject is the Law of Ukraine no. 5205 of 06.09.2012 on stimulation of investments in priority sectors of the economy to create new jobs. Like the previous government program of industrial development for 2003—2011 approved by the Resolution of the Cabinet Ministers of Ukraine by no. 1174 on 28.07.2003 it defines the structural policy aimed at specializing by priorities, rather than at diversifying the Ukrainian economy. In government decisions at various levels the term «economic diversification» is mentioned in a mere declarative manner.

To encourage the innovative activity of enterprises the state was ready to create favorable conditions and to provide assistance up to the budget funding of R&D and innovative activities in accordance with approved list of priorities, given the limited budgetary resources. The priority list was based on sophisticated and contradictory views on the place of Ukraine in the international division of labor, specialization, development and use of its competitive advantages; on a mere desire to retain the existing scientific and industrial areas and the traditional key industries, which preserved the existing economic structure of Ukraine, *on the one hand*, and on the objective to get a new structure of the Ukrainian economy and to raise it to the level of post-industrial (information) society, *on the other hand*.

The priorities were implemented starting with the Resolution of the Verkhovna Rada of Ukraine of 16.10.1992 no.2705 on the priority directions of science and technology where all the priorities were divided into seven areas: 1) environmental protection, 2) health care, 3) agricultural production, 4) energy efficiency, 5) resource saving, 6) new materials, and 7) information technologies and ending with today's legislation on the development of science, technology, and innovation. Pursuant to the Laws of Ukraine no. 433 of 16.01.2003 and no. 3715 of 08.08.2011 on the priority directions of innovative activities in Ukraine, the Law of Ukraine no. 2519 of 09.09.2010 on amendments to the Law of Ukraine on the priority directions of science and technology and other acts the following 19 lines can be identified:

1) Fundamental research on the most important problems of research, technical, socio-economic, socio-political, and human potential which is necessary to ensure Ukraine's competitiveness and sustainable development of the society and the state;

2) Information and communication technologies;

3) Energy and energy efficiency;
4) Management of natural resources;
5) Life sciences, new technologies for prevention and treatment of the most widespread diseases;
6) New substances and materials;
7) Development of biotechnologies and genetic engineering;
8) Machinery and equipment;
9) Development of high-quality metallurgy;
10) Nanotechnology;
11) High-tech development of agriculture and processing industries;
12) Transport technologies;
13) Coal mining technologies and labor safety;
14) Oil and gas drilling equipment;
15) Welding technologies and related processes;
16) Public utilities and electronic appliances;
17) Laser technologies;
18) Robotics; and
19) Weapons and military equipment.

The Cabinet of Ministers of Ukraine which under the law defines the medium-term sectoral priorities of innovative activities itemizes the grid and cloud technologies as innovation priority requiring the budgetary support (Resolution no. 942 of 07.08.2011). Resolution no. 397 of 17.03.2012 establishes among the innovative priorities «the introduction of modern types of wires», «the replacement of obsolete electrical equipment by modern energy-saving facilities» and so on. Such a wide and itemized range of priorities contradicts the idea of priority lines making virtually all the directions eligible for the government support and elusive in terms of public funding. However, this record of innovations gives the statistical data on a growth in the share of innovation-oriented corporations from 8.2%, in 2005, to 13.6%, in 2012, according to the State Statistics Service of Ukraine or on an absolute increase in the number of implemented processes and products or a rise in budget financing of innovations, which reaches UAH 224.3 million, in 2012, and is extremely poor and disproportionate to the needs of Ukraine.

However, actually, the innovative activities in the Ukrainian economy stagnate. The main criterion of innovativeness is the presence or absence of new product (technology) in the market. The main indicators of innovative activities (innovativeness of economy) are as follows:

a) Technology (innovation) negotiability which shows the rate of technological modernization of industrial production facilities (economy) by innovations within one year (%, coefficient); it is an equivalent of the share of sold innovative products in the total industrial output (used by State Statistics of Ukraine and Eurostat (Fig. 2));

b) Average duration of technology turnover (full technological upgrade of industrial production); inverse to technology negotiability (Fig. 3).

By these indexes Ukraine is significantly behind the advanced economies, with the gap continuing to increase. They point to a slowdown in technological renewal of Ukrainian economy, as technological negotiability decreases, while duration of turnover increases.

In addition, it is difficult to compare the innovativeness of Ukrainian products with that of products made in developed countries, since the Ukrainian products composed of imported components can be conventionally referred to the innovative ones. In fact, enterprises deal with modification of imported goods instead of creating the innovation. Therefore, the statistical innovativeness of Ukrainian products is rather conventional. In 2007—2013, Ukraine was rated from 60th to 79th in the global innovation indices published by Cornell University (USA) and the World Intellectual Property Organization (UN).

This situation raises a deep concern. The concept of national innovation systems approved by Resolution of the Cabinet of Ministers of Ukraine no. 680 of 17.06.2009 describes numerous deficiencies and evidences of inefficient use of innovative potential and identifies the main cause of dangerous trend in technological development gap between Ukraine and advanced economies, which is the imbalance of subsystems of innovative system: government regulation, education, activities of research institutions, innovative infrastructure, producers and consumers of new products. To over-

come the existing problems they should be well-balanced and improved. The concept of reform of government policy in the field of innovations approved by Resolution of the Cabinet of Ministers of Ukraine no. 691 of 10.09.2012 contains a statement that the majority of businesses is technologically backward and energy-intensive. In fact, the above mentioned concepts state the refusal of enterprises from innovative activities based on their own innovation potential, which is equivalent to failure of innovation policy and its principle of independent innovation development based on the priorities. Despite to the fact that the Ukrainian law provides for foreign direct investment, the current investment climate in the country does not attract the investors. Instead of analyzing the reasons for this situation the concepts offer to improve everything. Therefore, the existing scientific, technological, managerial, and competitive gaps underlying the problems and entailing the inevitable consequences of economic and innovation development remain beyond the scope of discussion. These gaps can be considered within the framework of technology (innovation) turnover model.

1. The competitive gap is based on:

a) The gap in scientific knowledge, research and resource base;

b) The gap in technologies and qualified staff;

c) The gap in management of present-day innovative process and every its component.

The present-day innovative activities are inextricably linked with management culture and consumer confidence in innovator manufacturer and in brand, with the latter being as important as the other factors.

The existing scientific, technological, managerial, and competitive gaps allow the Ukrainian enterprises neither to rely on their own R&D potential, nor to master licensed techniques for industrial use (to raise efficiency and productivity) and for the creation of new consumer products, nor to compete with global technology leaders both in the domestic and in the foreign markets.

2. The comparative technology (innovation) turnover model demonstrates how the scientific,

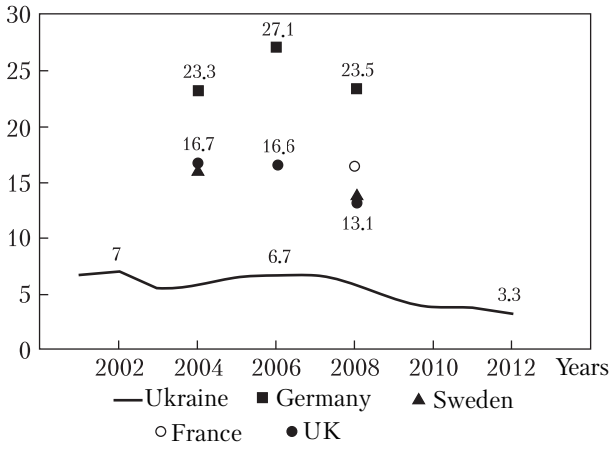


Fig. 2. Technology negotiability (%)

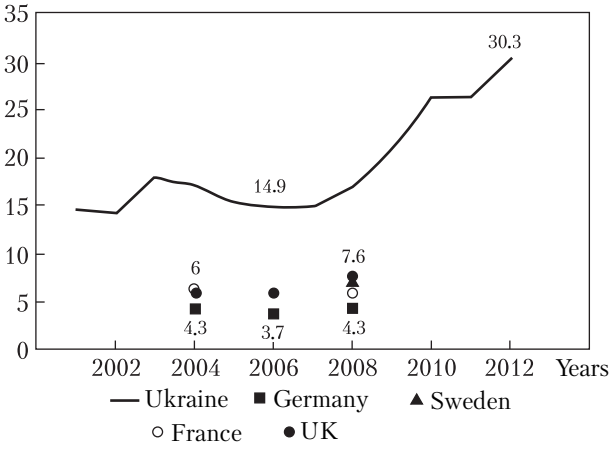


Fig. 3. Average duration of technology turnover (years)

technological, and competitive gaps between Ukraine and advanced economies increase with each generation of technologies or fundamental and revolutionary innovations (Figs. 2, 3). For the period of one technology revolution in Ukraine (15—30 years) the advanced economies have 3—4 technology generations (each lasts 4—7 years) and enhance their competitiveness 3—4 times. The market requires from the corporations the continuous cyclic development of technology, which takes place synchronously with competitors or proactively, rather than the single innovation. Otherwise, any innovation appears to be useless and having a short-time effect. As a result of scientific, techno-

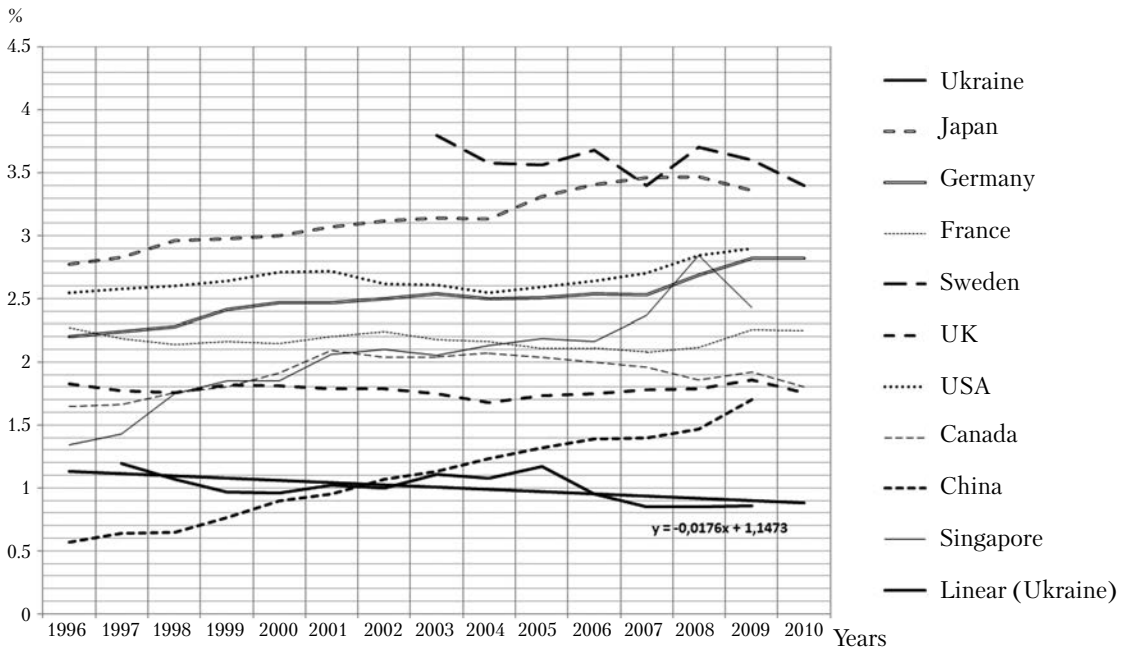
logical, and competitive gaps the Ukrainian enterprises have a low innovation potential which allows them neither to create and to develop their own innovative products in competitive environment, nor to ensure continuity, quality, and appropriate pace of innovations. This difference in the rate and intensity of technology turnover is a crucial factor of the scientific, technological, and competitive gaps. Under these conditions, in Ukraine, these gaps are progressive and irreducible. No wonder, Ukraine is among the outsiders (around 90th place) in the global competitiveness ranking of the World Economic Forum. Therefore, the Ukrainian enterprises refuse to deal with innovations considering them useless and pointless, as reported in the above mentioned concept of innovation development of Ukraine. Accordingly, one can predict further deterioration of their innovative activity indices. This entails a fall in the R&D expenditure to GDP ratio and its downward trend in Ukraine contrary to stable or even upward trends in advanced economies (Fig. 4). Hence, in Ukraine, under conditions of competitive gap, the negative innovative expectations determine the amount of R&D expenditure, whereas in the advance economies, the latter predefines technology (innovation) negotiability.

As a result of the above said reasons, Ukraine's industries lose chance for survival and disappear, with the economy getting deindustrialized and undiversified. The knowledge-intensive industries oriented towards competitive markets and requiring high technology negotiability are the first to suffer, while the technologically conservative sectors such as energy, chemical, and metallurgical industries, die away among the last ones, as a result of their physical wear and tear.

3. Technology negotiability not only provides new scientific and technological capabilities to meet the current needs of society, but also opens up new opportunities for new technological needs thereby diversifying, expanding, and changing the quality of consumption. Therefore, the greater is the technology gap between Ukraine and the advanced economies, the less diversified is its economy, the poorer is the consumption as compared with the technologically developed countries, and the larger is the value of import and its unaffordability. Due to fundamental innovation, accumulation of qualitative changes in production and consumption the technology negotiability stimulates the use of new scientific and technological principles and effects, raises the efficiency of production and consumption, and improves the quality of social reforms. The technological gap between the economic systems makes impossible their long-term coexistence in competitive environment and ends with disappearance of the old structure, as well as with economic and social disaster. This explains the deindustrialization and social decline in Ukraine in the 1990s, when its economy was forced to compete with technologically advanced systems. So, technology negotiability and innovativeness are necessary conditions for the existence and development of every economy in the competitive environment.

4. The scientific, technological, managerial, and competitive gaps appear provided there are significant differences between the countries in the technology (innovation) negotiability, when high-speed economies rapidly pull ahead and become inaccessible for the low-speed ones, with disastrous consequences for the latter. The driving forces for escalating the technology negotiability are market competition and initiative. The USSR scientific and technological backwardness was caused by centralized economic system where competition was associated with inefficient use of resources. Having received, in the 1920s–1940s, the technological mode of the fourth level from developed western countries, the Soviet Union could not develop it to the fifth level, came off an economical and ideological looser and ceased to exist. The post-Soviet countries are still at the fourth level of technological mode and doomed to further degradation for being unable to overcome the competitive gap and for neglecting research and technology transfer from developed countries.

5. The R&D funding from proprietary funds of Ukrainian enterprises or other sources cannot re-



Note: according to the UNESCO data

Fig. 4. R&D expenditure to GDP ratio

place the skills of systematical implementation of research results, creation of industrial and technological base, and managerial evolution, which can be gained in the course of technology turnover in competitive environment. It can neither ensure the innovation success in the market, nor raise the corporation from the fourth to the fifth or sixth level of technological mode. The latter is as impossible as to jump from the Middle Age to the modern technological era with the help of gold only. Sophistication is achieved either by a long period of industrial evolution and technology negotiability (European countries, USA) or by scientific, technological, and managerial transfer from developed countries to eliminate the scientific and technological gap. The first way is affordable only for the advanced economies, while the second one is the only hole to creep out for the other countries. Hence, the lack of success in Ukraine's innovative development on the basis of its own potential and priority system is explainable.

Thus, the technology (innovation) negotiability model explains how the competitive gap is formed and why the backward economy cannot compete and catch up the advanced one, degrades, and dies away. Due to long-term, intensive, and successful innovation activities in the market the global leaders in the field of technology have gained a competitive advantage over the post-Soviet enterprises. The latter cannot overcome this competitive gap on its own. Hence, to build an innovative economy it is necessary to rely on the world leaders, the international corporations, not on the post-Soviet enterprises.

4. International Corporations as a Modern Means of Production and Technology Transfer in Ukraine

Large research industrial complexes are the main framework for innovative activities in the world. They concentrate significant scientific, research, technological, operational, financial, and human potential. Their desire to use the opportunities of globalization and the benefits of different countries refers them to international business.

Their share in the world industrial output accounts for about 50% of production and 70% of world trade. The international corporations are the only entities of innovative and productive activities, which fulfill a complex of tasks required for the continuous development. This complex includes the following assignments:

- To define and to achieve objectives, to realize a self-development in competitive environment;
- To form a complete innovative production cycle, from R&D to large-scale production, distribution, and disposal of used products of any complexity;
- To integrate and to cooperate in the sphere of innovative activities, to prepare innovative products for large-scale production;
- To overcome and to create technological gaps, to use the technological and managerial innovations as tools for modern economic competition and development;
- To improve continuously the quality of consumption in the markets;
- To ensure production and structural development, to increase efficiency and sales of commodity products in the markets, to develop international logistics;
- To develop human resources (industrial, technical, and managerial culture);
- To be comprehensively engaged in international activities providing global opportunities.

The international corporations have proved their leadership in competitive environment due to their scientific, technological, and managerial advantages. To overcome and to create the competitive gaps they consolidate their advantages in the market making strategic alliances, such *Ford-Mazda, Volkswagen-Suzuki, Volkswagen-Bentley, Volkswagen-Porsche, Renault-Nissan, Daimler-Chrysler, etc. (mechanic engineering); Sony-Philips, Sony-Ericsson, Toshiba-Samsung, Sony-Samsung,* and so on (information technology). Sometimes, such alliances and international corporations experience market failures (*Nokia*) and even crash (*Kodak*). These facts emphasize how high-innovative business should be to survive in the market today.

Because of competitive gap Ukraine feels the lack of proper performers of innovative activities. So, the only possible way to get into the circle of developed countries and to synchronize with them the development and technology negotiability is to use the globalization opportunities for diversifying the economy of Ukraine on the basis of scientific, technological, and managerial transfers from advanced economies (international corporations).

5. Requirements for Structural and Innovative Strategies

The requirements for structural and innovative strategy (hereinafter referred to as «the Strategy») are derived from the analysis of problems and alternative solutions. The main problems of Ukraine in the context of the Strategy are as follows:

1) Deindustrialization and lack of diversification of the economy. They prevent the country from creating an industrial and technological framework for future innovation development and from reaching high social standards;

2) Competitive gap between the advanced economies and the post-Soviet Ukraine, which consists of scientific, technological, and managerial gaps at the micro level, and the incapability of Ukrainian enterprises to overcome it;

3) Inadequate and inefficient government structural and innovative policies aimed at preserving the existing undiversified economic structure. They offer to overcome the competitive gap with the help of financial support granted on the basis of priority system to those who are incapable of doing so, i.e. the Ukrainian enterprises; Disregard of international corporations as a means of scientific, technological, and managerial transfer and synchronization of Ukraine's economy with the advanced economies;

4) Separation of the government innovative and structural policies from each other; separation of the innovation development from the overall socio-economic development; disregard of structural reforms and economic diversification as framework for innovation development.

The government policy should be modified immediately insofar it does not meet the needs and potential of the country and, therefore, is improper and ineffective.

In addition, the problems for which alternative solutions should be selected have been identified:

- Content of structural policy in the economy: specialization (priorities) or diversification?
- The ratio of structural policy to innovative policy: should they be separate or united?
- Ways and means of development: to use the capacity of Ukrainian enterprises or to transfer the scientific, technological, and managerial capacity from developed countries (international corporations)? These questions must be answered as the requirements for strategy to achieve its consistency.

The requirements for the Strategy are as follows:

1. Requirements for the economic structure. Basically, the main factor for choosing the appropriate economic structure of the country is demographic factor: the number of population and the level of its education. Under the current level of productive force development Switzerland (the population of 7 million), Norway (4.9 million), or Finland (5.4 million) cannot have a diversified economy and focus their efforts only on special areas. However, the high technological level of industrial development, competitive advantage, and international economic cooperation allow them to have large GDP per capita and high living standards. At the same time, Sweden with a population of 10 million can have a diversified economy. The 46-million Ukraine could have even more diversified economy especially in the view of its human potential and natural resources. Instead, Ukraine has an undiversified economy that does not meet the social needs of the country and wastes its potential. The government policy of innovation development based on the system of priorities has the following disadvantages and deficiencies:

- Aggravation of disparities caused by hypertrophied specialization which cannot meet the current needs of consumption and employment, but produces excessive products that cannot be utilized in domestic industry and exported (steel products, about 80%);
- Vulnerability of consumer sector which depends on external conditions for undiversified exports, imports, and the hryvnia undervalued rate;
- Decline and disappearance of industries not included in the list of priorities, as a result of competitive gap, de-diversification, and deindustrialization of the economy;
- Limited escalation of production capacity in the priority areas as a result of specific distribution of productive forces;
- Priorities as management category mean choosing among the achievable goals those for which resources can be allocated under the conditions of the shortage of resources; the competitive gap and the difference in technological modes make these goals and priorities theoretically and practically inaccessible because of the lack of appropriate scientific, technical, and industrial framework;
- The Ukrainian enterprises operating at the advanced scientific and technological level do not suffer from the competitive gap and, therefore, do not need any priority support.

Specialization is improper target for Ukraine's economy. The system of priorities is inappropriate and impossible way to achieve it. To meet the needs and potential of Ukraine it is necessary to industrialize and to diversify the economy, with the priorities meaning a mere order of precedence, sequence. The economic and structural reforms should be aimed at restructuring the economy in favor of diversification which is a form of industrialization. One more necessary quality for Ukraine's economy is innovativeness as the key to competitiveness and sustainable development. It is impossible to have separate, unrelated structural and innovative policies. Without innovation there is no modern industry and without industry in its broadest sense there is no application of innovations. So, in Ukraine, the structural re-

form, the economic diversification, and the innovation development should be an inseparable constituents and purpose of the strategy implementation.

2. The objective of strategy as a form of the implementation of government and innovation industrial policy is the creation of innovative, new, modern diversified economy capable of developing synchronously with the developed world and creating the social conditions for life and development of people. The scientific and technological development not only creates the social and economic conditions in the country, but also depends on them, and therefore must be considered in close connection with the economic development. Low social status leads to low social mobility and brain exodus and undermines the innovation potential.

3. The task of structural policy is to diversify the economy, to create the scientific, technological, competitive conditions, and to stimulate innovation development. The task of innovative policy is to ensure the continuous innovation development of diversified economy for raising its effectiveness.

4. Methods and means of the Strategy. While experiencing the competitive gap, when in the advanced world life-cycle technology decreases and technology negotiability increases, Ukraine cannot rely on independent, separate technological development as a proper way to improve the situation. This way will lead to aggravation of the technological and socio-economic gap between Ukraine and the external world. The policy of independent structural and innovative development failed, with the indicators worsening every year. Hence, this is time to give a chance to another method, the technology transfer, and to synchronize its technological and socio-economic development with the rest of the developed world utilizing the innovative experience and capacity of the world technological leaders and to use global technological diffusion. Thanks to their international character the international corporations are proper executives of science and technology transfer from the advanced economies to Ukraine. The success of the newly industrialized countries that received such transfers from the advanced economies was secured by the fact that they merged, integrated into the world market. Now, they are developing simultaneously and in conjunction with other developed countries. The same tasks must be set for Ukraine.

5. The country's needs, purpose, objectives, methods, and means are well-balanced.

6. The diversification of the economy and the settlement of the social problems will facilitate the political stabilization in Ukraine.

7. The strategy has the following features:

- Indefinite duration (because of poor initial framework and considerable amount of required resources);
- No detailed long-term planning of all the activities because of uncertain macroeconomic situation and mega-economic environment;
- The nature of novation processes is continuous and endless (the strategy should be valid until the goals are revised);
- Strategy can be the basis for economic and social reforms, public governance, and structural development of innovative economy;
- Provisions and content of the Strategy are preliminary (should be amended and revised in the course of its implementation).

II. STAGES OF STRATEGY FOR STRUCTURAL REFORMS IN THE ECONOMY AND INNOVATION DEVELOPMENT OF UKRAINE

The strategy has important principles on the basis of which it is implemented:

1. The principle of priority of the vertical diversification over the horizontal diversification:

- Horizontal diversification: IC creates production facilities for manufacturing the finished products of final consumption (for the households), including food;
- Vertical diversification (localization): IC creates production facilities for manufacturing the intermediate products for industrial purpose

(capital goods, components, semi-finished materials), as well as for the use in production of finished consumer goods, mining and processing industries (intermediate companies) and, in fact, the maximum localization of consumer product manufacture.

Overall, the Strategy implies the priority of the horizontal diversification over the vertical one as reasonable consistency in the organization of ordered diversification for the following reasons:

- In Ukraine, the priority of consumer (finished) goods manufacture will give the fastest consumer and social effect of import substitution;
- The horizontal diversification will allow Ukraine to create only those intermediate companies whose products are required for the manufacture of finished consumer products and to accurately estimate their capacity given the real needs in order to avoid the creation of unnecessary intermediate industries;
- The horizontal diversification will make it possible to involve intermediate ICs (who are the main suppliers of ICs manufacturing the finished products) in the vertical diversification; to transfer their already-established cooperation at all the stages, from extraction and processing to manufacture of finished goods, to the Ukraine; and to encourage them to invest in Ukraine's economy.

The production of agricultural raw materials and food, as well as those industries as energy, construction, communications, and transport can be an exception to this priority approach. In addition, Ukraine should refrain from the creation of environmentally hazardous enterprises.

The horizontal diversification is realized during the first investment phase, whereas the vertical one is implemented during the second investment phase.

If necessary, the second investment stage in certain sectors may commence before the total completion of the first phase, since this sequence is logical rather than related to terms.

IC investment and innovative components: the *investment component* provides for industrialization, diversification, and creation of industrial enterprises as industrial and technological framework for future innovations; the *innovative component* ensures the further development of established industrial and technology framework and products.

The investment component precedes the innovation one, although the investment component by its content can be considered to be an innovation in the Ukrainian economy since it leads to the creation of new modern enterprises. The strategy envisages that the innovative activities at new IC enterprises can start immediately after the launch of these enterprises.

2. ***Funding of IC investment activities*** *(«purchase of investment»)* *and* ***innovative activities*** *(«purchase of innovation»)* ***by the Government of Ukraine***

Investment bonus is a means of motivation and encouragement of IC investment and production activities in Ukraine; the legitimate subsidy assistance is a means of facilitation and promotion of innovation-oriented activities. To implement this principle, the Cabinet of Ministers of Ukraine and the National Bank of Ukraine created a special fund for structural economic reforms and innovation development of Ukraine (hereinafter referred to as «the special fund») in a way similar to the creation of sovereign wealth funds. The special fund is also used to finance the implementation of infrastructure projects and the personnel training by foreign experts. The sources for fund raising are the foreign exchange reserves and NBU monetary issues for buying foreign currency in the market. The amount of such issue is set as annual limit of the Special Fund (5—10% of the monetary aggregate M2 annually or on the basis of parity of credit issue and FX issue in the structure of their circulation, or on the basis of other principles and is subject to substantiation by the NBU in order to comply with the requirements of rational structure of monetary transmission and to maintain the financial system stability (according to the NBU data, as of May 2013, M2 = = UAH 819 billion, the hryvnia exchange rate is UAH 8.05 per USD 1). This money supply will be

backed by additional products manufactured by IC enterprises in Ukraine.

The Special Fund may be a financial basis for socio-economic model of Ukraine and for the management of social and economic development by identifying and formalizing:

- Conditions for paying salary at new IC enterprises; general level of income in the country; budgeting and formation of social funds;
- Domestic demand and consumption, production development.

Special funds exist in addition to and independently from the budget and other sources of funding for science, education, innovation, and investment purposes. The IC innovative activities can be financed from the Special Fund on both repayable and irrevocable but interest-free bases. Funds granted to the IC on a repayable basis should be transferred to the state budget of Ukraine and be directed towards repaying the state debt of Ukraine, reducing the fiscal pressure on the Ukrainian economy, improving the business and investment climate in the country, and financing the education and fundamental science. The projects of research and technological development may be financed from the Special Fund in cooperation with foreign governments.

3. Principle of strategy cyclicality. It implies that in the future it is necessary to regularly revise the economic diversification in accordance with the global development and the diversification of consumption. The strategy is implemented in stages.

1. Preparatory phase (1 year)

1.1. Organizational stage. Formation of a regular Task Force under the Cabinet Ministers of Ukraine (TFCM) consisting of representatives of science, the Cabinet of Ministers, Verkhovna Rada of Ukraine, National Bank of Ukraine and the appointment of leading research institution.

The TFCM objectives include:

- Drafting of CMU decisions and laws for the strategy implementation;
- Monitoring of strategy implementation, adjustments.

The TFCM should be headed by Prime Minister or Vice Prime Minister of Ukraine.

The tasks of the leading research institution include:

- Provision of guidance for TFCM activities;
- Coordination of expert work and documentation of TFCM;
- Ideological support of strategy and its adjustment;
- Expert, analytical activities and negotiations.

1.2. Comparative analysis of Ukraine's economy structure in terms of the composition of household consumption basket PPP. For the purpose of horizontal diversification the goods (groups) whose share in imports for the last 2 years exceeded 50% are listed. The items from the list are divided among the IC manufacturers to build the horizontal diversification, with several options.

1.3. Negotiations with the ICs on their investment, production, and innovative activities in Ukraine; approval of suitable conditions with respect to following issues:

- Implementation of IC strategic plans in Ukraine;
- The range of IC goods and their scientific and technological level;
- Main suppliers of raw materials, components, and IC assets for future localization;
- Administrative assistance to IC activities;
- Preparation of technical infrastructure and training of personnel;
- Technical regulations;
- Customs regime of investment import;
- Government funding (subsidies) from the Special Fund for new IC manufacturing enterprises and their innovative activities;
- Tariff and exchange rate regulation;
- Terms and conditions for issuing loans to ICs;
- Further localization of IC production facilities in Ukraine;
- IC cooperation with Ukrainian companies, synchronization of their joint strategic development;
- Creation of IC research and innovation branches in Ukraine, implementation of innovative projects;

- IC scientific and technological cooperation with Ukrainian research and educational institutions;
- Intellectual property rights;
- Other important issues.

1.4. Assessment of IC technological level. Development of procedures for the selection of IC investors. When selecting the IC investors it is necessary to consider their strategic and innovation development plans, the level of process automation, innovation negotiability, etc.

1.5. Formalization of requirements for administrative, fiscal (including tariff regulation of foreign trade activities), education, and social reforms (including employment and pension), as well as for legal and technical regulations and so on.

1.6. Formalization of socio-economic model of Ukraine as a diversified innovative economy; formalization of social policy in education and science, labor and pensions, demography and health, environment and other fields; approval of the model by parliamentary political forces through signing a memorandum of economic and social reforms to ensure the long-term implementation of the model. Drafting of the Law of Ukraine on the national (government) program for structural economic reforms and innovation development of Ukraine. Drafting of legal acts.

2. Planning of horizontal diversification (not limited in time)

2.1. Planning of IC business location, labor and natural resources; planning of alignment and harmonization of economic development of regions, industrial clusters, industrial parks, industrial infrastructure and coordination with investors. Determination of priority (priorities) in the implementation of IC investment projects related to manufacture of finished goods.

2.2. The district and city administrations are appointed to be responsible for the implementation of IC investment and innovative projects under the current legislation of Ukraine.

3. The first investment phase, horizontal diversification (not limited in time)

3.1. Making agreements between the Cabinet of Ministers of Ukraine and the IC on the implementation of investment projects related to the manufacture of finished goods in Ukraine. The essential provisions should include the following:

- Information on newly incorporated company (product range, capacity, location) and development plans;
- Approximate date of commencement of construction (reconstruction), operation and attainment of project capacity;
- Amount of investment bonus to be paid from the Special Fund and procedure for payment by the Cabinet of Ministers of Ukraine;
- IC intentions concerning further localization of production;
- IC intentions concerning future innovative activities;
- Mutual undertakings of IC and the Government of Ukraine with respect to the project, the creation of technical infrastructure and the personnel training; terms of their fulfillment;
- Terms of investment import and import of components;
- Terms and conditions related to paying salary/wage at the IC enterprise;
- Settlement of disputes, arbitration, and conditions for transition from the foreign to the Ukrainian jurisdiction.

3.2. Budget planning and budgeting of Special Fund for the implementation of infrastructure projects and personnel training within the annual limit of the Special Fund.

3.3. Implementation of investment and infrastructure projects, personnel training, and monitoring. Analysis and adjustment of strategies. The amount of funding from the Special Fund as well as the budget funds allocated for the implementation of investment and infrastructure projects and personnel training will determine the pace of the strategy implementation.

4. Planning of vertical diversification, localization

4.1. Planning of cooperation (main suppliers to IC), list of intermediate ICs for vertical diversifi-

cation and coordination with ICs manufacturing the finished goods.

4.2. Negotiations with intermediate ICs (similar to paragraphs 1.3, 1.5, 2).

5. The second investment phase, vertical diversification (similar to paragraph 3)

6. IC innovative activities

6.1. Development of tender procedure for funding IC innovative projects from the Special Fund.

6.2. The final and interim ICs are encouraged to perform innovative activities in Ukraine by means of:

- Funding (legitimate subsidies) of incorporation in Ukraine of IC R&D and innovation branches;
- Funding (legitimate subsidies) of implementation of IC own strategic plans of innovation development;
- Placement with ICs of government orders for R&D and implementation of innovative projects (legitimate subsidies).

The funding is granted within the limit of the Special Fund, provided the work is carried out by Ukrainian and foreign units of IC, their Ukrainian and foreign partners and the innovative projects are implemented within the territory of Ukraine.

6.3. The intellectual property right (or share in it) created at the expense of funds from the Special Fund granted on a repayable basis should be subject to registration. The intellectual property is owned by IC, with the book value of government share in it being transferred to the state budget of Ukraine without interest accrued, in accordance with the agreement.

7. Determination of macroeconomic indicators to be monitored, comparison and evaluation of the strategy implementation

The key indicators are as follows:

- Deviation of the hryvnia exchange rate from PPP as an indicator of industrialization and economic diversification (target: the ratio of PPP to the hryvnia market exchange rate more than 1);
- Technology (innovation) negotiability at the IC Ukrainian enterprises as an indicator of the strategy efficiency (target: the technology negotiability is compared to the indicators of leading industries);
- Technology (innovation) negotiability as an indicator of economy's innovativeness (target: the technology negotiability is compared to that of advanced economies).

The additional indicators are as follows:

- Implementation of listed items for horizontal and vertical diversification;
- Upward dynamics of IC contribution in industrial output of Ukraine as an indicator of industrialization and diversification;
- Upward dynamics of Ukraine's GDP as an indicator of industrialization;
- Upward dynamics of GDP per capita in Ukraine as an indicator of industrialization;
- Share of imports in domestic consumption (ad hoc);
- Upward dynamics of employment rate, downward dynamics of unemployment rate (ad hoc);
- Upward dynamics of the level of localization of production (ad hoc);
- Upward dynamics of budget revenues and social funds (retirement, education, and science) (ad hoc);
- Downward dynamics of the public debt of Ukraine;
- Downward dynamics of the fiscal burden on the economy (ad hoc);
- Others.

8. Due to the creation of conditions for ICs **the Strategy is capable of ensuring unlimited continuous reproduction of diversification and innovation development** of the country in line with global R&D evolution, according to the principle of its cyclicality by means of regular monitoring and implementation of paragraph 1.2. Its implementation can lead to the formation of an international center for innovative activities, the center of gravity of innovators engaged in creating an advanced innovative economy. Under these conditions, the requirements for innovative

and R&D expertise of TFCM leading academic institution are formalized.

9. **During the implementation of the Strategy the conditions will be created** for adjusting the subsystems of innovative system in terms of their approximation to the actual IC innovative activities:

- The education system will receive benchmarks to determine the structure and quality of vocational training in line with IC cutting-edge technologies and manufacturing facilities, using the present-day professional standards;
- The research institutions and innovation infrastructure can be integrated into IC innovative activities;
- The diversification of Ukraine's economy and implementation of innovations will create new conditions for R&D activities. The growing revenue will ensure funding of fundamental science and will determine its future role. New financial, scientific, industrial, technological, and human capacity will allow the country to overcome scientific, technological, and competitive gaps and to create opportunities for the implementation of development priorities based on foresight research by placing government orders for R&D works and implementation of innovative projects at the highest international level.

10. **The present-day investment, innovative, and manufacturing activities** are sophisticated, costly, and time consuming process. In order to be successful it requires the fulfillment of undertakings by all its participants and the appropriate legal guarantees. Such activities are impossible unless Ukraine implements relevant administrative and judicial reforms which would provide these guarantees. Therefore, in order to protect the IC interests in Ukraine, until the appropriate changes in these areas are realized, it is advisable to use the jurisdiction proposed by ICs.

11. **The Strategy implementation leads to the creation of scientific and material resources** for the development of "society of knowledge" and ensures high social protection standards as basis for further comprehensive sustainable development.

Ю.П. Курза

СТРАТЕГИЯ СТРУКТУРНЫХ РЕФОРМ В ЭКОНОМИКЕ И НОВАЦИОННОГО РАЗВИТИЯ УКРАИНЫ

Проведен анализ экономического, научно-технологического, новационного статуса Украины и государственной политики в этих сферах с точки зрения научно-технологического, конкурентного разрыва и оборотности технологий (новаций). Предложена стратегия по созданию новой диверсифицированной новационной экономики путём научно-технологического трансфера силами международных компаний — мировых технологических лидеров.

Ключевые слова: трансфер, конкурентный разрыв, диверсификация, приоритет, новация, инвестиция, стратегия.

Ю.П. Курза

СТРАТЕГІЯ СТРУКТУРНИХ РЕФОРМ В ЕКОНОМІЦІ ТА НОВАЦІЙНОГО РОЗВИТКУ УКРАЇНИ

Проведено аналіз економічного, науково-технологічного, новаційного статусу України та державної політики в цих сферах з точки зору науково-технологічного, конкурентного розриву та оборотності технологій (новацій). Запропонована стратегія по створенню нової диверсифікованої новаційної економіки шляхом науково-технологічного трансферу силами міжнародних компаній — світових технологічних лідерів.

Ключові слова: трансфер, конкурентний розрив, диверсифікація, пріоритет, новація, інвестиція, стратегія.