JOURNAL
OF EUROPEAN ECONOMY
Vol. 2 (№ 3). September 2003
Publication of Ternopil Academy of National Economy

Macroeconomic innovation projects

Leonid BEZCHASNIY,
Viktor MEL'NYK

INNOVATION MODEL OF ECONOMIC DEVELOPMENT OF UKRAINE

Abstract

Conditions for implementation of objective laws of innovative economic growth in Ukraine are determined.

Key words:

Competitive advantages, economic growth, innovations, investments, macro- and micro-economic policy, national economy, structural and technological transformation of economy.

The GDP growth in Ukraine, established by national statistics since late 1999, became an integral part of triumphal reports of Ukrainian officials, who consider this growth to be the proof of soundness of the realized economic policy. Nevertheless, the victorious figures provide no cause for enthusiasm, as seen from experts' commentaries. It is not surprising, since it is absolutely im-

Bezchasniy Leonid, Corresponding Member of the NAS of Ukraine, Doctor of Economic Sciences, Institute of Economics of the NAS, Kyiv, Ukraine.
Mel'nyk Viktor, Senior Research Assistant, Candidate of Economic Sciences, Institute of Economics of the NAS of Ukraine, Kyiv, Ukraine.

possible to talk about economic growth without regards for quality and provision of progressive innovative changes.

Modern theory of economic growth allows us to formulate a number of postulates, which are critical for substantiating a concept of national economy formation oriented at innovative economic growth.

It is well known that a key factor of current economic growth is Scientific and Technological Advance (STA), the share of which in GDP of leading world countries, according to experts' estimations, is from 70% to 90%. Other important factors are the following: investments into «human» capital and production capacities, legal system development, stability of macro-economic and political environment, and low level of personal income differentiation.

Economic growth is irregular. Each fixed period of time is characterized by specific macro-generation, i. e. a complex of branches and institutes that constitutes dominant technological mode and serves as a basis of economic growth. The macrogeneration, which represents the fifth technological mode within industrial technological method of production, is dominant today in material and technological base of the most developed countries. At the same time, the elements of the new macrogeneration are being formed in these economies, which represent the sixth technological mode, which is in many ways transitional towards post-industrial technological method of production.

Current technological growth, which can be considered as innovative, is global in character and largely affected by competitiveness of specific national economies and their competitive advantages. The economies built upon the latest STA achievements create greater potential for economic growth. While dominating in the global economic environment, these countries can realize their comparative innovative advantages, in particular, through expropriation of scientific and technical quasi-rent. The countries with no access to basic technologies of dominant technological mode find themselves in dependent and economically disadvantageous situation, expressed in stable non-equivalent foreign economic exchange.

«Great Depressions», recurrently affecting world economy, stem from accumulation of structural disproportion and exhaustion of innovative potential of the macro-generation, that dominated on the preceding stage of economic growth. Such depressions are overcome through so-called «creative destruction» and modernization of existing institutional and technological structure of economy on the basis of innovation diffusion of technological mode that follows. These depressions are global in character. The countries able to avoid or overcome them faster than other countries acquire additional competitive advantages, incorporated into higher rates of economic growth.

Finally, each technological mode corresponds to a particular system of economic institutions and forms of industrial organization, which provide extensive reproduction of respective industrial and technological systems. The currently leading fifth technological mode is characterized by domination of global

financial and industrial groups, extensive use of state regulation instruments for foreign economic exchange, and STA stimulation.

The use of aforementioned basic postulates of economic growth theory accompanies by an analysis of Ukrainian economic realities allows us to substantiate new conceptual approaches. They are fundamentally different from the recipes suggested by the adherents of radical liberalism doctrine, which recently has been unsuccessfully applied in Ukraine. Naturally, in order to implement the recommendations covered below, economic policy should be changed in a qualitatively new way.

Specifically, a model of national economy, capable of providing a sustained innovation-based economic reproduction, should be formed.

The innovative economic growth under conditions of Ukrainian transitive economy requires solution to the tasks of creating technological, institutional, and organizational structures, capable of uniting all required components into a general reproduction frame for new technological mode development, as well as for creation of preconditions for a national economy's modernization and efficiency growth. Moreover, favorable macroeconomic environment must be created, and adequate behavioral motives and optimal micro-level organizational forms should be used.

Technological sphere in particular is facing the task of creating constituents of the new macro-generation, i. e. production and technological systems of the new technological mode, and their development along with modernization of related industries. Therefore, the following challenges must be met: *firstly,* to «grow» new highly competitive industrial and financial formations based on the cumulative scientific and industrial potential; *secondly*, to import necessary technologies; *thirdly,* to stimulate intensive diffusion of new technological industries; *fourthly,* to introduce a system of professional training; *fifthly,* to protect domestic product sales market from foreign expansion; *sixthly,* to ensure satisfactory (from the new technological mode viewpoint) parameters of economic mechanism.

Institutional sphere is facing the task of creating such an economic mechanism, which would ensure: *reallocation of resources from outdated nonprospective industries into industrial and technological systems of the new technological mode; concentration of resources in the points of its development; modernization of an economy in general, increase of its efficiency and competitive capacity through diffusion of new technologies.* Privatization, tax, financial, monetary, regulatory policies, as well as price and income policies must work to solve this problem.

Similar objectives should shape policy in the field of improvement of organizational and production structure of national economy. It is important to stimulate organizational and production formations, which would continuously and intensely reproduce their economic potential under conditions of severe in-

ternational competition, and ensure continuous increase of production efficiency on the basis of timely introduction of the most advanced technologies.

Macro-economic policy must create favorable conditions for meeting the above tasks, guarantee stability and normal investment and innovative climate, and support competitive capacity of national economy with adequate monetary and fiscal policies. In its turn, on a micro-level, accuracy and determination of property rights should be provided that in case of success would provide for increased responsibility in business management, orientation of entrepreneurial activity at higher production efficiency and advanced technological and managerial innovations.

In fact, the outlined range of tasks helps to formulate an approach to effective policy of national economic system creation oriented at innovative economic growth under Ukrainian conditions. The two integral components of the policy foresee creation of general macro- and micro-economic preconditions to production investment and innovative activities increase, on the one hand, and, specific measures of stimulating progressive structural changes on the basis of diffusion of the industries of the fifth technological production mode and enhancing development of basic innovations of the next technological mode, on the other hand.

In the current economic situation it is urgent to put the creation of favorable production conditions in the core of macro-economic policy. In order to meet this task it will be necessary to take the following steps:

First, to solve the problem of liquid resources deficit, specifically of circulating capital, and, as a result, to eradicate the payments crisis. Presently, these issues are viewed by national officials as unimportant and minor in comparison to hryvna stability support and non-deficit budget provision. However, the deficit of liquid resources and the payments crisis are major factors of production instability. Thereby, it would be reasonable to transform the policy of «expensive money» into the policy of «effective money». Here, it may be worthwhile to mention the «double currency» introduction during the NEP (new economic policy) period or Chile's reforms of the 1970–1980s.

Second, it would be expedient to transit from the policy of monetary base planning to the policy of interest rate targeting keeping the latter within the range of 3 to 7% per year in real terms. This is consistent with the practice of monetary policy in industrially developed countries and requires advanced technologies for monetary management to be applied.

Third, the policy of forced hryvnya devalorization curb should be transformed into the policy of its rate change in proportion to domestic inflation with orientation of ensuring national product competitiveness. Therefore, it is critical to enhance currency control, since the current currency regime in Ukraine is the «upside-down» of world experience.

Fourth, the tax system needs the most urgent reform with the rent-based taxation principle as its basis. Payments for real and large movable assets sat-

isfy two key criteria of effective taxing – fiscal and motivational. On the one hand, such taxing is practically unavoidable, and, on the other hand, it makes economic agent utilize available property with maximum efficacy.

Fifth, strict control should be set up over monopolists, specifically in pricing. This would foster lower inflation rates, lower costs, and elimination of price disparity.

Sixth, measures should be taken to protect domestic market, in particular: to create unacceptable environment for unfair foreign competition through customs duties and non-tariff restrictions; to set rigid controls over the quality of imported goods; to abolish any preferences for foreign capital; to introduce restrictions for foreign investments into vulnerable spheres in terms of national security.

Nevertheless, the creation of favorable macro-economic production conditions is not sufficient for starting the mechanism of economic growth. After quintuple fall of production investments, creation of speculative investment type, and depreciation of a sizable part of capital assets, additional steps are necessary to increase production investments. Specifically, they will presuppose: *first,* to limit securities issuance to investment purposes only; *second,* to establish financial institutions, which will provide accessible credit flows to industrial development; *third,* to create stimuli for financing innovations; *fourth,* to set control over the flow of corporate amortization costs and their purposeful investment use; *fifth,* to limit options for capital use outside the real sector; *sixth,* to intensify the role of the state in forming investment demand; *seventh,* to raise firm barriers against illegal outflow of national capital abroad, and to encourage its repatriation into Ukraine.

The given recommendations on normalization of macro-economic environment for production and investment activity in the existing conditions, when production is running under capacity, and quantity of demand has decreased, should be complemented with special measures directed at expanding aggregate demand. This is a critical condition for forming the key frame of positive feedback in market economic growth: «production-demand-investments-production» and «production-income-demand-production».

Currently, on the micro-economic level the major problem is still the lack of proper motivation system for effective property management. Particularly, formal change of owners as a result of privatization was not ensured by real economic liability mechanisms, which would encourage economic agents to increase economic efficacy and long-term sustainable business development. Therefore, a set of measures is required to regulate rights of ownership. It will be reasonable to make an inventory of privatization results both from the view of its legality and from the perspective of realization of liabilities stated in the state property purchase-sale agreements by the new owner. In case of infringement absence a reliable protection should be ensured for privatized property rights. Consequently, a rigid liability system should be set for ineffective public property management. Stricter norms of administrative responsibility should be imposed

from employed officials to shareholders, labor groups, and the state for the outcomes of corporate property utilization. Favorable conditions should be created for effective integration of financial, production, and intellectual capital by providing state support to Financial and Industrial Groups' (FIGs) development, thus ensuring their survival in the conditions of intense international competition, and directing the privatization of corporate shareholdings, which belong to the state, for creation of competitive economic structures. Besides, economic activity should be decriminalized based on strengthening state protection of property rights by increasing the effectiveness of judicial economic dispute settlements, and improving a regime of strong responsibility for carrying out contractual liabilities, credit recovering, etc.

Another specific question is related to current situation of financial insolvency at a number of companies. In this case the state can hardly do without special measures on selective sanitation. In this respect, in order to avoid economically inefficient solutions scientific, technological, industrial, and structural policies should be implemented. Selective state support of competitive enterprises should be concentrated on technological reconstruction or modernization on the basis of the new technological mode innovations. We will proceed from a likewise principle while considering a policy of economic complex organization improvement in general and its specific constituent related to «bringing up» competitive FIGs on the world market.

The other component of a national economic system oriented at innovative economic growth is a set of special measures of ensuring structural and technological restructuring of national economy based on the diffusion of new technological mode innovations. These measures foresee the solution of the following major tasks.

First, a negative effect of current economic crisis on structural economic changes should be transformed into a positive one. Volatility of business activities should not cause curtailment of progressive industries of the new technological mode, which have great prospects on the world market and have the ability to become the locomotives of the country's economic growth. The idea is to shift the crisis potential into the channel of sanitary effect on the national economic structure. A classical economic crisis rejects outdated ineffective industries, eliminates disproportions, and clears a way for economic growth based on the advanced technological basis.

Second, the processes of avalanche-like crash of national scientific and production complex should be securely blocked. The conditions should be created to preserve manpower, knowledge, technologies, and their application in prospective areas (i.e. expansion of a new technological mode and development of fundamentals for a successive one).

Third, essential goals and priorities of state structural and technological policy should be in line with comparative advantages of Ukrainian economy and adjusted by objective directions of global technical and economic development through diffusion of a new technological mode. State support of production and

science should be concentrated on these priorities' realization through construction and implementation of relevant aid programs for innovation.

Fourth, the priorities of state structural and technological policy should guarantee creation of preconditions for the consequent investment increase and economic growth due to application of new advanced technologies.

Fifth, it is critical to ensure the creation of competitive economic formations, capable of meeting strict competition both on domestic and the world markets by concentrating resources on prospective directions of production renovation.

The measures necessary for solving these general tasks cannot be limited to levers of direct state influence. The major task is to provide an effective support to a broad private initiative in introducing production of the new technological mode and to stimulate corporate investments into respective areas. In this respect, it is urgent to provide all economic agents with organizational and economic conditions for free access to relevant scientific, technological, and economic information, as well as to introduce pertinent information systems.

Today the state must preserve perspective productions and provide conditions for their development under unfavorable macro-economic conjuncture, on the one hand, and, facilitate release of funds from obsolete inefficient productions, sanitation and change of productive profile capacities, on the other hand. Settlement of this twofold problem requires a set of interrelated measures of innovative policy, primarily to preserve scientific and technological potential in Ukraine, covering the following major points:

- to protect expenditures on science and STA stimulation from devaluation and shrinkage; to make law that a share of budget expenditures on R&D be not less than 3% of GDP; to increase government subsidies in scientific researches and make R&D costs tax-exempt;
- to stimulate innovative activity through state support of venture projects in perspective innovations;
- to reorient «priority» financing to scientific organizations and competitive innovation projects according to priority directions of establishing new technological mode;
- to preserve information infrastructure of R&D, including networks of scientific libraries, and to maintain research stands, and research and experimental production operational;
- to subsidize expenses on protection of intellectual property, and to guarantee intellectual property rights in Ukraine and abroad;
- to bring in capital for implementing STA priorities, including intellectual capital of our compatriots, in particular, those who are now living abroad.

A set of measures on production and technological potential development encompasses the following: elaboration and implementation of national programs for development and diffusion of key primarily resource saving technologies of the fifth technological mode; creation of motivational mechanism for transfer of military technologies into civil production; search for and support of innovations, capable of providing national companies with competitive advantages on the world market; elaboration and implementation of programs for development of special areas with high concentration of scientific and technological potential, particularly, techno-polices of research centres; governmentally facilitated development of infrastructure for commercialization of R&D results; active governmental purchase of advanced machinery and assignment of it for leasing; imports subsidizing of new foreign technology and exports stimulation of high-degree manufacturing products, thus supporting national businesses in becoming included into the global reproduction framework of the new technological mode.

At the same time, it is necessary to start immediate re-profiling and modernization of enterprises and industries that are considered to be ineffective and do not satisfy the objectives of structural and technological maneuver.

The efficacy of the aforerecommended special measures for structural and technological transformation of national economy depends strongly on the adequacy of the priorities chosen. From scientific and technical perspectives, these priorities should meet the prospects of the new technological mode development and create an appropriate background for the next one. From an economic standpoint, state support of priority directions of development should satisfy three major requirements, specifically*: first,* to produce significant external effect to improve general economic environment and conditions for business activity development. *Second,* to initiate economic activity growth in a wide range of priority-related industries that is to achieve multiplication effect to incite powerful impulse for demand growth and economic activity increase. *Third,* to stimulate competitiveness of certain industries, which would enable them to reach independent trajectory of expanded reproduction on the world market scale and develop into the «locomotives of growth « for the national economy. From a social standpoint, implementation of national priorities for structural and technological transformation of an economy will be accompanied by expansion and optimization of employment, upgrading proficiency levels, and improvement of employees' real income and welfare in general.

The measures that meet the above-mentioned criteria and should be included in the respective state support programs are the following:

- renovation of the aircraft depot, since its depreciation reached the critical point, and there are proper technical potentials for its replacement, related to development of new generation airliners production, in particular;
- re-equipment of the energy complex, including modernization of atomic power stations;

- modernization of the train dispatching system that is meant to essentially improve railway capacity and provide timeliness of railage;
- development of modern transport junctions aimed at speeding-up and improving safety of combined transportations, at implementation of just-in-time delivery management systems, and at expansion of intra-regional and international industrial cooperation;
- technical and technological re-equipment of agricultural production and related processing industries;
- development of information infrastructure based on the satellite, fiber optic, and cellular communications within urban areas;
- steady increase of construction and reconstruction based on modern construction technologies;
- reconstruction of social infrastructure by means of domestically produced equipment;
- improvement of the environment through ecologically clean technologies.

Taking into consideration the fact that in the Soviet period national science-intensive industries were over-militarized, implementation of real potential for expansion of the new technological mode and structural maneuver is not possible without state support in terms of conversion, intended to be the central trend and the utmost common priority for economic and innovational policy of the country. Such support should apply to all of the possible instruments for regulation of the state purchase policy, the R&D assignments, credits on favorable terms, loan guaranties for production expansion, forms of IFG creation stimulation subsidies for imports of technologies, target investment programs, etc.

State economic and innovational policy must also be oriented towards realization of comparative advantages of domestic industries. As the world practice of successful structural transformations shows, the primary aspect of structural and technological transformations is to provide support to such industries, capable of becoming the bearers of economic growth on the world market scale. Ukraine has a number of competitive advantages, the realization of which is hampered by serious discrepancies in economic structure as well as vulnerability of its position in international labor division.

Major competitive advantages of Ukraine encompass the folowing: *first,* cheapness of labor force along with its rather high qualification; s*econd*, low capital intensity of R&D sector along with its relatively developed infrastructure and a namber of serious scientific achievements and results in several directions of STA; *third,* experience of long-term presence of domestic science intensive products on foreign markets; *fourth,* significant amount of idle production capacities, allowing to achieve relatively low-cost increase in volume of exports with

due organization of production; *fifth,* availability of unique up-to-date R&D projects in a range of industries, the commercial utilization of which would allow to expand export of highly competitive products.

Concerning the above-mentioned vulnerabilities, which hamper realization of competitive advantages, they are the following: basically poor financial, organizational, and informational infrastructures for support of competitiveness of domestic exports and imports rationalization; unfavorable geopolitical changes in the modern world that cause loss of traditional markets for domestic products; intense Western protectionism; concentration of major competitive technologies in the military-industrial complex, and objective difficulties in its conversion or transfer into civil production; low efficiency of production and exceedingly high material costs per unit; outdated organization of production and maladjustment of managerial systems of the majority of enterprises to dynamic market strategy and survival within severe market competition; rapid decrease in domestic demand because of reduction in state ordering of science intensive products.

Proceeding within these restrictions, the strategy of realization of competitive advantages and integration of the national economy into the world economic relations would imply the following:

- stabilization of traditional science-intensive exports including the ones dependent on the state support of supply in full sets intended for technologically stimulated objects;
- employment of competitive advantages, associated with cheapness of main production factors, which can be achieved by: *a)* maintenance and development of metal-consuming machine-building production on the basis of resource saving technologies, including machine and technical components, and primary products made of ferrous metal; *b)* mastering of production of products which end their manufacturing cycle in highly developed countries (this mainly refers to machine-building for sector of individual consumption, equipment for food and light industries, trade equipment); *c)* expansion of assembling productions based on imported accessories (this entails the production of motor transport, electric and electronic appliances, PC's); *d)* establishment of enterprises which ensure international industrial cooperation relations based on the process of commercialization on the basis of domestic scientific and technical potential; *e)* attracting the orders for R&D implementation in Ukraine and rendering of other science-intensive services in sectors with highly qualified experts and significant achievements on the global scale;
- realization of dynamic competitive advantages represented in high technology.

The industries with unique technologies, able of being the leading exporters, are under protection within the framework of national industrial complex. These are the aerospace, the laser, and the nuclear industries. Introduction and

development of export potential of the above-mentioned industries under conditions of low domestic demand permit to solve a number of priority problems of innovation policy. This would stimulate the corresponding technological improvements in compatible industries, along with their technological and organizational modernization. Thus, the leading Hi-Tech industries would be the propulsive force for structural and technological progress, reformation of production organization, and enhancement of the national economy's efficiency.

The prospects for integration of the aforementioned industries in the international division of labor depend on resolving two exceedingly complicated problems.

First of all, the adaptation of technologies represented in these industries to requirements laid down by the world market with regard to the production efficiency is of core importance. Taking into consideration the typical for domestic military-industrial complex high resource-intensiveness and power-consumption, many Ukrainian technologies may not reach the threshold of profitability on the world prices conversion basis and, accordingly, competitiveness. In other words, this is constructively impossible without entering global networks of transnational companies that are covering the markets of both by-products and final products.

Second, the actual and potential national competitive advantages are concentrated, as a rule, in sectors drawing in the extremely powerful opposition of foreign competitors, including transnational companies, fully based on state and non-state support and which functions directly involve geopolitical interests of the leading countries and their groups. Therefore, it is impossible to enter these markets and, consequently, to realize competitive advantages without active state support and implementation of adequate measures for trade policy, in particular.

The effective participation in the international labor division implies parallel breakthrough in all directions. Yet, the utmost is the one related to use of competitive advantages of the higher level, represented in unique domestic technologies and developments.

Bibliography

1. Послання Президента України «Про внутрішнє і зовнішнє становище України у 2002 році». – К.: Інформаційно-видавничий центр Держкомстату України, 2003.
2. Лукинов И. И. Эволюция экономических систем. – М.: Экономика, 2002.
3. Гальчинский А. С. Україна: поступ у майбутнє. – К.: Основи, 1999.

4. Інноваційна складова економічного розвитку. Монографія / За ред. чл.-кор. НАНУ Безчасного Л. К. – К.: ІЕ НАН України, 2000.

5. Портер М. Международная конкуренция. – М., 1993.

The article was received in July 2003