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## **FUNDING OF INNOVATIONS IN THE AGRICULTURAL SECTOR OF UKRAINE UNDER CONDITIONS OF SUSTAINABLE DEVELOPMENT MODEL**

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**The necessity of improving the model of innovations funding in the agrarian sector of Ukraine with the account of globalization processes is proven. The model constructed by the rule of “the golden sequence” is proposed.**

**Key words: agriculture, sustainable development, innovation, financial security, pragmatism, neo-liberalism, globalization.**

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## **ФІНАНСОВЕ ЗАБЕЗПЕЧЕННЯ ІННОВАЦІЙНОЇ ДІЯЛЬНОСТІ В АГРАРНІЙ СФЕРІ УКРАЇНИ В КОНТЕКСТІ МОДЕЛІ СТАЛОГО РОЗВИТКУ**

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**Доведена необхідність вдосконалення моделі фінансового забезпечення інноваційної діяльності в аграрній сфері України з урахуванням глобалізаційних процесів. Запропоновано модель, побудовану за правилом “золотої послідовності”.**

**Ключові слова: аграрна сфера, сталий розвиток, інноваційна діяльність, фінансове забезпечення, прагматизм, неолібералізм, глобалізація.**

### **Problem statement**

With the globalization and internationalization processes in economic relations, development of modern society is characterized by rapid structural and institutional changes. These changes are related to activation of innovations, which will provide a transition as some types of economic activity and the

national economy as a whole to the models of sustainable development. Mainly it concerns to agriculture and its individual components.

Agricultural sphere includes complex socio-economic and vulnerable agrobiological systems of nature and society with three diversified functions: life support function (production of agroproducts and raw materials); life activity (employment, conditions and quality of life for businesses, rural population and nation as a whole); living arrangement (development of territories and environment). Efficient functioning of agrarian sphere is possible only at transition to the model of sustainable development with appropriate financial support of innovation in the complex agrosystem.

### **Analysis of recent research and publications**

An important contribution to solving the problems of funding of agrarian sector, analysis of national and international mechanisms of regulation of development of agriculture made by such leading Ukrainian economists: A. Babenko, V. Borysova, P. Gaydutskiy, V. Golovina, A. Dibrova, S. Lazutkina, A. Makarenko, S. Maystro, O. Romashkina, P. Sabluk, O. Shpykulyak and others. Despite the large number of publications, the problem of formation and improvement of funding of innovations within the context of the model of sustainable development of agriculture in view of globalization challenges remains understudied and needs thorough research.

### **Objectives**

The main objective of this paper is to analyze and substantiate the current models of improvement of system of financial support for innovations in the context of sustainable development of agriculture in consideration of modern economic trends, especially, those are caused by globalization.

### **Materials**

Sustainable development is a modern concept of desired social development that is proposed by the international community and is based on the optimization strategy of all human activity, primarily economic, in its interaction with the environment. According to “Agenda of XXI century”, the goal of sustainable development is to satisfy needs of modern society without endangering the ability of future generations to provide for their needs [1].

For the agricultural sector of Ukraine, sustainable development must be long-term and balanced in terms of socio-economic and agro-ecological settings. In our opinion, the main criterion for this development should be an improvement of the quality of life of agricultural producers, rural population and nation alongside preserving of life supporting systems of nation and food security of country.

Intensification of agricultural production in Ukraine that prevailed over the past 20 years, has led to the growth of its eco-destructive influence on agrolandscape that resulted in growth of proportion of tilled agricultural land in Ukraine up to 0.85 (in the Dnipropetrovsk region up to 0.92) [2]. Unfortunately, this is an indication that sustainable development concepts and environmental principles of sustainable agrocultural management did not become part of the national agricultural strategy during the years of market transformation. This strategy was extremely destructive for nature, and state of agriculture, according to V. Dokuchaev, can be described as “undermined agriculture”.

Mentioned eco-destructive processes in agricultural production in combination with a significant decrease in volume of capital investments in environmental activities of agricultural producers threaten resource and ecological safety of agricultural sphere, which means reduction of ability of future generations to meet their nutritional needs due to violation of the basic paradigm of sustainable development. To solve this problem, it is necessary to introduce modern agricultural technologies and agricultural innovations.

At the current stage, the financial support of such transformations in the agrarian sector of Ukraine is the complex process that is associated with defining of investment objects, taking into account potential obstacles and risks, finding necessary investment resources and investors, coordinating and controlling of investment usage and timing of their return .

Using the methods of correlation and regression analysis helped us to prove that the investment in fixed assets have tight correlation with the level of development of the national economy ( $GDP$ ) and agricultural sphere (Gross Product of Agriculture ( $GP_{Ag}$ ), but the degrees of their influence are different (Tab. 1).

Table 1

**Correlation and regression analysis of interdependence of key macroeconomic indicators and different sources of funding into agrarian sector of Ukraine**

Macroeconomic indicator ( $Y$ )	Source of funding ( $X$ )	Regression equation	Correlation coefficient ( $R$ )	Determination coefficient ( $R^2$ )
$GDP$	Investments in fixed assets	$Y = 146.7 + 60.9X$	0.93	0.86
$GP_{Ag}$	Investments in fixed assets in agriculture	$Y = 54.4 + 7.9X$	0.89	0.79
$GP_{Ag}$	Foreign direct investments in agriculture	$Y = 46.6 + 0.14X$	0.94	0.88
$GP_{Ag}$	State funding in agriculture	$Y = -619.5 + 20757.1X$	0.72	0.52
$GP_{Ag}$	Bank lending	$Y = 77.8 + 4.6X$	0.66	0.44
$GP_{Ag}$	Own funds of enterprises	$Y = 17.8 + 168.7X$	0.66	0.44

The sources of funding of agrarian sector that have a tight interdependences with its development are investments in fixed assets in agriculture (correlation coefficient – 0.89) and foreign direct investment (correlation coefficient – 0.94), but these sources do not affect the growth of gross product in agriculture (growth of foreign direct investment by 1 million. U.S. stimulates 0.14 million USD). These results suggest that investment activity in agriculture of both domestic and foreign investors is secondary. As a result, the amount of the invested funds do not meet the required volume. The main source to cover the existing gap in investments in fixed assets of agrarian sphere is own funds of agricultural enterprises, which formed from profits and amortization. The existence of close interdependence (correlation coefficient – 0.72) between state financing of agricultural expenditure and its aggregate gross product was proven. Adequate regression equation was built that leads to important socio-economic conclusion: in absence of budgetary support, agrarian gross product will shrink by 619.5 million USD, in the same time Ukrainian GDP will shrink accordingly by the same amount due to the lack of state support for agricultural sphere. This conclusion confirms that the state should exercise state regulation in investment and innovation processes in agriculture of Ukraine and control used investments, use investment funds to finance national projects, innovations, targeted and regional programs.

Recently in the academic literature, there is a discussion about definition of state’s role in development of agriculture and its transition to sustainable development model taking into account the impact of globalization. In our opinion, should agree with those of economists who argue that, for the formation of principles of sustainable agrarian activity, it’s necessary to use more pragmatic policy, which priority is governmental regulation of the economy that is carried out through the creation of agricultural policy, support of necessary mechanisms, development of legal and organizational bases for activity of economic agent in the agrarian sector. We analyzed components of funding of the sustainable development of agriculture and proved that, under the conditions of globalization of economy within the selected investment policy, it’s necessary to have a qualitatively new financial and economic mechanisms and institutional solutions in public administration that coordinate developmental strategy and investment policy in whole.

In Ukraine, the financial support of the agrarian sphere requires consistent implementation of the State Target Program of Ukrainian Villages by the year 2015 and the Concept of “State Program of Sustainable Rural Development of Ukraine for the period till 2025” [3,4]. However, these documents do not assume recovery of public finances and improvement of agricultural policy towards stimulation of innovations in order to switch to the model of sustainable development of agriculture within existing

globalization trends. This means, that economy is functioning better than political democracy. The weakness of democratic institutions slows economic transformation and reduces macroeconomic performance since hinders timely decisions that can contribute to the modernization of finance and create the conditions for economic growth in the future.

Given the urgency of changes and innovative development of the agricultural sector in Ukraine, it is important to take into account the experience of countries of the European Union. Particular interest is the experience of France, which has a strong tendency of state regulation of regional, economic and social development, as well as experience of sustainable development of rural regions in Poland, where the modernization of public finance and agricultural policies were carried out according to the rule “golden sequence” [5].

The obtained results show that Ukraine, with sufficient experience of socio-economic development, is not yet a master of its future, which is largely formed spontaneously. Over the years, the Ukrainian national economy was formed according to the ideas of neoliberalism that dominated in social and especially in economic academic studies of the twentieth century. However, this ideology, doctrine, policy and practice outlived itself, and the global financial crisis, in 2008, accelerated its final destruction and shown how close financial systems and humanity are to threshold of exhaustion of non-renewable resources. Neoliberalism is not the policy, on which the future should be based. Way of thinking becomes more pragmatic, necessity to subordinate the process of development to rationally organized human activity, society, and humanity has appeared.

Doctor of Economic Sciences, Academician of NAS of Ukraine, V. Heyets supports the same idea and believes that between 2000–2008 was a period of economic growth, which was ended by the global financial crisis of 2008 that occurred as a result of globalization [6]. Opportunities for fundamental structural changes targeted on creating a sustainable economy, civil society and effective political system in Ukraine were not used properly neither during transformational crisis of the 1990s, nor during economic growth in 2000–2008, when there were investment funds for such transformations.

The paper presents dynamic model of funding of innovation in agrarian sector of Ukraine in the context of the transition to the sustainable development model that is built according to the theory of "new pragmatism" that for Ukraine, given the globalization trend, appears a logical extension of the new approach to the modernization of public administration of sustainable development of agricultural areas.

$$\Delta I_{Ag} \geq \Delta EX_{Ag} \geq \Delta GP_{Ag} \geq \Delta LP_{Ag}, \quad (1)$$

where  $\Delta I_{Ag}$  – growth rate of investment in fixed assets in agriculture;  $\Delta EX_{Ag}$  – growth rate of export of agricultural products;  $\Delta GP_{Ag}$  – growth rate of gross product of agricultural sector;  $\Delta LP_{Ag}$  – growth rate of labor productivity in agriculture.

The proposed model on a new level creates systematic harmonious unity of all its components. At the same time, it acts as a means of evaluating the effectiveness of innovative processes in order to offer ways to improve the investments process in agrarian sector to ensure its sustainable development.

### **Conclusions**

Thus, we can conclude that the funding of innovations in the agricultural sector of Ukraine in the context of sustainable development must have a qualitatively new model of investment activity that would allow transformation of public administration and coordination of the whole developmental strategy and investment policy.

### **Prospects for future research**

To shift to the model of sustainable development of agriculture of Ukraine, the following measures should be implemented at the national and regional levels: macroeconomic stabilization; formation of stable regulatory framework to attract investment; increase of sources of capital investments for natural restoration of agricultural landscapes; strengthening guarantees of investments and returns of investors; provision of free movement of capital and goods, etc.; development of a comprehensive legislative support

of implementation of the agricultural land market; realization of innovations for optimizing land use, etc.; implementation of the necessary government programs of rural development: ensuring an adequate level of infrastructure of the agricultural sector and implementation of large-scale regional and national investment and innovation projects.

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