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MAIN TRENDS OF INNOVATIVE ENTREPRENEURSHIP DEVELOPMENT IN AGRARIAN SECTOR OF UKRAINE

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Мета статті полягає у дослідженні тенденцій розвитку інноваційного підприємництва та визначенні його особливостей в аграрній сфері, обумовлених специфічністю продукції та економічними умовами даного виду діяльності. Аналізуючи, систематизуючи й узагальнюючи наукові праці багатьох учених, розглянуто особливості розвитку інноваційного підприємництва у сільському господарстві, стан їх матеріально-технічного потенціалу та фінансові показники діяльності, виявлено інституційні обмеження інноваційного розвитку аграрної сфери.

У результаті дослідження встановлено, що незважаючи на створення певної законодавчої бази, переорієнтація економіки України на інноваційну модель не відбувається. Серед причин, які гальмують інноваційну діяльність в Україні, є хронічне недофінансування науки, яка генерує нові наукові знання, що трансформуються в інновації. Показник наукоємності ВВП в Україні зазнав катастрофічного падіння – з рівня 1,8 у 1991 році до 0,62 у 2015 році, що у 3,27 разів менше ніж в середньому в країнах ЄС-28 і у 5,11 разів у країнах-лідерах за рівнем інноваційного розвитку (Фінляндія, Швеція). Україні необхідно, не втрачаючи часу, переходити на інноваційно-інвестиційну модель розвитку. І починати треба, насамперед, з сільського господарства, оскільки аграрна сфера є однією з найприбутковіших в України (розмір прибутку у 2015 році – 103,1 млрд. грн), незважаючи на те, що вона не користується популярністю серед вітчизняних інвесторів. Доказом того є те, що питома вага капітальних інвестицій у сільському господарстві від загальної їх суми коливалась від 7,86 до 13,62% за період 2010-2015 років, у той час як у промисловості вона перебувала у діапазоні від 33,73 до 40,20%. Для успішного здійснення інноваційної діяльності в аграрній сфері інвестиції мають бути збільшені у рази.

Перспективами подальших досліджень у даному напрямку є ідентифікація системи концептуальних орієнтирів забезпечення інноваційної діяльності в аграрній сфері та розробка методичного підходу до оцінки її ефективності.

Ключові слова: аграрна сфера, інноваційне підприємництво, матеріально-технічний потенціал, наукоємність ВВП.

Formulation of the problem. In today's economic conditions, the development of innovative entrepreneurship in the agrarian sector of Ukraine builds the foundations for the formation and intensification of agricultural production on this basis and a steady increase in its efficiency. The development of innovative entrepreneurship is the basis and the key to stabilizing the efficiency and growth of the competitiveness of the domestic agrarian economy.

It is commonly heard truth in scientific circles that economic growth in Ukraine is impossible without the intensification of innovation activity, including in the agrarian sector of the economy, since agriculture in 2015 provided for the creation of 10.76% of the country's GDP, while the export of agricultural products in 2015 amounted to 31, 8% of total exports of goods [14]. The world's leading countries are countries with a high level of technological development and scientific potential, no matter what natural resources they possess. International practice shows that if the share of innovation in the country's GDP is less than 20.0%, than national products lose their competitiveness. Thus, the average European rate is 25.0-35.0%. In Ukraine, the GDP growth on the basis of new technologies is only 0.7% [14].

Analysis of recent research and publications. The theoretical, methodological and applied aspects of the development of innovative entrepreneurship in agriculture are the subject of study by many foreign scientists, in particular A. Amanpiou [20], S. Valencia [22], K. Gathaiya [20], D. Kechen [18], G. Mickson [19], J. Ntalia [20], R. Ridha [21], J.J. Pharia [19] and others.

Food and Agriculture Organization of the United Nations scientist D.Kehhen is beleives that the development of a competitive, socially and strategically oriented economy becomes possible only on condition of its transition to an innovative way of development. In this regard, objectively determined task is the formation of an innovative agricultural model that is capable of ensuring the advanced development of the industry, sustainable economic growth, which implies a stable annual increase in gross output and productivity growth, and a high level of global competitiveness [18].

The fundamental researches of Ukrainian scholars are devoted to the study and generalization of various trends in the development of innovative entrepreneurship in the agrarian sector. The profundity and breadth of the study subject are characterized by scientific developments of L.V. Vovka [1], I.V. Kachalova [2], Y.O. Lupenko [3], M.I. Malika [4], T.Y. Prutsky [5], A.M. Pugach [6], P.T. Sabluka [7, 8], V.P. Seminozhenko [9], N.M. Sirenko [10, 11], V.V Shirmi [16], O.G. Sppiluca [17] and others.

L.V. Vovk and S.O. Puriyov investigates the actual aspects of the development of innovative entrepreneurship in the agrarian sector of Ukraine [1]; I.V. Kalacheva, K.O. Prokopenko, O.V. Shubravska study obstacles and trends in the development of innovative entrepreneurship in agriculture [2]; O.I. Melnik and N.M. Sirenko reveals the essence of innovative entrepreneurship as a component of the development strategy of the agrarian sector of the economy [10]; T.Y. Prutskaya studies institutional support for the development of innovative entrepreneurship in the agrarian sector of the economy [5].

At the same time, in the field of domestic science, the theory of innovative entrepreneurship in agriculture is not sufficiently developed, since it is relatively new, complex, diversified, and applies to many aspects of agrarian transformation. In addition, the theory and practice of entrepreneurship themselves are in constant development, and therefore necessarily there are necessarily new problems that need to be solved, and there is a need for continuous updating of knowledge on the issues of formation and development of innovative entrepreneurship in agriculture .

In this regard, the purpose of the article is to identify trends in the development of innovative entrepreneurship and identify its features in agriculture, due to the specificity of products and economic conditions of this type of activity.

The main results of the study. Investigation of innovative entrepreneurship as a holistic object of analysis, definition of its place and influence on the evolution of the economic system of society requires an integrated system approach, entails the penetration of scientific thought into the complex matter of entrepreneurial activity, a thorough study of many problems associated with fundamental research and innovation [17, p. 124].

Investigating the peculiarities of the development of innovative entrepreneurship in agro-industrial production, O.I. Melnik and N.M. Sirenko's essence of innovative entrepreneurial activity in the AIC is defined as a special process of organization of management based on an extensive network of rationally-coupled small and large innovative enterprises capable of rapidly and with minimal cost of implementing technological changes in agro-industrial production through the development, production and implementation of innovative products and the provision of innovative services, provide competitive science-intensive products. Innovative enterprises include Innovation Centers, Technoparks, Research Formations, Technopolises, Innovative Business Incubators, which are involved in the development, production and implementation of innovative products and the provision of innovative services, the volume of which exceeds 70.0% of their total output, and services in cash equivalent [10].

Innovative entrepreneurship in agriculture is an element of the overall organizational and economic system, which, provided it is adequately constructed and used, promotes the innovation process through the implementation of a number of functions, as shown in Figure 1.

The development of innovative entrepreneurship in agriculture is impossible without taking into account the following features of the agricultural sector:

– sensitivity (ability to predict problems and ways to overcome them, make strategic decisions, adapt to climatic conditions);

– experimentation (the level of objectivity of the evaluation of new ideas);

– internal communication (ability to distribute relevant information);

– risks (the ability to invest in innovative processes, even in conditions of uncertainty, in order to improve the activity);

– controllability of processes that are continuing by changes and innovations.

Summarizing the above, we can state that innovative entrepreneurship in the agrarian sector is an initiative, systematic, carried out at its own risk by economic activity, which encompasses socio-economic relations with regard to the development of innovations, their testing and verification, reproduction, and introduction into production, and is a determining factor of development of agrarian production at the expense of more rational use of resources, increase of efficiency and maintenance of competitive advantages. At the same time, innovative entrepreneurship is based on the principles of systematic, risky, scientific, energy and resource-saving, economic and social responsibility [11, p. 103].

The current state of innovation activity in Ukraine, and especially in the agrarian sector of the economy, is defined by most economists as unsatisfactory or crisis [1, 4, 6]. The intensity of the science of the GDP

of Ukraine during the years of independence has suffered a catastrophic decline – from the level of 1.8% in 1991 to 0.62% in 2015, decreased almost threefold.

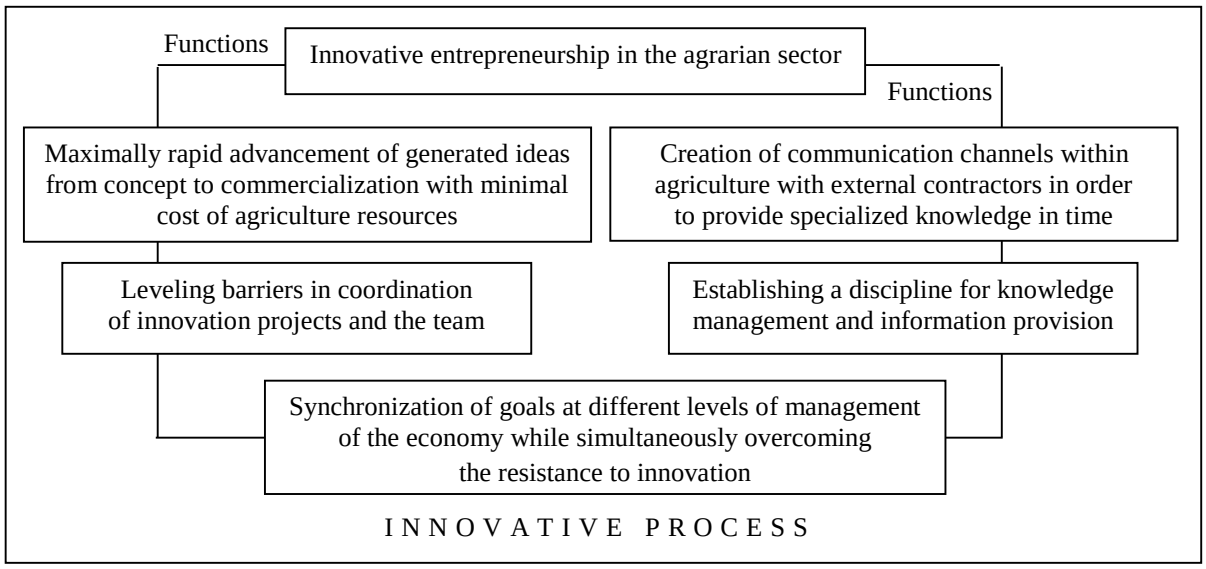

Figure 1 – Innovative entrepreneurship in the agrarian sector as an element of the overall organizational and economic system (compiled by the authors in accordance with [2, p. 12-13; 17, p. 202])

For comparison, the share of spending on research and development in foreign countries' GDP has been steadily increasing in recent years: the science-intensive GDP of the EU-28 countries has increased from 1.76% in 2005 to 2.03% in 2014 (Figure 2). In addition, to ensure the stimulation of EU competitiveness in the world, one of the five objectives of the Europe 2020 strategy is to increase the science-intensive GDP to 3.0% by 2020.

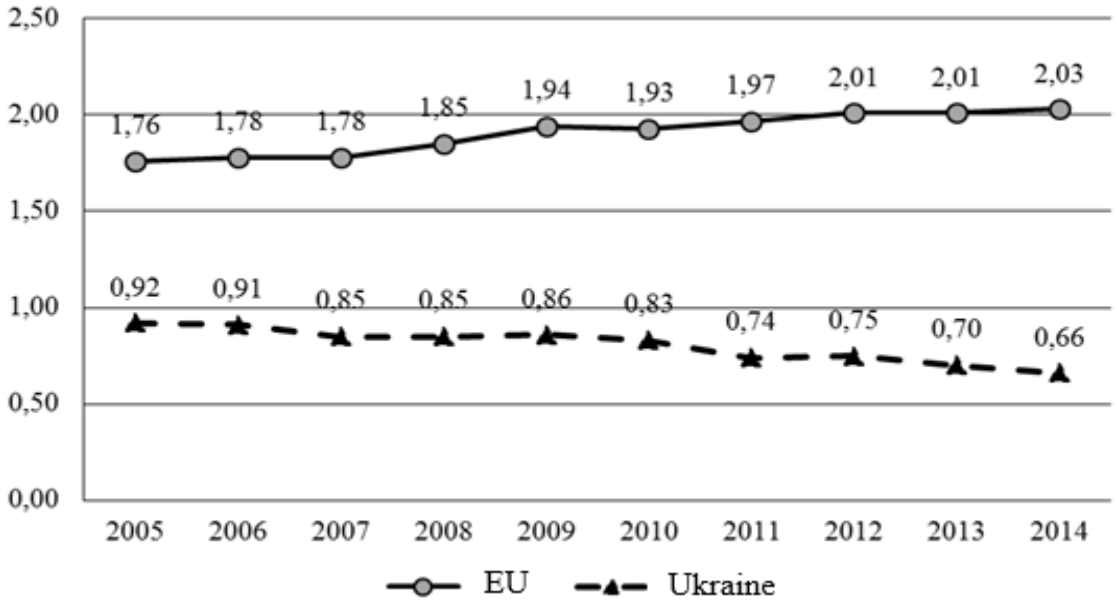

Figure 2 – Dynamics of the share of expenses for the implementation of scientific and scientific works in the GDP of the EU-28 and Ukraine for 2005-2014,% (compiled by the authors in accordance with [14])

Comparison of the knowledge intensity of GDP of Ukraine with the EU-28 as a whole, and with the most developed countries of the European Union in 2014, shows that this indicator in Ukraine is 3.27 times smaller than the average in the EU-28 countries and 5.11 times in the countries Leaders on the level of innovation development - Finland, Sweden (Figure 3). The current state of development of the scientific sphere condemns Ukraine to the role of a backward state in the world environment.

The Academician of the National Academy of Sciences of Ukraine V.P. Seminozhenko pointed out that the majority of the technical level of domestic enterprises for today are behind for at least half a century

from the enterprises of the developed countries [9, p. 12]. Regarding the negative dynamics of the indicator of the intensity of the GDP of Ukraine, which has intensively declined over the past ten years, it is appropriate to draw attention to the opinion of experts who believe that with a science-intensive GDP of less than 1.0% per year within 5-7 years, begins the destruction of the country's scientific and technological potential [10].

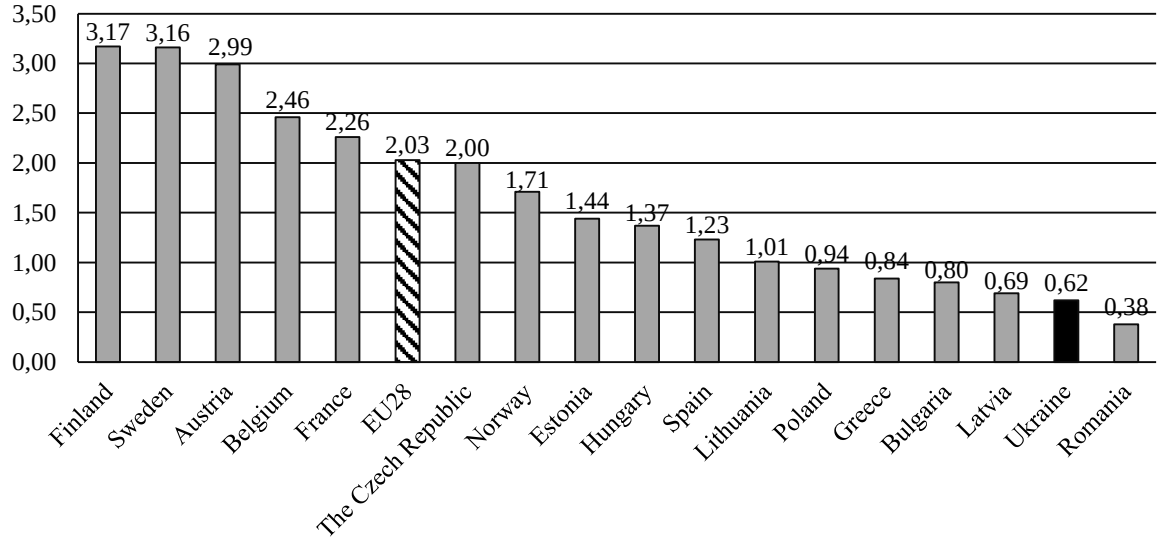

Figure 3 – Indicators of science intensity of GDP of Ukraine and some EU countries in 2014,% (compiled by authors in accordance with [14])

The share of state expenditures on science in the value of agricultural products (0.04% of the cost of production in 2015) and the amount of expenditures on agrarian science from the state budget per 1 hectare of agricultural land (UAH 3.27 in 2015) were in Ukraine on an order of magnitude smaller than similar figures in developed countries. There was a reduction in the number of employees of scientific agrarian organizations from 12.7 thousand people in 2009 to 8.0 thousand people in 2015. The number of received security documents for inventions for agriculture and plant varieties in 2009 was 834, in 2015 – 287 [14, 15]. The number of agroformations in which innovations were implemented amounted to 1,076 or 1.92% of the total number of agricultural enterprises and farms in 2012 [3, p. 9]. The analysis of statistical data showed a decrease in the scientific potential of agricultural enterprises for the period under study.

The material and technical potential of innovative development of agrarian enterprises forms a set of land and material and technical resources of enterprises (buildings, structures, energy supply systems, machinery, equipment, equipment, seeds, fertilizers, feed, etc.), forms of their combination, which are necessary for the introduction of innovations in agricultural enterprises and the production of innovative products. A comprehensive analysis of the material and technical potential of innovation development goes beyond the scope of one article, so let us dwell only on its particular aspects.

We note the positive dynamics in the investigated period of the growth of the value of fixed assets in the industry, fund-raising and stock-raising. The cost of fixed assets was 1.8 times more than in 2015 compared to 2009, according to our estimation, the fund-equipment, in agricultural enterprises, increased by 1.3 times (from UAH 2,83 thousand per hectare to 3.68) , Labor productivity is 1.7 times (from 84.55 thousand UAH per employee to 143.73 thousand UAH). Table 1 shows quantitative changes in the most active part of fixed assets – agricultural machinery of agricultural enterprises.

The number of tractors, combines of agrarian enterprises in Ukraine has decreased. Tractor loads are much higher than in EU countries. In Ukraine, there were 8 tractors in Ukraine in 2012, while in Germany – 80, in France – 80, Poland – 100, in Italy – 200 [5, p. 95]. Therefore, in Ukraine there is a gap between the supply of agricultural machinery and the need for it. According to the academician NASU P.T. Agricultural branches are provided with agricultural machinery only by 45.0-65.0% [8, p. 238].

Table 1 shows that for the period of 2008-2015, among the existing equipment, agricultural enterprises prevail in the country: in 2015, in the total structure of machinery, they account for 80.44%. During the analysis, there is a significant reduction in the number of available equipment from agricultural enterprises: the number of tractors decreased by 27.96%, grain harvesters by 24.44%, beet harvesters by 58.62%, and maize harvesters by half. This situation is due to the partial renewal of fixed assets in agriculture, but they are not sufficient for their transition to an innovative development model.

This above-mentioned is the result of the absence of a strategy for transferring Ukraine's economy to an innovative way of development, the formation of a national innovation system that would ensure its implementation, improper use of planning methods at all levels of management (system analysis, forecasting, optimization, program-targeted management methods), low level innovative culture of employees of state authorities.

Table 1 – Availability of equipment from agrarian enterprises of Ukraine in 2008-2015 (compiled by the authors in accordance with [12, 13])

Type of machinery	Years								2015 in % to 2008
	2008	2009	2010	2011	2012	2013	2014	2015	
Tractors of all brands, thousand	177,4	168,5	151,3	147,1	150,1	146,0	130,8	127,8	72,04
– per 1000 hectares of arable land	9,0	9,0	8,0	8,0	8,0	8,0	7,0	6,8	75,56
Combine harvesters, thousand	39,1	36,8	32,8	32,1	32,0	30,0	27,2	26,7	68,29
– per 1000 hectares of sown area of grain	4,0	3,0	4,0	4,0	4,0	4,0	3,9	3,5	87,50
Maize harvesters, thousand	3,2	2,9	2,5	2,3	2,1	2,0	1,8	1,6	50,00
– per 1000 hectares of corn sown area	2,0	2,0	1,0	1,0	1,0	1,0	1,0	1,0	50,00
Beet-harvesting machines, thousand	5,8	5,1	4,2	3,8	3,6	3,0	2,7	2,4	41,38
– on the basis of 1000 hectares of sown area of beets	18,0	18,0	9,0	8,0	9,0	13,0	11,0	11,0	61,11

Undoubtedly, the introduction of innovations requires investments that depend on the financial condition of enterprises and the financial resources available to them. According to the results of 2015, all branches of economy of Ukraine, except for agriculture, proved to be unprofitable. And only in the agrarian sector received 103.14 billion UAH. profits, while other industries brought the country more than UAH 236.99 billion damage [15].

Compare the financial results of the industry and agriculture of Ukraine in 2010-2015 (Figure 4). If the profits gained in industry in 2010 and 2011 were higher than in agriculture and in 2011 amounted to over UAH 58 billion, however, then in the industry there was a sharp drop in the value of profit – up to 21.3 billion UAH. in 2012 and UAH 13.7 bln. in 2013 and in 2014 and 2015, the Ukrainian industry suffered huge losses – 166.4 and 181.4 billion UAH. in accordance. However, the profit in agriculture for the period under study was growing and in 2015 reached a record high of UAH 103.1 billion. At the same time, the share of capital investments in industry from 2010 to 2015 amounted to 33.73 to 40.20% of the total amount of capital investments in the economy of Ukraine, and in agriculture – only from 7.86 to 13.62% , which is almost three times less than in industry.

Such underfunding of agriculture is not permissible. The leadership of the state should radically change the investment policy regarding the leading state and promising industry. The allocation of investment resources should be proportional to the contributions of industries to the country's economy. For successful innovation in agriculture, investments should be increased at times. Only under such conditions is techno-technological re-equipment of agricultural production and development of knowledge-intensive resource-saving technologies, which allow to increase the competitiveness of agricultural products and the efficiency of production and ensure economic growth.

Conclusions. Thus, the signing by Ukraine of an association agreement with the EU has opened new opportunities for international integration of the agrarian sector, using its existing powerful export potential for the development of the global economic space. However, in spite of obtaining a preferential regime in mutual trade for Ukraine, domestic farmers were not able to realize a single ton of agricultural products in most positions. Products of Ukrainian agrarian enterprises showed low competitiveness in the European market. It is about small commodity producers, which provide 70.0-80.0% of agricultural production in the country, but they can not be integrated into the world and European markets, because their products are not competitive at all standards of quality and safety, or at a price. One of the main reasons for this is the level

of development of innovative entrepreneurship in the agrarian sector, which most economists define as unsatisfactory or crisis.

This confirms the level of knowledge intensity of GDP of Ukraine, which in 2015 was 0.62%, which is 3.27 times less than the average in the EU-28 and 5.11 times in the leaders of the countries in terms of innovation development (Finland, Sweden).

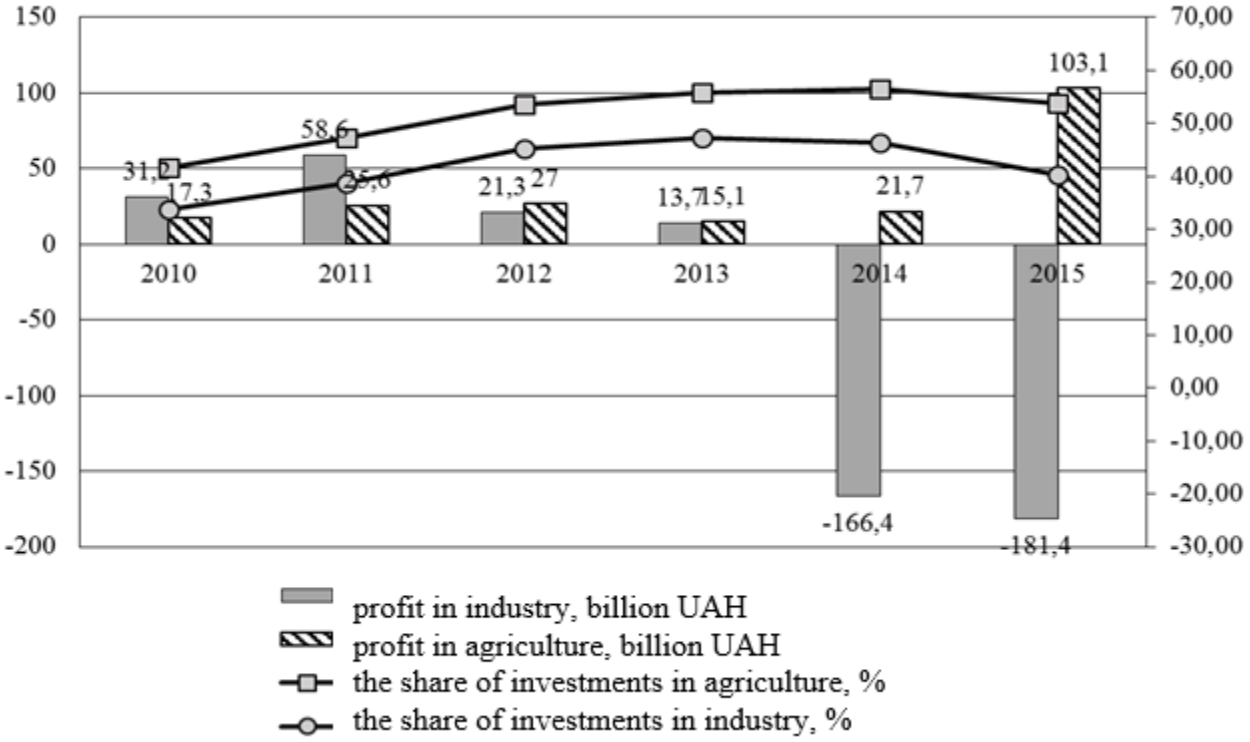

Figure 4 – Dynamics of profit and share of capital investments in industry and agriculture of Ukraine in 2010-2015,% (compiled by authors in accordance with [15])

The innovative potential of agricultural enterprises is decreasing each year. So the number of received security documents for inventions for agriculture and varieties grew in 2015, compared with 2009, decreased by 65,58%. In addition, in 2015, the share of state expenditures on science in the value of agricultural products (0.04%) and the amount of expenditures on agrarian science from the state budget per 1 hectare of agricultural land (UAH 3.27) were in Ukraine at an order of magnitude smaller than Similar indicators in developed countries.

Experts estimate that the level of provision of agrarian enterprises with agricultural machinery varies from 45.0% to 65.0%. Despite this, there is an annual decline in agricultural machinery units, and its level of loading is much higher than in the EU. In Ukraine, there were 8 tractors in Ukraine in 2012, while in Germany – 80, in France – 80, Poland – 100, in Italy – 200.

The agrarian sector is one of the most profitable in Ukraine (the amount of profit in 2015 – UAH 103.1 billion), despite the fact that it is not popular among domestic investors. The proof is that the share of capital investments in agriculture from their total amount ranged from 7.86 to 13.62% for the period 2010-2015, while in the industry it ranged from 33.73 to 40,20%.

Taking into account the above mentioned, the priority tasks for the formation of an innovative model of entrepreneurship development in the agrarian sector are the creation of: an appropriate legislative framework that would include a set of measures of innovation policy, with a definition of terms of implementation, clear tools, sources and amounts of funding; analytical-coordination state structure that would monitor the effectiveness of innovative projects; An effective system of scientific and information support for small and medium enterprises; Effective institutional structure of the innovation market; an effective flexible system of incentives for productive high-tech production and service cooperatives of research institutions, agrarian universities with subjects of small and medium agricultural entrepreneurship; Institutional support for stimulating the development of regional innovation clusters.

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