LEGAL REGULATION DEVELOPING REGIONAL INNOVATION CLUSTERS IN THE FINANCIAL SECTOR IN UKRAINE

Abstract. The need to increase the autonomy of Ukraine’s financial system makes it advisable to undertake a series of activities aimed at consolidation of the banking system, development of the non-banking financial institution’s sector, increasing public and business confidence in the country’s financial sector. The formation of regional innovation clusters in the financial sector is seen as a major measure of improving the financial system’s condition. Therefore, the purpose of the article was to develop a system of directions for improving the legal regulation of the formation and development of regional innovation clusters in the financial sector of Ukraine. In the article, a system of indicators for determining financial clusters in the regions of Ukraine is determined using the method of expert assessments. 20 experts from the regional offices of the Ministry of Communities and Territories of Ukraine were experts. The basic methods of the research were clustering methods and Kohonen maps, on the basis of which associations (clusters) of objects (regions) by the level of innovative activity in the financial sphere of Ukraine were selected. According to the results of the Kohonen map, according to the indicators of 2018, for all administrative and territorial units of Ukraine 4 clusters were determined according to the level of innovative development of the financial sector. The feasibility of creating innovative clusters was assessed by calculating the synergistic effect, where the gross regional product (GRP) of the administrative-territorial unit was used as the resultant indicator. With the help of the production function, the priority of influence of indicators of activity of financial clusters of synergetic effect on GRP of the administrative-territorial unit was empirically established. Multivariate regression analysis was used to solve the production function in the study. Regression models for cost-effectiveness assessment have been developed to create regional innovation clusters of the financial sector in Ukraine. Economically advantageous, which brings a synergistic effect to the development of regions innovative financial clusters have been identified. The main gaps in the regulatory regulation of the formation and development of regional innovation clusters in the financial sector of Ukraine are substantiated. The system of measures for improvement of regulatory legal regulation of development of regional innovative clusters of the financial sector is substantiated and presented. The practical implementation of the results of the scientific research will help to create qualitatively new integration associations of financial and credit institutions, the purpose of which is to develop new financial instruments and new schemes for financial transactions in Ukraine.

Keywords: clusters, financial sector, Ukraine, administrative-territorial unit, innovations, legal regulation.
НОРМАТИВНЕ РЕГУЛЮВАННЯ РОЗВИТКУ РЕГІОНАЛЬНИХ ІННОВАЦІЙНИХ КЛАСТЕРІВ У ФІНАНСОВОМУ СЕКТОРІ УКРАЇНИ

Анотація. Необхідність підвищення автономності фінансової системи України робить доцільним проведення комплексу заходів, які будуть спрямовані на: укрупнення банківської системи, розвиток сектору небанківських фінансових інститутів, підвищення довіри населення і бізнесу до фінансового сектору в країні. Основним заходом поліпшення кондицій фінансової системи бачиться формування регіональних інноваційних кластерів у фінансовому секторі. Тому метою статті стало розроблення системи напрямків удосконалення правового регулювання формування та розвитку регіональних інноваційних кластерів у фінансовому секторі України. За допомогою методу експертних оцінок детерміновано систему показників для визначення фінансових кластерів у регіонах України. Експертами виступили 20 фахівців регіональних представництв Міністерства розвитку громад та територій України. Як базові методи дослідження використано методи кластеризації і карти Кохонена, на підставі яких виділено об‘єднання (кластери) об’єктів (регіонів) за рівнем інноваційної активності у фінансовій сфері України. За результатами побудови карти Кохонена за показниками 2018 року для всіх адміністративно-територіальних одиниць України визначено чотири кластери за рівнем інноваційного розвитку фінансового сектору. Доцільність створення інноваційних кластерів оцінено шляхом розрахунку синергетичного ефекту, де результатом показником використано валовий регіональний продукт (ВРП) адміністративно-територіальної одиниці. За допомогою виробничої функції емпірично була встановлена пріоритетність впливу показників діяльності фінансових кластерів синергетичного ефекту на ВРП адміністративно-територіальної одиниці. Для вирішення виробничої функції в дослідженні використовувався багатофакторний регресійний аналіз. Були розроблені регресійні моделі оцінки економічної ефективності при створенні регіональних інноваційних кластерів фінансового сектору України. Виявлено економічно вигідні, які привносять синергетичний ефект у розвиток регіонів інноваційні фінансові кластери. Аргументовано основні прогалини нормативно-правового регулювання формування і розвитку регіональних інноваційних кластерів у фінансовому секторі України. Обґрунтовано і представлено систему заходів щодо вдосконалення нормативно-правового регулювання розвитку регіональних інноваційних кластерів фінансового сектору. Практична реалізація отриманих результатів наукового дослідження сприятиме формуванню якісно нових інтеграційних об’єднань фінансово-кредитних установ, метою створення яких є
розроблення нових фінансових інструментів і нових схем здійснення фінансових операцій в Україні.

**Ключові слова:** кластери, фінансовий сектор, Україна, адміністративно-територіальна одиниця, інновації, нормативно-правове регулювання.

Формул: 2; рис.: 1; табл.: 2; бібл.: 36.

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**НОРМАТИВНЕ РЕГУЛЮВАННЯ РАЗВИТИЯ РЕГІОНАЛЬНИХ ІННОВАЦІЙНИХ КЛАСТЕРОВ В ФІНАНСОВОМ СЕКТОРЕ УКРАЇНИ**

**Аннотація.** Необхідність повышения автономности финансовой системы Украины делает целесообразным проведение комплекса мероприятий, которые будут направлены на: укрепление банковской системы, развитие сектора небанковских финансовых институтов, повышение доверия населения и бизнеса к финансовому сектору в стране. В качестве основной меры улучшения кондиций финансовой системы видится формирование региональных инновационных кластеров в финансовом секторе. Поэтому целью статьи стала разработка системы направлений совершенствования правового регулирования формирования и развития региональных инновационных кластеров в финансовом секторе Украины. Оценена целесообразность создания инновационных кластеров, выявлены экономически выгодные, которые привносят синергетический эффект в развитие регионов, инновационные финансовые кластеры. Обоснована и представлена система мероприятий по совершенствованию нормативно-правового регулирования развития региональных инновационных кластеров финансового сектора.

**Ключеві слова:** кластери, фінансовий сектор, Україна, адміністративно-територіальна одиниця, інновації, нормативно-правове регулювання.

Формул: 2; рис.: 1; табл.: 2; бібл.: 36.

**Introduction.** At the present stage of socio-economic development, the financial sector of Ukraine is characterized by significant gaps in the development of its individual sectors, which has provoked deepening imbalances and further financial destabilization. The country has been experiencing an unprecedented combination of political, financial and economic crisis, which are systemic and long-term [1]. Over the past 20 years, Ukraine has suffered three systemic crisis — in 1998—1999, 2008—2009 and 2014—2015. Over these years of its life, the hryvnia has devalued 16 times, while consumer’s prices have increased 15 times, and prices in the industry — 27 times [2]. During the crisis of 1998—1999 GDP fell by 2%, in 2009 — by 14.8%, and in 2014—2015. — by 15.8%. After 2013, more than half of the banks disappeared in the country. The National Bank
of Ukraine (NBU) estimated losses from their bankruptcy at the rate of 38% of GDP, which turned out to be almost 2.5 times more than losses from a fall in GDP itself [3]. The economic growth, beginning after the financial crisis, remains below (3.3% of GDP, 2018) the global average (3.7%) [1]. All official programs and assessments (governments, NBU, IMF) are based on the assumption that this gap will not disappear in the foreseeable future. Moreover, the IMF predicts a decrease in the potential growth of Ukraine by 2021 from 4 to 3% [4]. Due to the high dollarization of the Ukrainian economy (public debt — about 70%, bank deposits and loans — over 40% [2]), debt vulnerability, the critical dependence of the domestic economy on the world market are the main key characteristics of the development of the financial sector of Ukraine. Since the economy of Ukraine is small and open to external shocks, export- and import-dependent, any negative changes in the global commodity and financial markets can negatively affect her balance of payments, exchange rate, access to external financial resources and GDP growth.

One of the factors that could reduce the dependence of the financial sector of Ukraine from impacting cross-border financial flows is the increasing role of domestic funding [5]. Sources of internal funding of the financial system of Ukraine could be money and financial assets of households, corporations and the government. In European countries and other countries of the world, the unification of financial and credit institutions in the regions is carried out on the basis of a cluster approach [5]. The financial innovation cluster is an association of banking and other financial institutes, which determines the basis of the activity and the necessary financial infrastructure. The main goal of creating a financial regional cluster is to achieve a positive effect from interaction. Therefore, in these current conditions, the need to increase the autonomy of the financial sector of Ukraine seems to be necessary to carry out a set of measures that will be aimed at consolidating the banking system, developing the sector of nonbanking financial institutions, increasing the confidence of the population and business in the Ukrainian financial system. The development of these types of clusters should contribute to the consolidation of financial institutions of Ukraine, increase the level of financial literacy of the population, and create a convenient infrastructure for the development of financial markets. But it should be noted that the main destructive factor in the formation and development of financial clusters in Ukraine in modern conditions seems to be the lack of an effective regulatory framework for regulating this process.

Today, the organization of innovation activity in Ukraine is regulated by more than 400 legal acts (Law of Ukraine «On Innovation Activity» of 04.07.2002 № 40-IV [6], Law of Ukraine «On Education» of 09.08.2019 № 2145-VIII [7], Law of Ukraine «On Higher Education» of 01.07.2014 №1556-VII [8], Law of Ukraine «On scientific and technical activity» 26.11.2015 № 848-VIII [9], Law of Ukraine «On priority directions of innovation activity in Ukraine» of 08.09.2011 № 3715-VI [10], etc.). Clusters as objects of innovation infrastructure are mentioned in more than 100 legislative and normative acts, and the essence of the concept is defined in different ways and is unjustified (for the first time since 2003, the concept of «cluster» is used without any definition or explanation) [11]. An example of the ineffectiveness of the current legislation in the area of innovation and clustering is the laws and regulations that envisage the creation of innovative infrastructure objects. In addition to clusters, each of the considered legislative acts provides for the creation and development of industrial parks. Until recently, they have been the only innovation structure in Ukraine supported by the state legislation. Techno parks were meant to become a model for a further strengthening of the innovation infrastructure, taking certain measures to support innovative business [12]. They were also called upon to promote the development of small and medium-sized enterprises and ensure the competitiveness of high-tech branches of the national economy.

That is, it should be noted that today the legislation on clusters, and especially on financial clusters in Ukraine, is in its infancy. At the level of the law, it is mentioned only in the Law of Ukraine «On Employment of Population» [13], which provides the development of the clusters of folk art crafts without defining the concept of a cluster. Articles 120 and 127 of The Commercial Code of Ukraine [14] provide for various legal forms of business associations in the financial sector, namely: associations, corporations, consortia, concerns, other business associations.
prescribed by law (unions, unions, business associations, etc.). If we compare these forms of enterprise associations with a such form of association as a cluster, we could conclude that the cluster can exist in one of these legal forms or be a separate form of enterprise combination. Therefore, most enterprises choose the first option, due to the lack of legislative regulation, the lack of concept of «cluster», and fundamentals of their functioning, etc., not only in the financial sector but also in the economy.

**Analysis and statement of the research problem.** The question of clustering the economy and the financial sector as a factor for providing sustainable development of the economic system and increasing the autonomy of the financial system has been considered by many researchers. Among them: Porter Michael E. [15]. He studied the phenomenon of clusters, put forward the concept of an industrial cluster and substantiated the cluster theory of economic development. Anderson T. [16], Schwaag-Serger S. [16], Sorvik J. [16], Hansson E. [16] were working on the development «A white paper on cluster policy» which been distributed by the International Organization for the Economics of Knowledge and Enterprise Development (IKED) [16]. Rosenfeld S. [17] has investigated the issue of cluster strategies in less favorable regions and the removal of geographical boundaries with using the Internet. Sokolenko S. [18] has investigated the complex problems of the formation and functioning of a network of clusters in the context of modern theories of economic development. Voinarenko M. [19] has worked under the nature and place of clusters in the institutional economy, the prospects for the implementation of cluster models and technologies in the Ukrainian economy. Dontsova O. and Ermolaeva A. [20] has studied models of financial regional clusters in developed and developing countries.

For more than 20 years in international practice, there is a tendency to targeted the stimulation of cluster initiatives [20]. The natural course of cluster development, characteristic of the first half and middle of the XX century, has recently given a way to the targeted use of various models for the formation of clusters. In the base of modern practices of implementing cluster policy is an understanding of the need for the organizational impact of the state through legal regulation. The matters of clusterization and the legal framework for its provision were investigated and thoroughly described in the works by S. Sokolenko [18], M. Graziano et al. [22], V. Glinsky et al. [23], G. Jucevicius [24], K. Grumadaite [24], and others. These and other researchers analyzed the current legislation of Ukraine regarding the recognition of a cluster as an object of the state economic and legal policy; determined the necessity of perfecting the legislation on improving the competitiveness of the economy, studied the legal aspect of the formation and functioning of clusters in certain spheres of economic, in particular in the financial sector. But despite a wide range of studies on this issue, there is uncertainty in the main questions of the theoretical foundations of clusters in the financial sector — the legal nature of clusters, their legal personality, specifics of their legal status, and the like. Therefore, the purpose of the article is the development of a system of directions to improve the legal regulation of the formation and development of regional innovation clusters in the financial sector of Ukraine.

**Results of the research study. Justification of the economic efficiency of creating innovative regional clusters in the financial sector.** The main indicator reflecting the innovativeness of business entities and regions is the number of innovations. Also, important indicators in determining the possibility of cluster formation are the availability of resources: financial and labor. To reflect the regional aspect in the formation of clusters in Ukraine, we decided to use data on administrative-territorial units. Since these indicators have different dimensions in order to ensure the commensurability of the indicators and the adequacy of the simulation results, the following indicators were used:

1) Concentrations of innovations in the financial sector (X1) — calculated as the ratio of the number of financial institutions using innovations in the i-th region (administrative-territorial unit) to the total number of financial institutions using innovations in Ukraine;

2) Labor force concentration (X2) — calculated as the ratio of the total number of employed and unemployed in the financial sector in the i-th region to the total amount of employed and unemployed in the financial sector in Ukraine;
3) Concentrations of capital — capital investment (X3) — calculated as the ratio of the amount of capital investment in the financial sector in the i-th region to the total amount of capital investment in the financial sector in Ukraine.

To confirm the representativeness of indicators X1-X3, an expert method was used to model clusters. About 20 experts had evaluated the appropriateness of including each indicator in the sample and the adequacy of the sample from indicators X1-X3 on a 5-point scale. The higher the score set by an expert, the more appropriate is the inclusion of the indicator in the analysis and the more complete is the selection. The reliability of the results of the expert method was determined by the level of competence of the experts and the coefficient of concordance. The competence of experts is evidenced by the fact that experts are specialists from the regional offices of the Ministry for Communities and Territories Development of Ukraine, which work with innovative development issues. The level of consistency of expert opinions was assessed using the coefficient of concordance [25].

The measure of the coefficient of concordance of 0.86 indicated the consistency of expert opinions regarding the representativeness of the sample of indicators X1-X3.

The sum of the assessments of the expert group about the feasibility to include indicators into the sample, by indicator X1 was 100 points, X2 was 92 points, X3 was 98 points. In percent are 100%, 92% and 98% respectively (the maximum possible score for 20 experts is 100 points). The sufficiency of the sample, estimated in a similar way, was 88%. The results of the expert evaluation indicated the representativeness of the proposed scorecard.

The clustering method was used as a basic research method in the article, which allows identifying the associations (clusters) of objects (regions) depend on the level of innovative activity in the financial sector [26]. The essence of cluster analysis is to search for such a combination of clustering objects that minimizes the value of Euclidean distances between objects in one cluster [27].

From the varieties of cluster analysis, Kohonen self-organizing maps were selected to minimize the clustering error with modeling more complex, compared to linear, interconnections [28]. According to the results of constructing a Kohonen map in the Deductor 5.3 program according to the values of indicators X1-X3 2018 for all administrative-territorial units, 4 clusters were identified by the level of innovative development of the financial sector (Fig.).

![Innovative clusters in the financial sector of Ukraine, 2018](image)

**Source:** by the author.

Descriptive statistics of clusters and clustering errors are given in Table 1.

Cluster components: **Cluster «1»:** Vinnitsa region, Volyn region, Donets region, Zhytomyr region, Transcarpathian region, Ivano-Frankivsk region, Kirovograd region, Lugansk region, Nikolayev region, Poltava region, Rivne region, Sumy region, Ternopol region, Kherson region, Khmelnytsky region, Cherkasy region, Chernivtsi region, Chernihiv region; **Cluster «0»:** Zaporizhzhya region, Kiev region, Lviv region, Odessa region, Kharkov region; **Cluster «3»:** Dnepropetrovsk region; **Cluster «2»:** Kiev.
The conducted cluster analysis allowed us to single out the pattern that all indicators X1-X3 have the same tendency: the higher the value of one indicator in the region, the higher the value of the other. This indicates about balanced nature of the development of the innovativeness of the financial sector in the areas. Based on the results of clustering, the following clusters were identified: Cluster «1» — the cluster with the lowest values of indicators X1—X3. This cluster includes the overwhelming majority of administrative-territorial units (18 regions), which indicates a low level of innovative activity in the financial sector in Ukraine; Cluster «0» is characterized by higher values of indicators X1—X3 compared with the regions of Cluster «1»; Cluster «3» — formed with Dnipropetrovsk region, which has indicators are 2.4—2.7 times higher than the average in Ukraine; Cluster «2» is the most innovatively developed cluster.

The feasibility of creating innovative clusters was evaluated by calculating the synergistic effect. As an indicator characterizing the development of the financial sector in the region was used as the gross regional product created by financial organizations. But due to the lack of statistics on this indicator, the study used the indicator of the gross regional product (GRP) as an indicator of the effectiveness of the regions. Estimating of the synergistic effect was to assess the GRP of a separate administrative-territorial unit, GRP of a cluster (Cluster «0», Cluster «1», Cluster «2», Cluster «3»), GRP of intercluster associations (Table 2).

Table 1
Descriptive statistics of regional innovation clusters in the financial sector of Ukraine, 2018

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Specification</th>
<th>Clusters</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>X1</td>
<td>% of correct clustering</td>
<td>Cluster «1»: 88.9 100%</td>
<td>92%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cluster «0»: 100%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cluster «3»: 100%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cluster «2»: 100%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>0.0168 0.0565 0.0966 0.3174</td>
<td>0.0400</td>
</tr>
<tr>
<td>X2</td>
<td>% of correct clustering</td>
<td>Cluster «1»: 94.4% 80%</td>
<td>92%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cluster «0»: 100%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cluster «3»: 100%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>0.0174 0.0487 0.1070 0.3355</td>
<td>0.0400</td>
</tr>
<tr>
<td>X3</td>
<td>% of correct clustering</td>
<td>Cluster «1»: 83.3% 100%</td>
<td>88%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cluster «0»: 100%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cluster «3»: 100%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>0.0178 0.0489 0.1042 0.3461</td>
<td>0.0400</td>
</tr>
</tbody>
</table>

Source: by the author.

Table 2
Models for evaluating economic efficiency in creating regional innovation clusters in the financial sector in Ukraine

<table>
<thead>
<tr>
<th>Cluster</th>
<th>Model</th>
<th>Statistical characteristics of the models</th>
<th>E, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cluster «0»</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cluster «1»</td>
<td>Y = 0.34 X1,1,03 X2,0,81 X3,1,06</td>
<td>50 0.81 12.95* 1.03</td>
<td></td>
</tr>
<tr>
<td>Cluster «2»</td>
<td>Y = 1.02 X1,0,76 X2,0,81 X3,0,56</td>
<td>180 0.86 19.67* 0.81</td>
<td></td>
</tr>
<tr>
<td>Cluster «3»</td>
<td>Y = 0.98 X1,0,98 X2,0,53 X3,0,76</td>
<td>180 0.86 20.44* 0.89</td>
<td></td>
</tr>
<tr>
<td>Cluster «1» + Cluster «2»</td>
<td>Y = 1.24 X1,0,14 X2,1,06 X3,1,16</td>
<td>60 0.80 18.43* 1.12</td>
<td></td>
</tr>
<tr>
<td>Cluster «0» + Cluster «3»</td>
<td>Y = 1.08 X1,0,04 X2,1,08 X3,0,15</td>
<td>60 0.89 24.09* 1.09</td>
<td></td>
</tr>
<tr>
<td>Cluster «1» + Cluster «2»</td>
<td>Y = 1.19 X1,0,17 X2,0,51 X3,0,56</td>
<td>190 0.94 34.39* 0.98</td>
<td></td>
</tr>
<tr>
<td>Cluster «0» + Cluster «1» + Cluster «2»</td>
<td>Y = 1.04 X1,0,58 X2,0,56 X3,0,54</td>
<td>90 0.79 9.49* 0.96</td>
<td></td>
</tr>
<tr>
<td>Cluster «2» + Cluster «3»</td>
<td>Y = 1.16 X1,0,35 X2,1,25 X3,1,42</td>
<td>20 0.93 48.70* 1.34</td>
<td></td>
</tr>
<tr>
<td>Cluster «0» + Cluster «1» + Cluster «2» + Cluster «3»</td>
<td>Y = 0.97 X1,1,01 X2,0,57 X3,0,56</td>
<td>240 0.91 31.88* 0.98</td>
<td></td>
</tr>
<tr>
<td>Cluster «0» + Cluster «1»</td>
<td>Y = 1.38 X1,0,97 X2,0,50 X3,0,56</td>
<td>240 0.88 19.49* 0.91</td>
<td></td>
</tr>
<tr>
<td>Cluster «1» + Cluster «2» + Cluster «3»</td>
<td>Y = 0.88 X1,0,51 X2,0,29 X3,0,52</td>
<td>200 0.86 11.84* 0.94</td>
<td></td>
</tr>
<tr>
<td>Cluster «0» + Cluster «2» + Cluster «3»</td>
<td>Y = 1.20 X1,0,29 X2,1,04 X3,1,30</td>
<td>70 0.94 55.10* 1.21</td>
<td></td>
</tr>
<tr>
<td>Cluster «0» + Cluster «1» + Cluster «2» + Cluster «3»</td>
<td>Y = 0.84 X1,0,98 X2,0,92 X3,0,51</td>
<td>250 0.92 49.06* 0.97</td>
<td></td>
</tr>
</tbody>
</table>

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To determine the effect of the synergy factor on the change in GRP, the production function was used [29]. The choice of the production function is because of the resulting indicator — GRP, corresponds to the volume of production, and factors X1—X3 are «production factors».

\[ Y = a_0 \times X_1^{\alpha_1} \times X_2^{\alpha_2} \times X_3^{\alpha_3}, \]  

(1)

where \( Y \) — GRP, billion UAN; 
X1—X3 — indicators of innovation activity; 
a0 — free term of equation; 
\( \alpha_1-\alpha_3 \) — indicators of the elasticity of changes in GDP from factors X1-X3, respectively.

To solve the production function (1), a multivariate linear regression model was used in the Statistica 12.0 program. For this, both sides of the equality were logarithmized and the function reduced to the form of a multivariate regression model:

\[ \ln Y_1 = \ln a_0 + a_1 \ln X_1 + a_2 \ln X_2 + a_3 \ln X_3 \rightarrow \bar{Y} = \bar{a}_0 + a_1 \bar{X}_1 + a_2 \bar{X}_2 + a_3 \bar{X}_3, \]  

(2)

where \( \bar{Y} = \ln Y; \bar{a}_0 = \ln a_0; \bar{X}_1 = \ln X_1; \bar{X}_2 = \ln X_2; \bar{X}_3 = \ln X_3 \) (from functions 1);
\( \bar{a}_0 \) — free term of equation;
\( a_1-\alpha_3 \) — coefficients for independent variables — model elasticity coefficients (1).

The value of indicators for administrative-territorial units for 2008—2018 was used as the information base for building models (1) — (2). Since when creating Cluster «2» and Cluster «3» there is no synergistic effect (clusters consist of 1 object), the production function for them was not built. The functions built for Cluster «0», Cluster «1», as well as intercluster associations are shown in Table 2.

The constructed functions (Table 2) indicate that the consciousness of the following regional clusters in the financial sector or cluster associations are economically beneficial. They could introduce a significant synergistic effect into the development of regions: Cluster «0», Cluster «0» + Cluster «2», Cluster «0» + Cluster «3», Cluster «2»+ Cluster «3», Cluster «0»+ Cluster «2»+ Cluster «3». These are associations for which the calculated coefficient of elasticity is \( E > 1 \). The most effective is the creation of the union Cluster «2» + Cluster «3». In the Dnipropetrovsk region and Kyiv has observed an increase in GRP of each administrative-territorial unit by 1.34 %. Any associations in which Cluster «1» is a member are economically disadvantageous for more developed regions, which is confirmed by the general values of elasticity coefficients \( E < 1 \).

**Improving the legal and regulatory frameworks for the development of regional innovation clusters in the financial sector.** Based on the data obtained in the framework of this study, the economic benefit and the feasibility of the formation and development of regional innovation clusters in the financial sector have been empirically proven. As was noted previously, the key destructive factor on the path of their development today is regulatory and regulatory unresolved. The perspective of the legal institutional theory of the finance cluster has of very important today, on the basis that the cluster is a system of legal institutions, which is regarded as a set of rights or set of relationships in their dynamic development. The assessment of the development of the legal framework of Ukraine and the determination of the possibility of a safe innovation development of financial sector under conditions of clusterization of the national economy allowed to outline the need to systematize the existing innovation legislation as well as its
supplementation and further development in two areas: legislative support for clustering; legislative support for foundations of the safe industrial innovation development.

Concerning the first area, it is necessary to carry out a number of transformations in the following groups: creation (adoption) of relevant laws of Ukraine and normative acts; introduction of changes to the current normative documents in order to deepen the legal framework for cluster development; accession to international conventions (memorandums of clustering).

As for the first direction, it would be advisable to support the adoption of the Concept of Creation of Clusters in Ukraine [30], which was approved by the Decree of the Cabinet of Ministers of Ukraine in 2008. It outlines the main types of clusters, prerequisites and reasons for their creation, as well as a set of measures to intensify clusterization of the economy. It is also necessary to ensure adoption of the National Strategy for the Formation and Development of Cross-Border Cluster [31], which was approved by the Cabinet of Ministers of Ukraine in 2009 (Draft National Strategy for the Formation and Development of Cross-Border Cluster was developed in 2009 by the Ministry of Regional Development and Construction of Ukraine together with the National Academy of Sciences of Ukraine).

One of the fundamental legislative acts on the regulation of the financial sector in Ukraine is the Comprehensive Program of Ukrainian Financial Sector Development Until 2020. At the same time, the Program does not contain items regarding the clustering of the financial sector. First of all, this is explained by the fact that the concept of «cluster» in the legislative framework of Ukraine is completely absent. The introduction of such an instrument of stimulating local economic development, such as clusters, is proposed in the State Strategy of Regional Development for the period until 2020 [32] and development strategies of individual regions. But there is no contain the cluster wording. Legislative uncertainty determines the complexity of the practical understanding of the category of the cluster, and therefore their meaningful typology. Therefore, it seems to us appropriate to introduce graying directions for improving the functioning of regional financial clusters in Ukraine. Adoption of the Concept of Creation of a Clusters in Ukraine [30] approved by the Cabinet of Ministers of Ukraine, adoption of the National Strategy for the Formation and Development of Cross-Border Clusters approved by the Cabinet of Ministers of Ukraine [31], the Strategy for Small and Medium-sized Enterprise Development in Ukraine until 2020 [33] approved by the Resolution of the Cabinet of Ministers of Ukraine.


In addition to the above legal acts and projects, it is advisable to amend Article 120 of the Commercial Code of Ukraine [14] («Legal Forms of Business Associations») and the adoption of a separate law «On Clusters». A separate Law of Ukraine «On Clusters» may include articles regulating the following issues:

- definition «cluster», «clustering», «participant (founder) of the cluster»;
- the purpose of the cluster (the cluster is created with the goal of economic development and increasing the competitiveness of the region, increasing the attractiveness of investment activities, infrastructure development)
- types of clusters (urban, regional, national and international, financial, industrial, innovative, service, etc.);
- the procedure for creating a cluster and its state registration;
- cluster structure (three levels: the core of the cluster — the main manufacturers, service providers, other supporting entities — higher education institutions, insurance companies, etc.);
- Governmental support of the cluster (support can be provided by means of state and local budgets and other sources not prohibited by law);
cluster termination (termination occurs as a result of its reorganization into another form of association or liquidation).

Conclusion. Based on the theoretical and empirical study, the following conclusions can be drawn. The formation and development of the regional innovation clusters seem effective from an economic point of view. Especially effective in the creation of the Cluster «2» + Cluster «3» association. Since the merger of the financial potential of the Dnipropetrovsk region and the city of Kyiv results in an increase in GRP of each administrative-territorial unit to 1.34%. Association of market participants in a financial cluster is a way to achieve positive results in sectors of the economy: the ability to create a joint product, taking into account all the needs of the client; the ability to position yourself as a universal financial services provider; the opportunity to get a synergistic effect from the combination, the development of an effective marketing mix, which is designed for a new client segment and so on. The creation of financial clusters in Ukraine is beneficial and has many advantages, but the lack of a special law and the corresponding regulatory framework for clusters does not make it possible to get full regulation their activities, and therefore to develop this form of associations. The article forms recommendations for the development of the legal framework for cluster development in four directions. The first direction involves the development (adoption) of separate laws and regulations (adoption of the Concept of Creation of Clusters in Ukraine, the National Strategy for Formation and Development of Cross-Border Clusters, the Law of Ukraine «On Innovative Structures», etc.), the second is related to the introduction of changes to the current legislation in the field clusterization (introduction of amendments to the Law of Ukraine «On priority directions of innovation activity in Ukraine», Resolution of the Cabinet of Ministers of Ukraine «On Approval of the Regulation on the Procedure for the Establishment and Functioning of Technoparks and Innovative Structures of Other Types» etc.).

Література


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