УДК 330.3:519.8   *T.I. Prosyankina-Zharova, O.M. Terentiev*

DEVELOPMENT TYPOLOGY OF REGIONS FOR THE PURPOSES OF THE INVESTMENT POLICY OF USING SAS BUSINESS INTELLIGENCE

У результаті дослідження значної кількості факторів, що впливають на розвиток інвестиційної діяльності в агропромисловому виробництві засобами інтелектуального аналізу даних, що входять до складу SAS Business Intelligence, було відібрано найбільш значимі та сформовано групи регіонів певної типології, відповідно до особливостей яких запропоновано удосконалення інвестиційної політики.

The study a large number of factors that influence the development of investment in agricultural production by means of data mining, which make up the SAS Business Intelligence, was chosen the most significant, and formed the group of a certain typology, according to which the features suggested improvement of investment policy.

Ключові слова: інвестиції, типологія, інвестиційна політика, агропромислове виробництво, інвестиційна привабливість, аналіз, SAS Business Intelligence.

Key words: investments typology, investment policy, agro-industry, investment attractiveness, analysis, SAS Business Intelligence.

How to optimize the use of domestic investment resources is especially important for the Ukrainian economy, which is a long time remains unattractive to foreign investors. According to data of the World Bank and the International Finance Corporation «Doing Business 2013» [1] at rating «Doing Business 2013» Ukraine rank is 134th only. The solution to this problem is closely connected with the need to develop ways to improve of investment policy that at a dynamically changing situation and increasing of the openness of the national economy requires a detailed analysis of all the factors that form conditions of investment activity both on macro-and meso-levels.

The question of the development of the investment activity in branches and sectors of the national and regional economy are devoted in works of foreign and domestic scientists, including Denisenko M., Gutkevych S., Hudzynsky O., Keynes J., Kisil M., Kondratiev N., Porter M., Schumpeter Y., Zubets M. and others.

Much attention focused on the need for adaptation of state regional policy and in particular, on its investment component according to features of the economy of certain regions. Those questions are described in the works Ackerman E., Andreychuk V., Chumachenko M., Matvienko R., Onishchenko V. and others. However, the problem of purposeful and differentiated use of the investment potential of the national economy based on regional features paid to little attention.

The aim of the article is substantiation of necessity mapping of regional features specific to agro-industrial production in the state investment policy

During the research was supplied the following purposes: study the existing methods for classification and typology of regions for the purposes of investment policies, to identify the most significant factors for the purposes of investment policy, develop

an appropriate typology for the regions of Ukraine, taking into account the priority development of the agro-industrial production.

Integration to the European Economic Area puts new requirements to ensure the competitiveness of the national economy. Under these conditions the question of its innovation and investment maintenance arises more acutely.

The economics of regions of Ukraine [2, p. 140] characterized by different levels of investment attractiveness, competitiveness, climatic conditions, economic development and social standards, but also it have common, integrating elements especially in agro-industry. As the experience of regions, whose economy is dominated by agricultural production for their sustainable economic development, is important not only to increase the volume of investment involved, but they also must be directed to the leading branches of the regional economy in optimal proportions according with the optimal branch structure, production and resource potential of regions.

This investment policy allows detecting and adjusts the negative structural changes in the regional economy, helps to eliminate disparities in their sectorial structure, identifies trends further disintegration and differentiation of socio-economic development. The complexity of solving these problems is in the necessity analyze large volumes of information, in the identification of most significant and typical factors, common and distinctive features and characteristics, modeling perspectives of development of the investment activity in the regions. None of this is unpassable without the use of data mining tools, as powerful as the software SAS Business Intelligence [3].

Typical examples of classification of regions are proposed by M. Homenyuk [4, p. 43] and V. Zakharchenko [5, p. 53]. In their works were described the grouping attributes characterizing the structure of the regional economy and its openness, in particular, used the share of industry in GRP, share of exports to the GRP and index of the share of innovative products in total volume of industrial production at the region.

In general, classification and typology of regions use a wide range of features to grouping, depending on their goals, as example, share gross regional product per capita, sectoral structure of the economy, geographic location, income, demographic situation in the region, the ratio of employment in different sectors of the economy, and so on. In all, we can count several tens of statistical indicators that characterize these signs.

At the core of the typology proposed by the authors posited the features of investment providing agricultural production particular region. This is due to the fact that the agricultural sector — undoubtedly an important component of the economies of all regions without exception. And his top link — agriculture, long period demonstrates sustained economic growth, competitiveness and characterized by a significant export potential. In addition, although the agriculture, which in itself, and is not a significant source of investment maintenance, it creates preconditions for developing other sectors of the national economy, forms a synergetic effect from investment activity in agro-industrial complex.

A results of research carried out on the use of a set of 39 socio-economic indicators of regions of Ukraine and the AR Crimea in 2010—2012 [6] by means of cluster analysis implemented in SAS Business Intelligence (average distance, centroid method, Ward's minimum variance, k-means), received the following grouping of regions.

Table 1

Summary results of the cluster analysis of effectiveness of investment activity in the regions of Ukraine in 2010—2012 (developed by the authors based on source [6])

Region	Number of the cluster	Distance to the center of the cluster (on average, by different methods)	Group by the level of efficiency investments
Crimea	3	1.69366	very high, increasing
Dnipropetrovsk	2	2.29593	high and rising
Donetsk	5	1.56233	very high, increasing
Zaporizhia	5	1.73793	not high, increasing
Lugansk	5	1.94660	not high, increasing
Odessa	3	2.15895	high and rising
Kharkiv	3	1.47743	very high, increasing
Ivano-Frankivsk	3	2.08548	not high, falls
Vinnitsa	1	1.23383	not high, increasing
Volyn	3	1.71505	not high, falls
Zhytomyr	4	1.48645	not high, falls
Transcarpathian	3	3.27512	not high, falls
Kirovograd	1	1.31494	not high, increasing
Kiev	2	2.29593	very high, increasing
Lviv	3	1.49399	high and rising
Nicholas	3	2.29645	not high, falls
Poltava	5	2.18412	not high, increasing
Rivne	4	2.01886	not high, falls
Sums	4	0.65913	not high, falls
Ternopil	4	1.81193	not high, increasing
Kherson	1	1.31776	not high, falls
Khmelnytsky	4	1.83218	not high, falls
Cherkasy	1	2.13486	not high, increasing
Chernivtsi	3	2.09909	not high, falls
Chernihiv	4	1.45575	not high, increasing

Grouping of regions presented in Table 1 practically corresponds to their distribution on macroeconomic and agrotechnical areas.

For the purposes of the research and forecasting of investment activity in the regions and to improve the state investment policy, the authors proposed a typology of regions, which is based on European and Russian approaches [7], adapted to Ukrainian conditions (grouping performed using SAS Business Intelligence).

The feature of the typology presented in Table 2 is that the grouping attributes is not only a production orientation or geographic location, and the complex of factors, primary among which is the sensitivity of the regional economy (especially agro-industrial production) for investment.

Table 2

**Typology of regions of Ukraine for the purpose of investment policy
(developed by the authors based on source [6])**

Name Type	Description regional features typology	Regions that belong to this type
with special status	Cities — the centers of national importance that are centers of adjacent regions	m. Kyiv, Sevastopol, Crimea
traditionally developed, active investment	- gross regional product of the region is more than 75% of the national average among regions; - Positive trend of investment income; - stable investment attractiveness; - presence of the existing branch structure; - powerful scientific potential.	Dnipropetrovsk, Donetsk, Zaporozhye, Lugansk, Poltava, Kiev, Kharkov, Odessa regions
active investment, such the developing	- gross regional product of the region is in the range of 50% to 75% average across regions or became positive growth; — balanced industrial structure; - existing stable positive dynamics of development; - investment is increasing, but there is no strong positive the dynamics; - not high investment attractiveness; - low level of implementation of innovations	Nikolaev, Vinnitsa, Cherkassy, Kirovograd, Kherson regions
regions that are potential consumers of investment	- gross regional product of the region is less than 50% on average among the regions; - investment dynamics negative or was not determined; - investment unattractive; - branch structure needs improvement.	Zhytomyr, Ternopil, Chernihiv, Sumy, Rivne, Khmelnytsky regions
areas of cross-border cooperation	- regions bordering with countries outside the CIS, their separate areas have a special status	Volyn, Lviv, Ivano-Frankivsk, Transcarpathian and Chernivtsi regions

Developing measures for improvement of public investment policy according to the present typology of regions, government should pay attention to the features of investment that is specific to different groups and take into account them while developing regional investment programs and strategies.

Group of investment active leading regions consists of regions with industrial-oriented economy, which shows non-clear positive trend, but differs of investment attractiveness and a significant amount of investment. Agriculture in these regions focused on providing needs of the population for food, although industry specialization is highly effective. Therefore, the investment policy in these regions should be oriented first of all on development of leading industry branches and tasks, and for the agricultural sector priorities consist in food self-sufficiency of region.

The economy of the regions that identified as potential consumers investments is characterized by non-always positive economic development, low investment attractiveness and efficiency of investment. Therefore, the main objective of the investment policy for this group of regions should be to support those investment directions that contributing to the formation of optimal branch structure of the economy in these regions (including agro-production).

The largest group is the group of investment typology that consists of investment active regions whose economies are growing. Members of this group — regions, economy of which is based on the agricultural production, they have low ratings of attractiveness. That is why they must use mainly their own investment resources for further development. Nevertheless, over the past five years they have shown steady positive economic dynamics.

This group includes leading regions of agricultural production, for which agriculture is the leading system-branch of the economy. In regions-members of this group, enterprises of other sectors of agro-production, in particular, trade and transport develop around of agricultural enterprises. A characteristic feature of those economic systems is balanced industrial structure, developed agro-industry with a clear trend of cooperation and clustering. This group of regions requires special attention from the state and local government, since a synergistic effect on investment received in the integrated agro-formations significantly increases the overall efficiency of investment.

Regions of cross-border cooperation highlighted in a separate group due to the peculiarities of the functioning of those economic systems through participation in interstate projects and therefore have the appropriate legal status of the investment maintenance. To further modeling and ensuring clarity of the results, we have developed an interactive map of the region using tools SAS Business Intelligence and the results of previous studies [8]

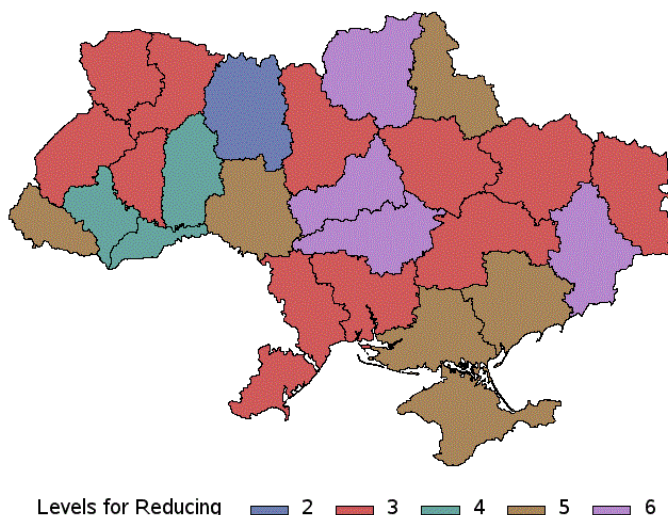Levels for Reducing ▬ 2 ▬ 3 ▬ 4 ▬ 5 ▬ 6

Fig. 1. Interactive map typology of regions for aims of improvement investment activity (developed by the authors)

Using of this map will greatly facilitate the perception of information about classification regions on the particular groups, will help simulate the process of co-development of geographically close and remote regions, and more.

Thus, according to the study, agriculture is the basis for the formation of an effective system of investment activity. It is therefore necessary not only try to attract more investment of resources, but also to optimize the activity of the regional and state administration to ensure a balanced orientation of investment resources in the economy of certain regions.

Given the significant impact of regional characteristics on the effectiveness of investment in agricultural production should be differentiated approaches to stimulate positive development of investment activity in agricultural production according to the typology developed by the authors. In order to improve the quality of research should be more use tools SAS Business Intelligence, competent application which will reduce the risks associated with management decisions.

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