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ANALYSIS OF SUSTAINABILITY OF DEVELOPMENT AND DETERMINATION OF POTENTIAL POINTS / POLES OF GROWTH OF A REGION (ON THE EXAMPLE OF AKTOBE REGION)

Abstract. The regions of Kazakhstan have a high growth potential. Its timely assessment and identification of reserves for future sustainable growth makes it possible to develop facilitating mechanism. This research is part of the scientific project “Formation of Growth Poles and Zones of Sustainable Development in Kazakhstan area of the Silk Road Economic Belt”, carried out as part of a grant from the Ministry of Education and Science of the Republic of Kazakhstan.

The research methodology is based on classical foreign theories and models of regional economic growth and development, models of macroeconomic analysis, and econometric modeling. The methodology for identifying growth poles is based on the stability of their growth and compiled using various economic indicators of regional development. Through the results of the research we can determine which industries and activities are the driving forces of the regional economy.

To determine the growth poles in the region’s economy groups of quantitative and qualitative criteria were used that allowed to identify and justify industries with the highest growth potential, assess sustainability (development trends) and the level of growth of economic activity by industries and districts of the region.

Based on the processing of large statistical material, the authors substantiated industries as potential growth poles and activities that are priority for development. Based on the results, the authors ranked industries and activities from the most promising to the least developed.

The study provides an opportunity to adjust the economic policy of the region in the long term, taking into account new opportunities, focusing on sustainable development.

Keywords: growth poles, stability index, Spearman coefficient, quantitative and qualitative indicators of economic sectors.

Introduction. The Aktobe region is a major industrialized region of Kazakhstan. The territory of the Aktobe region is 300.6 thousand km², which is 11% of the territory of the Republic of Kazakhstan. The administrative units of the region include 1 city of regional significance, 7 towns under regional jurisdiction, 12 districts, 2 township districts and 372 settlements. As of January 1, 2018, the population of the region amounted to 857.7 thousand people, 429.5 thousand of which is economically active population, decreased compared with 2016 from 50.7% to 50.07. The population density is 2.85 man/km² [1].

The region has industrial and agricultural focus. For 2017, the gross regional product amounted to 2,263,421.219 million tenge (VI - 91.5%) [2], which is 4.2% of the gross domestic product of Kazakhstan. This region has a great economic potential, the implementation of which requires the identification of potential growth points and poles [3].

Methods. To carry out the analysis, we used a methodology formed by a group of authors [4], which makes it possible to identify and substantiate economic sectors that have the highest growth potential. This methodology consists of two parts, the first part assesses the stability of development (development
trends) and the level of growth of economic activity by sectors, as well as economic activity by region’s districts. The second part assesses and identifies growth poles or points in the region’s economy based on statistical data of industrial production.

The stability of development and the level of growth is determined based on resistance to changes, trends and growth levels. The correct choice of growth priorities/points/poles is determined by their actual contribution to the growth of the country’s GDP, which in turn is estimated by two groups of indicators [5]:

- the growth rate (GDP index) of these growth priorities/points/poles and their share in GDP;
- the ability of these growth priorities/points/poles to have a positive multiplication effect on other sectors of the economy.

It is proposed to use sets of indicators designed to assess the stability of time series when diagnosing the stability of development. In this case, the stability of development of economic sectors is understood as the stability of trends in changes in the indicators of its operation or the stability of time series.

The stability assessment provides for solving two problems:
1) measuring the stability of levels of time series (Stability Index - Si)
2) measuring the stability of a trend. It is determined through the coefficient of variation (Cv) and the coefficient of volatility (Cvol) or variability.

Results and discussion. Assessment of the stability of trends in the development of the economy of Aktobe region by the Spearman coefficient showed that for the period from 2001-2017 the economic development trend of the region was at different levels of development, for instance, mining production (Sc=1.0), investment volume (Sc=0.82), industrial production volume (Sc=0.65), passenger turnover (Sc=0.57), import volume (Sc=0.58), foreign trade turnover (Sc=0.50), export volume (Sc=0.50) were at a fairly high level. The sectors which had the Spearman’s coefficient below 0.5% showed the low or weak level of development: retail trade turnover (Sc=0.48), construction production volume Sc=0.47, animal production volume (Sc=0.43), transport services volume (Sc=0.36). The following sectors were at an extremely unsatisfactory level of development (the downward trend was very high): processing production volume (Sc=0.05), agricultural production volume (Sc=0.07), and the crop production volume (Sc=0.05), freight turnover (Sc=0.10), freight traffic volume (Sc=0.04), passenger traffic volume (Sc=0.16)

Thus, very high-level trends of change (development or decrease) are observed in industrial production, mining, investment, import, export, foreign trade, as well as a low CPI growth rate. Retail trade, construction, animal production and transport services have a satisfactory (average) growth state. A low growth trend or absence of a growth trend (or a very high level of decline in development) is observed in the processing production, agriculture, crop production, freight and passenger traffic.

The assessment of the indicators growth rates and the level of its volatility/variability from the arithmetic mean value for 2001-2017 showed the following result:
- high and medium growth rates are shown by foreign trade (Si=1.77) with an indicator of variability to environmental factors (Cv=29.2%); mining (Si=1.2), with an indicator of variability to environmental factors (Cv=11.1%); freight turnover of all types of transport (Si=1.19) and variability (Cv=14.6%); retail trade (Si=1.18) with variability (Cv=18.4%).
- the volume of industrial production (1.13) with average variability (Cv=7.1%);
- agriculture (Si=1.12) with average variability (Cv=6.5%)
- transportation of goods by all means of transport (Si=1.13) with variability (Cv=7.5%)
- retail turnover (Si=1.18) with low variability (10.4%); Foreign trade turnover (Si=1.77) with average variability (29.2%).

The growth rate of the regional economy for 17 years (2001-2017) averaged 6.6%, for 2013-2017 -2.4%. There is a steady growth trend (Cvar.= 4.7%; Cstab.= 95.3%), the stability index in the period from 2001 to 2017 amounted to 1.08.

In the processing production, an increase in the average growth rate (growth stability) amounted to 5.5% in 2001-2017 and 6.6% in 2013-2017; however, the mining industry has shown a decrease in the average growth rate from 2013 to 2017 - the decrease amounted to 2.6%, while over the period from 2001 to 2017 the growth rate of the mining industry amounted to 8.6%. The stable growth from 2001 to 2017 is observed in the processing industry (Si=1.1; av.dev.=6.1%), while the mining industry is less stable (av.dev.=12.1%).
In agriculture, the increase in the average growth rate over the period from 2001 to 2017 has been 2.8% and for 2013-2017 - 3.2%. Of these, in crop production 2.0 and 7.4%, respectively, in animal production 3.5 and 0.7%. Agriculture in the Aktobe region has been developing steadily from 2001 to 2017. Thus, the stability index was 1.12 (Cvar.=6.8; Cstbal.=93.2). The growth in freight turnover and freight traffic for 17 years averaged 8.1% and 6.7%, respectively, and is characterized by steady growth (S=1.13-1.19, Cvar.=7.5-14.6%).

From 2001 to 2017, there has been an increase in foreign trade turnover in average by 17.1% per year, of which exports - by 20.0% and imports - by 11.3%. However, for the period from 2013 to 2017, there is a decrease in the rate of foreign trade turnover by 11.3%, exports by 11.0%, and imports by 11.6%. This is due to the fact that statistics on this indicator are calculated in US dollars, and in 2013-2017, there was a sharp significant change in the rate of the US dollar against the tenge towards an increase in the value of the dollar.

Foreign trade turnover is also characterized by less stability compared to the above basic socio-economic indicators (S=1.77, av. dev.=34.1%, Cvar.=29.2%).

The distribution of rates and stability of growth of sectors of the economy of the districts of the Aktobe region for 2001-2017 demonstrates a high average annual industry growth rate which are observed in the Martuk (24.6%), Alga (12.3%), Kobda (11.6%), Otyl (9.4%) districts. Relatively low growth rates are observed in the city of Aktobe (107.8), the Kargaly (105.1), Aytekbi (103.7), Khromtau (103.4), Irigiz (103.4) districts. The Bayganin, Mugalzhar, Temir, Shalkar districts show no growth.

To obtain comparative generalizing characteristics of the stability of the development of individual sectors in the region (we performed calculations using the example of the Aktobe region), taking into account both components (stability of levels and stability of the trend), we made a complex grouping of sectors according to the Spearman’s coefficient and stability index, the results of which are presented in Table 1.

<table>
<thead>
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<th>Components of stability of the regional economy</th>
<th>Region’s sectors</th>
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<td>Corridors of stability of growth trends</td>
<td>Stability of levels of time series (Stability Index - Si)</td>
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<td>Volatile trend Spearman’s coefficient Sc&lt;0.2</td>
<td>High Si=&gt;1.2</td>
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<tr>
<td>Weak stability Sc=0.2-0.4</td>
<td>High Si=&gt;1.2</td>
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<tr>
<td>Medium stability Sc=0.4-0.6</td>
<td>Medium Si=1.1-1.2</td>
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<tr>
<td>High stability Sc&gt;0.6</td>
<td>High Si=&gt;1.2</td>
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<td>Weak Si&lt;=1.1</td>
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In 1995-2013 the declared development priorities of the region really contributed to the GRP growth. But in 2014–2015, the situation has changed drastically. Traditional sources of economic growth have been exhausted. This is vividly illustrated by the data for 2001-2017.

To determine the growth poles/growth points, we proposed the definition of potential regional growth poles/growth points. The criteria are two main quantitative indicators, the characteristics of which are presented in the methodology: 1 criterion - the share of the type of economic activity in the economy of a region/sector; 2 criterion - the growth rate of the type of economic activity of the economy of a
region/sector. In order to be growth pole/growth point, by virtue of the above definition of growth poles/growth points, the type of economic activity of the economy/sector (enterprise, project) must meet two quantitative criteria - the first and second.

Based on the analysis and assessment of the types of economic activities of the Aktobe region for the period 2012–2017 and calculation of growth impulses / poles in industries according to quantitative criteria, it was revealed that: the highest chances (2-3 times higher) to become growth points are attributed to the following industrial production: beverage production; manufacture of wooden and cork products, except for furniture; production of straw products and materials for weaving; printing activities and reproduction of recorded materials; manufacture of computers, electronic and optical products; furniture manufacture; manufacture of other vehicles. The following industries have lower chances (1.5-2 times): consumer goods manufacturing; manufacture of electrical equipment. Low chances to become growth points/growth poles have the following sectors: technical services in the field of mining; textile manufacture; manufacture of rubber and plastic products; water supply; sewer system, control over the collection and distribution of waste.

The following is an analysis of the compliance of the growth poles / growth points with the qualitative criteria for the selection of growth poles / poles:

- a criterion (third) of the possibility of extrapolating the current state of the growth poles/growth points and the trends of their development in the past to the future (or modeling the future state of the growth poles/growth points based on the available data). The more such opportunities, the more informative the quantitative analysis is;
- a criterion (fourth) of a targeted nature, that is, to what extent the selected growth poles/growth points contribute to the achievement of the objectives of the development of the region;
- a criterion (fifth) of the availability of investment needs of the growth poles/growth points;
- a criterion (sixth) for the presence of synergistic interaction of the growth poles/growth points with other types of economic activity (enterprises, projects);
- a criterion (seventh) of the availability of mechanisms for activating growth poles/growth points available for implementation as a growth point/pole.

Thus, as a result of the study of the growth poles of the Aktobe region, we revealed that some industries can be considered as the regional economy growth poles, which can be ranked as follows:
- industries and projects in the processing industry: manufacture of computers, electronic and optical products; furniture manufacture; manufacture of wooden and cork products, except for furniture; manufacture of straw products and materials for weaving;
- water supply; sewer system, control over waste collection and distribution.
- industries and projects in the mining industry: technical services in the field of mining; mining and quarrying; crude oil and natural gas production; crude oil production; metal ore mining; non-ferrous metal ore mining.

More similarly, the following industries, districts and manufacturers can be considered as the growth poles of the Aktobe region’s economy [6]: manufacture of computers, electronic and optical products; furniture manufacture In the city of Aktobe; manufacture of wood and cork products, except for furniture; manufacture of articles of straw and plaiting materials; water supply; sewer system, control over waste collection and distribution; technical services in mining industry.

In the field of trade, significant structural changes have been observed in recent years, such as the reduction of spontaneously organized markets, the enlargement of retail chains, increased competition between large retail chains, as well as the provision of retail chains with products of local producers. As of January 1, 2016, the network of retail outlets in the region amounted to 5,209 units (in 2014 - 5686 units), the number of retail space - 584,496 sq.m. or increased compared with the corresponding period last year by 18% (495,251 sq.m.) [7].

**Conclusion.** Thus, the analysis made it possible to determine the growth points in the Aktobe region, the potential of which can be effectively used when enhancing the operation of international transport corridors and implementing state economic development programs.
АЙМАҚТЫҢ ДАМУ ТҰРАҚТЫЛЫҒЫН ТАҢДАУ ѮЖЕҢЕ ЭЛЕУЕТІ ОСУ НҮКТЕЛЕРІ/ПОЛЮСТРІНІҢ АНЫҚТАУ (АҚТОБЕ ОБЛЫСЫНЫҢ МЫСАЛЫНДА)

Аннотация. Қазақстан экономикасының қызметтілігі және оның құрылысының көмек құру қызметтілігі мемлекеттің және өндіріс аймақтарының тұрақты даму қосындықтары, бағыттары және міндеттерін ісік асерге қауіпсіз қауіпсіз етеді. Осыға байланысты Қазақстан аймақтарының экономикалық оқін қамтамасыз ету тұрақтылығының аймақтарының есу полюстери мен аймақтары құлақтытары анықтау өздік мәселелер болып отыр.

Зерттеу мақсаты Ақтоң облысының тұрақты даму резервтерін анықтау және оны қамтамасыз ету тетігін анықтау болып табылады. Құрылым қоғам экономикалық басқаруға қауіпсіз әуелерге есу полюстері мен құлақтытары даму қосындықтары құлақтытарының тұрақтылығы түркі язылысы және жобаңың білім бойынша табылады.

Жұртізілген зерттеу дәлімдесінің нәтижелерінде аймақтық экономикалық оқін сәйкестенісінің және даму дұрысын құрылығының әсері қызмет көрсетеді. Актобе облысының экономикалық салалар мен сфералары құрылығының әсері қаңырақты тұрақтылығын қауіпсіз қауіп қолдану үшін құрылығын қауіпсіз тұрақтылығын анықтау өзгертеді. Даму қосындықтарының қоғам экономикасының қызмет көрсетуінің үйренуі әсері құрылығын қауіпсіз қауіп қолдану үшін құрылығын қауіпсіз тұрақтылығын анықтау өзгертеді.

Актобе облысының экономикасының қызмет көрсетуінің нәтижелерін қолдану үшін құрылығын қауіпсіз қауіп қолдану үшін құрылығын қауіпсіз тұрақтылығын анықтау өзгертеді. Даму қосындықтарының қоғам экономикасының қызмет көрсетуінің үйренуі әсері құрылығын қауіпсіз қауіп қолдану үшін құрылығын қауіпсіз тұрақтылығын анықтау өзгертеді.
АНАЛИЗ УСТОЙЧИВОСТИ РАЗВИТИЯ И ОПРЕДЕЛЕНИЕ ПОТЕНЦИАЛЬНЫХ ТОЧЕК/ПОЛЮСОВ РОСТА РЕГИОНА (НА ПРИМЕРЕ АКТЮБИНСКОЙ ОБЛАСТИ)

Аннотация. Ситуация, складывающаяся в настоящее время в экономике Казахстана, и необходимость ее структурной перестройки требуют определения источников роста, позволяющих реализовать приоритеты, направления и задачи устойчивого развития страны и ее регионов. В этой связи актуальным является определение потенциальных точек или полюсов роста регионов Казахстана с точки зрения обеспечения их экономического роста.

Целью настоящего исследования является выявление резервов устойчивого роста Актюбинской области и выработка механизмов его обеспечения. Представленное исследование является частью научного проекта «Формирование полюсов роста и зон устойчивого развития на казахстанском участке экономического пояса Шелкового пути», выполненной в рамках реализации гранта МОН РК.

В основе методологии проведенного исследования лежат классические зарубежные теории и модели регионального экономического роста и развития, модели микроэкономического анализа, эконометрическое моделирование. Методика выявления полюсов роста основана на устойчивости их роста и составлена по различным экономическим показателям развития регионов. Для определения полюсов роста в экономике региона использованы группы количественных и качественных критериев, которые позволили выявить и обосновать отрасли, обладающие наиболее высоким потенциалом роста, оценить устойчивости развития и уровень роста экономической деятельности по отраслям и по районам области.

Для получения сравнительных обобщающих характеристик устойчивости развития отдельных отраслей промышленности региона с учетом устойчивости уровней и устойчивости тенденций составлена схема группировки отраслей по значению коэффициента Спирмена и индекса устойчивости. Результаты проведённых расчётов позволили дифференцировать сферы отраслей экономики Актюбинской области по тенденциям их изменений.

Для определения направлений роста авторами предложено определение потенциальных региональных полюсов роста/точек роста). При этом в качестве основных количественных показателей были использованы 2 критерия:

а) доля вида экономической деятельности в экономике региона/промышленности; б) темп роста вида экономической деятельности экономики региона/промышленности.

В качестве качественных критериев выбора точек/полюсов роста в работе использованы:

- критерий возможности экспроприации текущего состояния полюсов роста/точек роста и тенденций их развития в прошлом на будущее (или моделирования его будущего состояния);
- критерий целевого характера, т.е. того, насколько выбранные полюсы роста/точки роста способствуют достижению поставленных задач развития региона;
- критерий наличия инвестиционных потребностей полюсов роста/точка роста;
- критерий наличия синергетического взаимодействия полюсов роста/точки роста с другими видами экономической деятельности (предприятиями, проектами);
- критерий наличия доступных к реализации механизмов активизации полюсов роста/точки роста именно как точки/полюса роста.

В результате проведения анализа и оценки видов экономической деятельности Актюбинской области за период 2012–2017 гг. и расчета импульсов/полюсов роста в отраслях промышленности по количественным критериям, авторами проведено ранжирование отраслей и видов деятельности от наиболее перспективных к наименее развитым. Потенциал выявленных точек роста может быть эффективно использован в процессе активизации эксплуатации международных транспортных коридоров и реализации государственных программ развития экономики.

Практическая применимость результатов исследования состоит в том, что они позволяют определить конкретные отрасли и виды деятельности экономики, которые выступают локомотивами роста региона. Обработка большого статистического материала позволила авторам обосновать отрасли как потенциальных полюсов роста и виды деятельности, приоритетных для развития. Кроме того, проведенное исследование дает возможность скорректировать экономическую политику региона в долгосрочной перспективе, с учетом вновь открывающихся возможностей, ориентировав ее на устойчивое развитие.

Ключевые слова: полюса роста, индекс стабильности, коэффициент Спирмена, количественные и качественные показатели отраслей экономики.
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