своей продукции третьим независимым и авторитетным лицом, несомненно, будут иметь конкурентное преимущество на рынке, работающем по правилам ВТО.

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УДК 33

Akhmadiyeva Z.

MA, Senior lecturer, Suleyman Demirel University, Almaty, Kazakhstan

e-mail: zarema.akhmadiyeva@sdu.edu.kz

THE IMPACT OF THE CASPIAN SEA ACCESS ON REGIONAL INCOME LEVEL IN KAZAKHSTAN: SPATIAL AUTOCORRELATION ANALYSIS

Abstract. A sea border provides trading opportunities for nations and enables participation in the world market and consequently the economic growth. Sea access is considered as a significant limiting factor in the economic success of Kazakhstan's regions. Results of this study based on spatial autocorrelation analysis illustrates a positive relationship between access to the sea and the economic success of the regions while Gross Domestic Product (GDP) per capita is utilized as the economic indicator.

Key words: income per capita, sea access, global spatial autocorrelation.

Introduction

Access to the water was always a keystone of economic success for countries. People try to live near rivers and lakes due to the advantages provided by water. Looking to all over the world it is obvious that majority of the Least Developed Countries are landlocked. Countries that do not have sea access suffer a cost of trade, high transaction cost of imports and exports.

Kazakhstan are still considered landlocked, even though it has coastline with the Caspian Sea which is landlocked sea. As most of water objects, the Caspian region is vulnerable to the human impact. It isa unique water object on our planet. For a long time its resource abundant basin had been considered one of the main economic foundations of the peoples that used to live on its shores. Caspian basin also was used for logistics and transportation, tourism, recreation and, of course, it is a great source of oil and gas.

The Caspian Sea is exceptional by many standards. It is the largest lake in the world. Moreover, it is a closed lake with very large variations in its water level because of natural oscillations of the components that make up the water balance. The variations in the water level have had a strong influence on most aspects of economic life. The Sea and its shores are rich with mineral resources, including oil, but prospecting and extraction also require effective environmental management.

The dissolution of the USSR and the emergence of three new independent littoral states along with Iran and Russia completely reshaped the nature of inter-states relations in the Caspian region. The sea was no longer subject to bilateral relations of the two states. Particular

regional relations emerged in the Caspian region as new independent Caspian states, Azerbaijan, Kazakhstan and Turkmenistan became active players in the geopolitics and geo-economics of the region.

Caspian Sea has more importance for Azerbaijan, Kazakhstan and Turkmenistan, which have narrower foreign policy agendas in comparison with Russia and Iran. Oil and gas sector is the backbone of the economy of Kazakhstan and a relevant part of these resources are extracted either in the Caspian or in its immediate proximity. Kazakhstan, having abundant supplies of hydrocarbons, are interested in developing a wide network of export routes and the sea plays a key role in Westward export of the resources. [1]

Kazakhstan is heavily dependent on the Caspian Sea hydrocarbon resources. The difference in incomes per capita demonstrate a huge gap between regions of the state. Thus, GDP per capita in 2015 in the South Kazakhstan region was 909 800 KZT that is approximately 8 times less than in Atyrau region - 7 042 700 KZT.

Table 1 demonstrates regions with and without access to the Caspian Sea. The prediction of the study is that sea access and closeness to the sea makes a sense for regional economic development.

Table1: Sea access of Kazakhstan's regions

Regions with access to the Caspian Sea	Regions without access to the Caspian Sea
1. West Kazakhstan 2. Atyrau 3. Mangystau	1. Kostanay 2. North Kazakhstan 3. Akmola 4. Karagandy 5. Kyzylorda 6. South Kazakhstan 7. Zhambyl 8. Almaty 9. Pavlodar 10. East Kazakhstan 11. Aktobe

The aim of this paper is to study the impact of closeness to the Caspian Sea on the economic development of the Kazakhstan's regions. The main question of the course is "Does closeness to the Caspian Sea affect positively to regional income level?"

Literature Review and Methodology

There is a huge body of the literature on the relationship between geography and economic development that is continue to increase. Given the key role to transport costs, Adam Smith (1976) presented the correlation between geography and growth. "As by means of water-carriage a more extensive market is opened to every sort of industry than what land-carriage alone can afford it, so it is upon sea-coast, and along the banks of navigable rivers, that industry of every kind naturally begins to subdivide and improve itself, and it is frequently not till a long time after that those improvements extend themselves to the inland part of the country." [3]

Gallup, Sachs and Mellinger [4] found that coastal regions, and regions linked to coasts by ocean-navigable waterways, are much more developed in comparison with the landlocked areas.

Global spatial autocorrelation analysis is applied to study the importance of sea access to regional development in Kazakhstan. Spatial autocorrelation literally shows that variable is correlated with itself. The univariate Moran's I [2] statistics is an estimate that measures the

extent of spatial autocorrelation in data. It ranges from (-1) to (+1), where positive values indicate a positive association between variable and itself in other regions, negative indicate a negative association, and (0) indicates there is no correlation between variables.

The global Moran's I statistic is calculated by:

$$I = n\frac{\sum_{ij} w_{ij}\,(y_i - \bar{y})(y_j - \bar{y})}{W\sum_{i=1}^{n}(y_i - \bar{y})^2}$$

Where $n$is the total number of observations, $w_{ij}$is the weights for neighbours$i$and$j$, $y$is the value of the variable at the $i$and$j$locations, $\bar{y}$ is the the overall mean of values. To determine the significance of Moran's *I* a Monte Carlo randomisation test with 999 permutations was applied.

The data used were obtained from the World Bank's database. Gross Domestic Product per capita of 2015 was used as indicator of economic development of the regions. A research software GeoDa was utilized to present the data and compute spatial autocorrelation. First, spatial weights matrix of regions based on first-order queen contiguity that takes into account surrounding neighbours were calculated. After this, the Moran's I statistics with scatter plot were presented and interpreted.

Results and Discussion

Figure 1 indicates the distribution of regional GDP per capita for 2015 in all 14 regions of Kazakhstan. It is obvious that regions with access to the Caspian Sea demonstrate the highest economic development. Oil resources existence in West Kazakhstan, Mangistau and Atyrau regions plays a key role in regional income. The economy of South Kazakhstan, Almaty and Jambyl regions and northern part of the state are based on agricultural sector that is not contribute to the local income tangibly.

Figure 1: Regional Income Per Capita in Kazakhstan, 2015

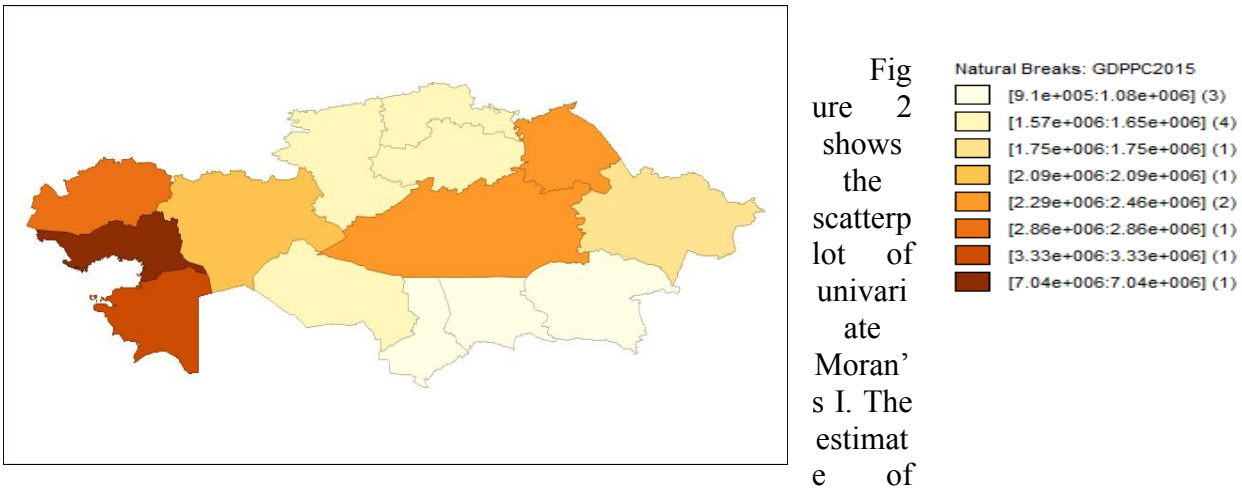
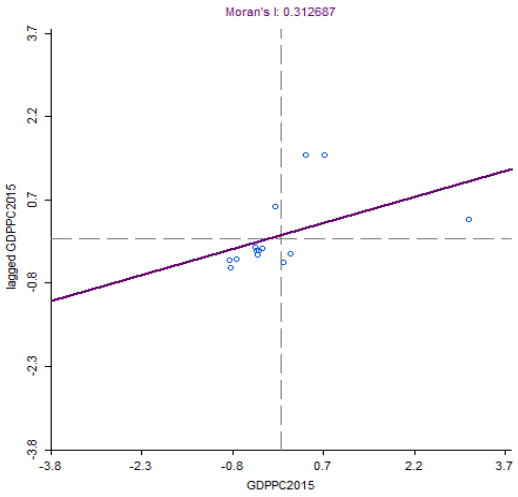


Figure 2 shows the scatterplot of univariate Moran's I. The estimate of Moran's I is 0.312 and significant (p-value = 0.003). As null hypothesis for this test is "there is no autocorrelation between regions", which is failed to reject, the alternative one is accepted. Spatial autocorrelation in regional GDP per capita is positive as it was expected. It means, the more is the regional income of neighbour regions the better is economic development in the given area.

Figure 2: Moran's I Scatter plot and the value



Conclusion and Future Work

It can be concluded that the access of the regions to the Caspian Sea is important for Kazakhstan. Knowledge of the spatial distribution helps us to understand the structure of the Kazakhstan's economy. The quality of life in the west of Kazakhstan actually is not high in comparing with the southern regions, however it has the highest regional income. This paradox can be explained by oil revenues generated that do not benefit the local communities.

The results of this study demonstrates spatial dependency on regional income. Although Kazakhstan has chosen the way of economic diversification, it is still heavily dependent on oil revenues that makes the economic stability vulnerable.

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УДК 338.1

Елшібаев Р.Қ.

Нархоз университетінің доценті, э.ғ.к., Қазақстан Республикасы, Алматы қаласы

e-mail: rahym@list.ru

ҚАЗАҚСТАНДА ИНДУСТРИЯЛЫҚ-ИННОВАЦИЯЛЫҚ ҚЫЗМЕТТІ МЕМЛЕКЕТТІК ҚОЛДАУ МӘСЕЛЕЛЕРІ

Abstract: This article considers the issues of state support of industrial-innovative activities in Kazakhstan. In particular article provides industrial innovation system and description of its component parts, and state support measures of subjects of industrial innovative activity.