A.S. Bekbossinova[1*], A.A. Kireyeva[2], L. Vasa[3]

[1]K. Sagadiyev University of International Business, Almaty, Kazakhstan;
[2] Institute of Economics Science Committee MSHE RK, Almaty, Kazakhstan;
[3] Széchenyi István University, Gyor, Hungary
[1]aselka01@mail.ru, [2]kireyeva.anel@ieconom.kz, [3] vasalaszlo@gmail.com

[1]https://orcid.org/0000-0003-1054-6640,
[2]https://orcid.org/0000-0003-3412-3706,
[3]https://orcid.org/0000-0002-3805-0244

[2]Researcher iD N-6029-2016, [3]Researcher ID: V-4749-2018

The influence of social and economic factors on the emergence of inequality in the regions of Kazakhstan

Abstract

Object: the aim of current study is to analyze the impact of social and economic factors on the emergence of inequality in the regions of Kazakhstan based on the regression analysis.

Methods: to achieve the purpose of the study, regression analysis of social and economic factors on the Ginny coefficient was used for four regions of Kazakhstan: Akmola, Aktobe, Karaganda and East Kazakhstan regions. In addition, comparative analysis and statistical analysis were used. Data from the Bureau of National Statistics from 2001 to 2021 were used.

Findings: in the case of Akmola, regression analysis shows that the F value of the model is statistically significant (Sig. = 0.017), which indicates that the model matches the data well. The coefficient Akm_PR is also significant, with a positive value of 0.016. This suggests that there is a statistically significant positive relationship between the variable Akm_PR and the Gini coefficient (Akm_Gini) in the Akmola region. In the Aktobe region, there is a statistically significant positive relationship between the variable Akt_HCE and the Gini coefficient (Akt_Gini). No statistically significant links were found in Karaganda. And in the East Kazakhstan region there is a statistically significant positive relationship between the variable EKZ_GRP and the Gini coefficient (EKZ_Gini).

Conclusions: the study showed that the level of regional inequality varies significantly in different regions of Kazakhstan. East Kazakhstan has the highest level of inequality, while in Akmola, Aktobe and Karaganda regions inequality is more moderate. The results of the regression analysis also showed that the influence of independent variables on the level of inequality varies in different regions.

Keywords: inequality, regions, economic factors, social factors, poverty level, Ginny coefficient.

Introduction

Social and economic inequality have a significant impact on society. Increased inequality affects the development and functioning of various communities. This is because vulnerable social groups have difficulty accessing resources and face other social and economic problems. Research also points to a link between income levels and inequality in society (measured by Gini index). Areas with high levels of economic inequality experience more problems because low-income people face limited opportunities and resources. In addition, low-income individuals often experience complex housing and working conditions, which increases their vulnerability (RodrÍguez-Pose* & Fratesi, 2004). The level of economic inequality at the local level is also significant because it affects the quality of life in specific regions. Therefore, social and economic inequality have essential impacts on society, and these impacts may vary depending on different circumstances (Brülhart, 2011). There is also evidence that in some developing countries inequality can be reduced if targeted policies are introduced. Ignoring potential distributional effects could lead to less effective policies and increased inequality, which could increase risks for the poor. However, most macroeconomic tools used for policy evaluation do not include explicit mechanisms to measure inequality between population groups, which is measured only indirectly through changes in GDP per capita or aggregate consumer spending (Fragkos et al., 2021).

Reducing the level of poverty and inequality is one of the most urgent tasks for the Kazakh society. The events that took place in January 2022 once again confirmed the serious problems associated with poverty and income inequality, which worsened during the COVID-19 pandemic.

---

* Corresponding author. E-mail: *aselka01@mail.ru*

According to official data of the National Bureau of Statistics of the Republic of Kazakhstan, the middle class in the country is less than 3% of the population, which means that most citizens live on the verge of poverty or close to it. The poverty rate in the country is 5.3%, which corresponds to 1 million 619 thousand people, while the depth and severity of poverty are also increasing (Bureau of National Statistics, 2022).

According to the World Bank, the poverty rate is estimated to be much higher, amounting to 15.5%. The analysis of median incomes shows that half of the population of Kazakhstan in 2022 manages to earn about 49.6 thousand tenge per month. There is a significant difference in income between urban and rural areas, where the percentage of the population with incomes below the subsistence minimum is higher in rural areas (The World Bank, 2022).

KPMG's report indicates that more than half of the country's national income belongs to just 162 people. Almost 97% of the adult population (more than 11 million people) have an annual income of less than 10 thousand dollars, while only 0.001% (162 people) own about 55% of the total wealth. These figures demonstrate a high level of income inequality (KPMG 2019).

Poverty is not only economic, but also psychological in nature, which leads to social problems such as depression, isolation and discrimination. The problem of poverty in Kazakhstan has an impact on the country's development, social stability and public well-being. Its relevance is becoming more and more significant every day.

During the reforms and market transformations carried out in Kazakhstan in recent years, the problem of poverty arose, which gradually became not only physical, but also social poverty. The number of people in a state of poverty continues to increase, and there is an increasing inequality in income and the level of material security in the country, which generates social tension and causes protest moods. The main goal of the development strategy of the New Kazakhstan, focused on social development, is to achieve social progress based on the constitutional principles of fair distribution of income in society, solidarity and mutual responsibility.

The aim of current study is to analyze the impact of social and economic factors on the emergence of inequality in the regions of Kazakhstan based on the regression analysis. This inequality is caused by an increase in the social income gap and the degree of stratification of society.

Literature review

When it comes to inequality in the regions of Kazakhstan, an extensive study of social and economic factors becomes important to understand its occurrence. A lot of research points to a variety of aspects that affect this problem.

Barberia& Biderman (2010) notes that local economic development is closely linked to politics and available resources. If there are favorable business conditions, as Myrdal points out, it is possible to observe a concentration of economic activity in certain regions.

The theory of polarized development proposed by Friedman (Stanilov, 2007) also plays an important role in understanding these patterns. She emphasizes the process of polarization and differentiation of regions, which can become a source of increasing inequality.

Works related to the new economic geography (Martin & Sunley, 1996; Fujita & Thisse, 2009), identify two groups of factors affecting the competitive advantages of territories. The first group includes natural factors such as resources and geographical location, and the second group includes factors created by the efforts of society, including human capital, institutional environment and infrastructure.

Studies also relevant to the context of Kazakhstan assess the impact of infrastructure and socio-economic institutions on regional development (KPMG, 2019; The World Bank, 2022). These factors can be essential to eliminate inequality, improve the business climate and ensure equal access to resources. Reducing the level of poverty and inequality is one of the most urgent tasks for the Kazakh society. The events that took place in January 2022 once again confirmed the serious problems associated with poverty and income inequality, which worsened during the COVID-19 pandemic.

Martins-Filho et al. (2021) closely examined the spread and impact of COVID-19 among children in different regions of Brazil. The study found a link between child mortality and social and economic inequality levels at the Brazilian state level. Thus, regions with higher levels of social and economic inequality had higher mortality rates among children exposed to COVID-19.

Khan & Siddique (2021) assessed the impact of spatial dependence and spatial disaggregation on the dynamics of income inequality and regional inequality in the United States during 1915–2015 and 1929–2018. The results of the study showed that income inequality tends to increase, while regional inequality,

both between different regions and within individual regions, gradually decreases over most of the century studied. The analysis revealed that the relative importance of interregional and intraregional inequality components does not depend only on the number of groups into which regions are divided. A relationship was also identified between the level of income inequality and spatial autocorrelation, indicating income inequality's unstable nature. Therefore, any analysis of income inequality must consider the geographic context in conjunction with other socioeconomic variables.

Additionally, changes in the way regions are grouped geographically can significantly influence the results of regional inequality estimates. Therefore, it is necessary to carefully select methods for aggregating regions when conducting analysis, taking into account the goals and context of the study.

Thus, an analysis of the literature on social and economic factors in the regions of Kazakhstan indicates many important aspects that influence the emergence of inequality. He emphasizes the importance of politics, resources, infrastructure and public efforts in shaping more even and sustainable economic development in various regions of the country.

The study highlights the importance of developing policies and programs aimed at reducing regional socio-economic inequalities. This includes taking into account the specificities of each region, its competitive advantages and challenges, and the use of geographic data and methods to more accurately and effectively measure and monitor inequalities.

Methods

The focus of the study is to analyze the level or regional inequality in Kazakhstan based on Gini coefficient. The research is divided into two parts. The first stage includes identification of regions with the lowest result. The second stage regards the provision of regression analysis based on the selected regions. In the Table 1 there are factors affecting the level of inequality in the regions of Kazakhstan. The considered period included years from 2001 to 2021.

Table 1. List of variables used in the analysis

No	Factors	Coding	Unit of measurement
	Social factors		
1	Gini coefficient	GC	%
2	Poverty rate	PR	%
	Economic factors		
3	Gross regional product	GRP	KZT
4	Household income used for consumption	HIUC	KZT
5	Per capita nominal monetary incomes of the population	PcNMIP	KZT
6	Household cash expenditures	HCE	KZT
Note – complied by the authors			

Gini coefficient (GC) is used to measure the level of income inequality in regions. The Gini coefficient ranges from 0 to 100%, with 0% indicating perfect income equality (everyone has the same income) and 100% indicating perfect inequality (all income concentrated in one person or household).

Gross regional product (GRP) measures the overall economic output (products and services) in a particular region. It is measured in KZT and helps to determine the economic activity and productivity of a region.

Unemployment rate (ER) indicates the percentage of people unemployed in a region, relative to the total labor force. It is expressed as a percentage and serves as an indicator of economic stability and social well-being in the region.

Household income used for consumption (HIUC) represents the income that households in a region use for their consumption. It is measured in Kazakhstani tenge (KZT) and can reflect the standard of living and well-being of the population.

Per capita nominal monetary incomes of the population (PcNMIP) measure the average income per person in a region. It is also measured in Kazakhstani tenge (KZT) and can serve as an indicator of the income of the population in the region.

The selection of factors is explained by the provided literature review, that there are four main factors and by the limited access or availability of data.

Regions were selected based on the Gini coefficient, the average coefficient was identified for the study period across the country and regions. Next, regions with indicators higher than the national average were selected: Akmola region, Aktobe region, Karaganda, and East Kazakhstan regions.

The following hypotheses were developed:

Hypothesis 1: Economic factors have significant impact on the emergence of inequality in the regions of Kazakhstan.

Hypothesis 1 a: Gross regional product has significant impact on the emergence of inequality in the regions of Kazakhstan (Akmola region, Aktobe region, Karaganda, and East Kazakhstan regions).

Hypothesis 1 b: Household income used for consumption considerably affects the emergence of inequality in the regions of Kazakhstan (Akmola region, Aktobe region, Karaganda, and East Kazakhstan regions).

Hypothesis 1 c: The population's per capita nominal monetary incomes considerably affect the emergence of inequality in the regions of Kazakhstan (Akmola region, Aktobe region, Karaganda, and East Kazakhstan regions).

Hypothesis 1 d: The population's household cash expenditures considerably affect the emergence of inequality in the regions of Kazakhstan (Akmola region, Aktobe region, Karaganda, and East Kazakhstan regions).

Hypothesis 2: Social factor (represented by poverty rate) has considerable impact on the emergence of inequality in the regions of Kazakhstan.

Hypothesis 2 a: Poverty rate have significant impact on the emergence of inequality in the regions of Kazakhstan (Akmola region, Aktobe region, Karaganda, and East Kazakhstan regions).

Results

The Gini coefficient is used to measure the inequality level in the income distribution in a society. Table 2 presents the values of the Gini coefficient for 10% (decile) groups of the population in different regions of Kazakhstan for 2001-2021. Gini coefficient values range from 0 (complete equality) to 1 (complete inequality).

Table 2. Gini coefficient for 10 percent (decile) groups by region of Kazakhstan for 2001-2021

Regions	2001	2010	2015	2020	2021	Mean
The Republic of Kazakhstan	0.366	0.278	0.278	0.291	0.294	0.296
Akmola	0.344	0.266	0.270	0.283	0.287	0.290
Aktobe	0.382	0.271	0.269	0.265	0.285	0.287
Almaty	0.331	0.263	0.255	0.286	0.280	0.270
Atyrau	0.372	0.215	0.219	0.207	0.222	0.251
West-Kazakhstan	0.321	0.251	0.263	0.245	0.249	0.271
Zhambyl	0.310	0.221	0.221	0.229	0.220	0.237
Karaganda	0.333	0.269	0.292	0.307	0.309	0.300
Kostanay	0.370	0.257	0.254	0.264	0.256	0.280
Kyzylorda	0.280	0.226	0.210	0.229	0.230	0.248
Mangystau	0.385	0.180	0.210	0.183	0.188	0.224
South-Kazakhstan	0.313	0.210	0.194	-	-	0.228
Pavlodar	0.318	0.250	0.226	0.290	0.312	0.265
North-Kazakhstan	0.295	0.267	0.269	0.299	0.298	0.283
Turkestan	-	-	0.180	0.192	0.192	0.188
East-Kazakhstan	0.348	0.275	0.284	0.324	0.319	0.301
Astana city	0.345	0.291	0.224	0.233	0.259	0.276
Almaty city	0.309	0.240	0.271	0.311	0.321	0.272
Shymkent city	-	-	0.186	0.194	0.188	0.189
Note – complied by the author based on Bureau of National Statistics (2022)						

The Republic of Kazakhstan's Gini coefficient by decile group varies from 0.278 in 2010 to 0.296 in 2021. The average Gini coefficient for the entire country is 0.296 for the study period.

Gini coefficients for different regions of Kazakhstan also have different values and dynamics of change. For example, the Almaty region varies from 0.255 in 2015 to 0.286 in 2020.

Some regions, such as Mangistau Oblast, show high Gini coefficient values in 2001, indicating higher levels of inequality in income distribution. Nevertheless, in subsequent years, this indicator dropped to 0.188 in 2021. From this table, the studied regions were identified where the average Ginny coefficient over 20 years was the national average. These regions include Akmola region (0.290), Aktobe region (0.287), Karaganda region (0.300) and East Kazakhstan region (0.301).
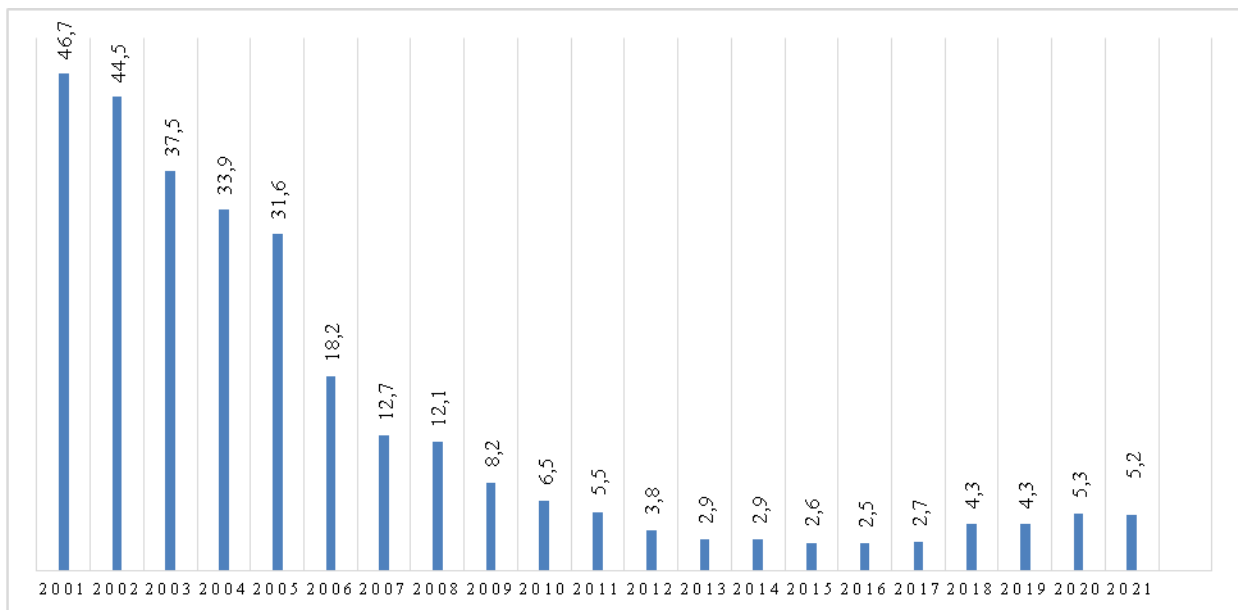
Figure 1. Share of the population with incomes below the poverty level in Kazakhstan for 2001–2021
Note – complied by the author based on Bureau of National Statistics (2022)

The data in Figure 1 shows the dynamics of the poverty level in Kazakhstan over twenty years. A decrease in the proportion of the poor population at the beginning of this period indicates positive changes in the country's economy. However, a subsequent increase requires attention and the development of appropriate measures to combat poverty.

At the beginning of the period under review, in 2001, the proportion of the population below the poverty level was 46.7%. This reasonably high figure indicates significant economic challenges during that period. Over time, since 2001, the proportion of the population living in poverty has gradually declined. Essential stages in this process were 2005 and 2007, when this share significantly decreased.

From 2006 to 2010, the poverty rate remained relatively low, around 3.8% in 2011. In subsequent years, until 2022, there was a gradual increase in the share of the poor population. For example, in 2020 and 2021, the poverty rate was 5.2%, and in 2022 it was 5.3%. Poverty rates have increased in 2020 and 2021, possibly driven by the economic and social impacts of the COVID-19 pandemic.

Table 3. The proportion of the population with incomes below the subsistence level (poverty level) in the studied regions for 2001–2021, %

Region	2001	2005	2010	2015	2020	2021	2022	Growth
Akmola	41.4	28.7	6.0	1.7	3.5	3.7	4.4	-37.0
Aktobe	39.4	21.1	3.8	1.5	3.0	3.7	3.8	-35.6
Karaganda	36.8	26.6	8.4	2.0	6.5	4.6	4.8	-32.0
Note – complied by the author based on Bureau of National Statistics (2022)								

There is a significant decrease in the poverty level in Akmola region from 41.4% in 2001 to 3.7% in 2021, a decrease of 37.7%. However, in 2022 there was a slight increase to 4.4%, which indicates a change in trend, but still significantly below the initial figures. In general, during the period there was a significant reduction in the poverty level by 37.0% (Table 3).

Aktobe region, similar to Akmola region, also has a significant decrease in the poverty rate from 39.4% in 2001 to 3.7% in 2021, but with a slight increase to 3.8% in 2022. The overall reduction in poverty in this region is about 35.6%.

In the Karaganda region, the poverty rate decreased from 36.8% in 2001 to 4.6% in 2021, but increased slightly to 4.8% in 2022. The overall reduction in poverty in this region is approximately 32.0%.

The analysis of these data shows a stable and significant reduction in poverty in all regions from 2001 to 2021, which indicates positive socio-economic development. However, small increases in the poverty rate in 2022 indicate the need for continued efforts to maintain the declining trend and prevent potential economic problems or inequalities.

Table 4. Estimation of average per capita nominal monetary income of the population for 2001–2021, KZT

Region	2001	2005	2010	2015	2020	2021	Growth
Akmola	5 656	11 443	31 169	56 579	107 224	122 039	116 383
Aktobe	8 264	16 982	36 356	60 921	98 360	115 009	106 745
Karaganda	8 756	15 561	40 701	66 841	130 552	140 882	132 126
East-Kazakhstan	8 226	12 793	33 101	55 392	111 632	133 823	125 597
Note – complied by the author based on Bureau of National Statistics (2022)							

The average nominal income per capita in the regions of Kazakhstan for the period from 2001 to 2021, increased more than 17 times (Table 4).

In the Akmola region, during the study period, the average nominal income per capita increased from 5,656 tenge to 122,039 tenge. This significant increase in per capita income amounted to 116,383 tenge, an increase of more than 2000%.

In Aktobe region, this indicator increased 13 times, from 8,264 tenge in 2001 to 115,009 tenge in 2021, this increase amounted to 106,745 tenge. In the Karaganda region, over the same period, the average nominal income per capita increased from 8,756 tenge to 140,882 tenge, an increase of 132,126 tenge. In the East Kazakhstan region, from 2001 to 2021, the average nominal income per capita increased from 8,226 tenge to 133,823 tenge. This increase amounted to 125,597 tenge.

Sharp jumps in income growth have been observed during periods of more intense economic development, such as in 2007, when the Kazakhstan economy was overgrowing.

Certain years, notably 2009 during the onset of the global financial crisis, and 2020 amid the COVID-19 pandemic, have exhibited fluctuations in income growth.

Despite overall income growth, it is essential to note that income levels in the Republic of Kazakhstan remain uneven, and there are differences between regions.

These data show a significant increase in the average nominal income per capita in these regions over a specified period of time. An increase in income may indicate an improvement in the economic situation in the regions and an increase in the standard of living of the population.

Table 5. Household cash expenses on average per capita per month, KZT

Region	2001	2005	2010	2015	2020	2021	Growth	Increase, %
Akmola	5 117	8 623	26 377	36 464	62 230	67 648	62 531	1322%
Aktobe	5 507	9 555	27 285	37 541	54 411	60 886	55 379	1106%
Karaganda	5 709	10 442	30 099	46 208	74 730	86 118	80 409	1509%
East-Kazakhstan	5 480	9 432	21 836	40 593	67 683	77 080	71 600	1407%
Note – complied by the author based on Bureau of National Statistics (2022)								

The data includes regression analyses for Kazakhstan's four regions: Akmola, Aktobe, Karaganda, and East-Kazakhstan. Analysis: In the case of Akmola, the regression analysis shows that the model's F-value is statistically significant (Sig. = 0.017), indicating that the model is a good fit for the data. The coefficient Akm_PR is also significant, with a positive value of 0.016. This suggests a statistically significant positive relationship exists between the variable Akm_PR and the Gini coefficient (Akm_Gini) in the Akmola region.

Results for Aktobe, the regression analysis yields an F-value with a Sig. of 0.072, indicating that the model's overall fit is not statistically significant at the 0.05 significance level. However, the coefficient Akt_HCE is significant, with a value of 0.041. This suggests a statistically significant positive relationship exists between the variable Akt_HCE and the Gini coefficient (Akt_Gini) in the Aktobe region. It is worth noting that while the overall model fit is not significant, the individual coefficient is.

In the case of Karaganda, the regression analysis results in an F-value with a Sig. of 0.221, indicating that the model's overall fit is not statistically significant at the 0.05 significance level. Additionally, none of the coefficients in the model are statistically significant. This suggests that the variables included in the model do not have a significant relationship with the Gini coefficient (Kar_Gini) in the Karaganda region.

For East-Kazakhstan, the regression analysis reveals an exceptionally high F-value with a highly significant Sig. of 0.000, indicating that the model is an excellent fit for the data. The coefficient EKZ_GRP is significant with a value of 0.001. This implies a statistically significant positive relationship between the variable EKZ_GRP and the Gini coefficient (EKZ_Gini) in the East-Kazakhstan region.

The data in the Table 6 presents regression analyses for four different regions in Kazakhstan, namely Akmola, Aktobe, Karaganda, and East-Kazakhstan, with their respective R-squared values.

Table 6. Summary of the models

Models title	R	R-square	Predictors:
Akmola (Akm_Gini)	,903[a]	,815	Akm_PcNMIP, Akm_PR, Akm_GRP, Akm_HIUC, Akm_HCE
Aktobe (Akt_Gini)	,840[a]	,706	Akt_PcNMIP, Akt_PR, Akt_HIUC, Akt_GRP, Akt_HCE
Karaganda (Kar_Gini)	,689[a]	,475	Kar_PcNMIP, Kar_PR, Kar_GRP, Kar_HIUC
East-Kazakhstan (EKZ_Gini)	,968[a]	,937	EKZ_PcNMIP, EKZ_PR, EKZ_GRP, EKZ_HIUC, EKZ_HCE

The R-squared value of 0.815 for Akmola indicates that approximately 81.5% of the variation in the Gini coefficient in the Akmola region can be explained by the independent variable(s) used in the regression model. This suggests a strong relationship between the independent variable(s) and income inequality (Gini coefficient) in this region.

The R-squared value of 0.706 for Aktobe indicates that around 70.6% of the variation in the Gini coefficient in the Aktobe region can be explained by the independent variable(s) included in the regression model. While slightly lower than Akmola's R-squared value, it still suggests a substantial and moderately strong relationship between the independent variable(s) and income inequality in Aktobe.

The R-squared value of 0.475 for Karaganda indicates that approximately 47.5% of the variation in the Gini coefficient in the Karaganda region can be explained by the independent variable(s) used in the regression model. This R-squared value is notably lower, suggesting a weaker relationship between the independent variable(s) and income inequality in this region compared to Akmola and Aktobe.

The R-squared value of 0.937 for East-Kazakhstan is the highest among the four regions, indicating that approximately 93.7 % of the variation in the Gini coefficient in the East-Kazakhstan region can be explained by the independent variable(s) included in the regression model. This exceptionally high R-squared value suggests an extremely strong relationship between the independent variable(s) and income inequality in East-Kazakhstan.

In summary, the R-squared values provide insights into how well the regression models fit the data for each region. Among the four regions, East-Kazakhstan demonstrates the strongest relationship between the independent variable(s) and income inequality, with an exceptionally high R-squared value of 0.937. Akmola follows with a strong relationship (R-squared = 0.815), Aktobe with a moderately strong relationship (R-squared = 0.706), and Karaganda with a weaker relationship (R-squared = 0.475). These findings indicate variations in the factors influencing income inequality across these regions, with East-Kazakhstan showing the highest degree of influence from the chosen independent variable(s) in the regression model.

Next, in the Table 7 there are provided results for ANOVA models for all selected regions.

Table **7.** ANOVA for all models

Model		F	Sig.	Coefficients (Sig.)
Akmola (Akm_Gini)	Regression	6,159	,017[b]	Akm_PR,016
Aktobe (Akt_Gini)	Regression	3,366	,072[b]	Akt_HCE ,041
Karaganda (Kar_Gini)	Regression	1,807	,221[b]	-
East-Kazakhstan (EKZ_Gini)	Regression	20,810	,000[b]	EKZ_GRP,001

The provided data includes regression analyses for Kazakhstan's four regions: Akmola, Aktobe, Karaganda, and East-Kazakhstan. Analysis: In the case of Akmola, the regression analysis shows that the model's F-value is statistically significant (Sig. = 0.017), indicating that the model is a good fit for the data. The coefficient Akm_PR is also significant, with a positive value of 0.016. This suggests that a statistically significant positive relationship exists between the variable Akm_PR and the Gini coefficient (Akm_Gini) in the Akmola region.

Results for Aktobe, the regression analysis yields an F-value with a Sig. of 0.072, indicating that the model's overall fit is not statistically significant at the 0.05 significance level. However, the coefficient Akt_HCE is significant, with a value of 0.041. This suggests that a statistically significant positive relationship exists between the variable Akt_HCE and the Gini coefficient (Akt_Gini) in the Aktobe region. It is worth noting that while the overall model fit is not significant, the individual coefficient is.

In the case of Karaganda, the regression analysis results in an F-value with a Sig. of 0.221, indicating that the model's overall fit is not statistically significant at the 0.05 significance level. Additionally, none of the coefficients in the model are statistically significant. This suggests that the variables included in the model do not have a significant relationship with the Gini coefficient (Kar_Gini) in the Karaganda region.

For East-Kazakhstan, the regression analysis reveals an exceptionally high F-value with a highly significant Sig. of 0.000, indicating that the model is an excellent fit for the data. The coefficient EKZ_GRP is significant with a value of 0.001. This implies a statistically significant positive relationship between the variable EKZ_GRP and the Gini coefficient (EKZ_Gini) in the East-Kazakhstan region.

The Hypothesis 1a, for the fourth model, East-Kazakhstan region is supported. Gross regional product has significant impact on the emergence of inequality in East-Kazakhstan region.

The Hypothesis 1d for the second model, Aktobe region is supported. Household cash expenditures have significant impact on the emergence of inequality in Aktobe region.

The Hypothesis 2a, for the first model, Akmola region is supported. Poverty rate has significant impact on the emergence of inequality in Akmola region.

Conclusions

The analysis showed that the level of regional inequality varies significantly in different regions of Kazakhstan. East Kazakhstan has the highest levels of inequality, while Akmola, Aktobe and Karaganda have more moderate inequality. The results of the regression analysis also showed that the influence of independent variables on the level of inequality varies across regions. East Kazakhstan and Akmola have stronger relationships between the independent variables and the level of inequality, while in Aktobe and Karaganda the relationship is weaker.

Policies and programs to reduce socioeconomic inequality must consider regional differences. It is necessary to develop and implement measures corresponding to each region's specifics. Regions with lower development and education levels may require additional investment in infrastructure, education, and technological innovation to improve their economic prospects. The level of inequality in regions should be regularly monitored, and the effectiveness of policies and programs to reduce inequality should be assessed. Regions with lower levels of inequality can learn from regions with higher levels and share experiences and best practices.

Acknowledgements

References

Barberia, L.G., & Biderman, C. (2010). Local economic development: Theory, evidence, and implications for policy in Brazil. *Geoforum*, *41*(6), 951–962. https://doi.org/10.1016/j.geoforum.2010.07.002.

Brülhart, M. (2011). The spatial effects of trade openness: a survey. Review of World Economics, 147, 59–83. https://doi.org/10.1007/s10290–010–0083–5.

Bureau of National Statistics (2022). [Cited September 5, 2023]. Retrieved from http://www.stat.gov.kz.

Fragkos, P., Fragkiadakis, K., Sovacool, B., Paroussos, L., Vrontisi, Z., & Charalampidis, I. (2021). Equity implications of climate policy: Assessing the social and distributional impacts of emission reduction targets in the European Union. Energy, 237, 121591. https://doi.org/10.1016/j.energy.2021.121591.

Fujita, M., & Thisse, J. F. (2009). New economic geography: an appraisal on the occasion of Paul Krugman's 2008 Nobel Prize in Economic Sciences. Regional science and urban economics, 39(2), 109–119. https://doi.org/10.1016/j.regsciurbeco.2008.11.003

Fujita, M. (2010). The evolution of spatial economics: from Thünen to the new economic geography. The Japanese Economic Review, 61, 1–32. https://doi.org/10.1111/j.1468–5876.2009.00504.x.

Khan, M. S., & Siddique, A. B. (2021). Spatial analysis of regional and income inequality in the United States. Economies, 9(4), 159. Access mode: https://doi.org/10.3390/economies9040159.

KPMG. (2019). Private Equity Market in Kazakhstan. Kazakhstan: KPMG in Kazakhstan and Central Asia. [cited September 5, 2023]. Access mode: https://assets.kpmg/content/dam/kpmg/kz/pdf/2019/09/KPMG-Private-Equity-Market-in-Kazakhstan-ENG2019.

Martins-Filho, P. R., Quintans-Júnior, L. J., de Souza Araújo, A. A., Sposato, K. B., Souza Tavares, C. S., Gurgel, R. Q., … Santos, V. S. (2021). Socio-economic inequalities and COVID-19 incidence and mortality in Brazilian children: a nationwide register-based study. Public Health, 190, 4–6. https: //doi.org/10.1016/j.puhe.2020.11.005.

Martin, R., & Sunley, P. (1996). Paul Krugman's geographical economics and its implications for regional development theory: a critical assessment. *Economic geography*, 72(3), 259–292.

Rodrĺguez-Pose, A., & Fratesi, U. (2004). Between development and social policies: the impact of European Structural Funds in Objective 1 regions. Regional studies, 38(1), 97–113. https: //doi.org/10.1080/00343400310001632226.

Stanilov, K. (2007). Taking stock of post-socialist urban development: A recapitulation. In *The post-socialist city: Urban form and space transformations in central and eastern Europe after socialism* (pp. 3–17). Dordrecht: Springer Netherlands.

The World Bank In Kazakhstan: Development News, Research, Data. The World Bank, Kazakhstan (2022). [cited September 5, 2023]. Access mode: https://data.worldbank.org/country/KZ.

А.С. Бекбосинова, А.А. Киреева, Л. Васа

Қазақстан өңірлерінде теңсіздіктің туындауына әлеуметтік және экономикалық факторлардың әсері

Аңдатпа:

Мақсаты: Мақсаты — Джини коэффициентінің декомпозициясы негізінде Қазақстан өңірлерінде теңсіздіктің туындауына әлеуметтік және экономикалық факторлардың әсерін талдау.

Әдісі: Зерттеу мақсатына қол жеткізу үшін Қазақстанның төрт өңірі: Ақмола, Ақтөбе, Қарағанды және Шығыс Қазақстан облыстары Джини коэффициентіне әлеуметтік және экономикалық факторларды регрессиялық талдау үшін пайдаланылды. Сонымен қатар, салыстырмалы талдау және статистикалық талдау қолданылды. Ұлттық статистика бюросының 2001 жылдан 2021 жылға дейінгі деректері пайдаланылды.

Қорытынды: Ақмола жағдайында регрессиялық талдау модельдің F мәні статистикалық маңызды екенін көрсетеді (Sig. = 0,017), бұл модель деректерге жақсы сәйкес келетінін дәлелдейді. Бұл Ақмола облысындағы Akm_PR айнымалысы мен Джини коэффиценті (Akm_Gini) арасында статистикалық маңызды оң байланыс бар екенін көрсетеді. Ақтөбе облысында Akt_HCE айнымалысы мен Джини коэффиценті (Akt_Gini) арасында статистикалық маңызды оң байланыс бар. Қарағанды облысы бойынша да статистикалық маңызды байланыстар табылмады. Ал Шығыс Қазақстан облысында JUL_GRP айнымалысы мен Джини коэффиценті (JUL_Gini) арасында статистикалық маңызды оң байланыс бар екені анықталды.

Тұжырымдама: Зерттеу көрсеткендей, өңірлік теңсіздік деңгейі Қазақстанның әртүрлі аймақтарында айтарлықтай ерекшеленеді. Шығыс Қазақстанда теңсіздік деңгейі ең жоғары, ал Ақмола, Ақтөбе және Қарағанды облыстарында теңсіздік анағұрлым қалыпты. Регрессиялық талдау нәтижелері сонымен қатар тәуелсіз айнымалылардың әртүрлі аймақтардағы теңсіздік деңгейіне әсері бірдей емес екенін көрсетті.

Кілт сөздер: теңсіздік, өңірлер, экономикалық факторлар, әлеуметтік факторлар, кедейлік деңгейі, Джини коэффициенті.

А.С. Бекбосинова, А.А. Киреева, Л. Васа

Влияние социальных и экономических факторов на возникновение неравенства в регионах Казахстана

Аннотация:

Цель: Провести анализ воздействия социальных и экономических факторов на возникновение неравенства в регионах Казахстана на основе декомпозиции коэффициента Джини.

Методы: Для достижения цели исследования был использован регрессионный анализ социальных и экономических факторов на коэффициент Джини для четырех регионов Казахстана: Акмолинской, Актюбинской, Карагандинской и Восточно-Казахстанской областей. Кроме того был применен сравнительный и статистический анализ. Авторы использовали данные из Бюро национальной статистики с 2001 по 2021 годы.

Результаты: В случае Акмолы регрессионный анализ показывает, что значение F-модели статистически значимо (Sig. = 0,017), что указывает на то, что модель хорошо соответствует данным. Коэффициент Akm_PR также значим, с положительным значением 0,016. Это свидетельствует о том, что существует статистически значимая положительная взаимосвязь между переменной Akm_PR и коэффициентом Джини (Akm_Gini) в Акмолинской области. В Актюбинской области существует статистически значимая положительная взаимосвязь между переменной Akt_HCE и коэффициентом Джини (Akt_Gini). В Караганде не было обнаружено статистически значимых связей. А в Восточно-Казахстанской области есть статистически значимая положительная взаимосвязь между переменной EKZ_GRP и коэффициентом Джини (EKZ_Gini).

Выводы: Исследование показало, что уровень регионального неравенства существенно различается в разных регионах Казахстана. В Восточном Казахстане наблюдается самый высокий уровень неравенства, в то время как в Акмолинской, Актюбинской и Карагандинской областях неравенство более умеренное. Результаты регрессионного анализа также показали, что влияние независимых переменных на уровень неравенства в разных регионах неодинаково.

Ключевые слова: неравенство, регионы, экономические факторы, социальные факторы, уровень бедности, коэффициент Джини.