

ABSTRACT

A deepening youth unemployment crisis could not only cause problems in terms of intergenerational transmission, but also widens the gap in income inequality, leading to an unequal society. This situation can increase political tension, which leads to unforeseen and undesirable changes in the entire social structure and economic system of a state. Youth opportunities for employment and stable incomes were threatened in the Spring and Summer of 2020 by a new factor - the COVID-19 pandemic. The economic impact of the pandemic is exacerbating the vulnerability of young people, as young people are more likely to be in temporary and part-time employment than older people, and therefore more likely to face a higher risk of losing their jobs and income. This article is focused on testing the influence of economic and demographic factors on the level of youth unemployment in all regions of Kazakhstan. It highlights the main factors and determinants of reducing youth unemployment in the Republic of Kazakhstan using regression analysis to test the extent of their influence.²

Keywords: Youth unemployment, Republic of Kazakhstan; labour market; regions of Kazakhstan, youth wing “Zhas Otan”.

INTRODUCTION

Almost all countries are committed to achieving higher economic growth and better living standards for their people. Based on this premise, each generation wants to ensure a higher standard of living and a better socio-economic environment for future generations. A young population is a powerful asset for economic and social innovation and creation. However, for a country to fully realise this potential and fully utilise its “youth dividend”, young people must have productive jobs to be fully integrated into society.

While unemployment, regardless of age, is detrimental to the economic and personal well-being of everyone it affects, the hit is especially severe for those who have just entered the labour market. Hence, the frustration of young people is evident, because of the lack of employment opportunities is evident. Their deep anxiety about future life prospects is also evident, manifested through protests by young people around the world.

According to analysts from the International Labour Organisation (hereinafter - ILO), one in six young people aged 18-29 (17.4 per cent) have stopped working since the beginning of the recent crisis, reflecting the dramatic impact that the coronavirus epidemic is having on youth labour markets around the world (Beisembaev, 2018). In Kazakhstan, at the beginning of 2021, the number of young people aged 14-28 was 20.2 per cent of the total population of country. The youth unemployment rate was 3.8 per cent (Statistics Committee, Ministry of National Economy of the Republic of Kazakhstan). The COVID-19 lockdown has mostly affected industries that are popular with young people for employment. Starting in 2020, the largest reduction in jobs and/or temporary suspension from work is observed in such areas as: accommodation and food services, 70.2 per cent; recreation and entertainment, 68.3 per cent; other individual services, 64 per cent; trade, 35 per cent; transport and warehousing, 38.5 per cent; and construction, 35 per cent (CDHR, 2020).³

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² The motive for researching the topic of youth unemployment was my earlier ethnographic study in September 2021 under the Youth wing "Zhas Otan" of the Amanat political party in Nur-Sultan, where during the discussion of the Address of the President of the Republic of Kazakhstan to the people of Kazakhstan of 1 September 2021, highlighted that the country's youth were concerned about high unemployment.

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Considering that people aged 15-28 are mostly employed in these areas, the situation in the youth labour market may worsen further, as the pandemic has resulted in young people not only losing their jobs, disrupting their higher education process and vocational training, but also creating serious obstacles for those who are just entering the labour market or moving from one job to another. Youth unemployment can have long-term repercussions. Young people who have had long periods of professional downtime are more likely, in the longer run, to face lower wages, fewer career opportunities, and therefore, ultimately, lower pensions.

Kazakhstani labour market is characterised by uneven economic development across regions. In large oil and gas and industrial regions, i.e., Aktobe region, the demand for labour is higher than in agricultural regions, i.e., Turkestan, and North Kazakhstan. In this connection, it seems relevant to consider the influence of factors that have the greatest impact on the youth labour market by region for a time period that includes the crisis years. The aim of this study is to determine the factors that cause interregional differences in youth unemployment and determine the extent of their influence on the level of youth unemployment. It also aims at ascertaining the factors that can play a role in reducing youth unemployment levels, using, in both cases, correlation and regression analysis.

The article consists of 6 sections. The first section examines the relevance and significance of the topic, the second section discusses existing theoretical research in this area. Section 3 provides a brief description of the youth labour market in Kazakhstan, and Section 4 discusses the data, variables, methods, and procedures used in the study. The correlation and regression analysis results are provided in section 5, followed by conclusions and limitations of the study in section 6.

This study utilises a statistical method to assess and compare the results of the analysis. The data for the study was sourced from the Bureau of National Statistics of the Republic of Kazakhstan, the Ministry of Labour and Social Protection of the Population of the Republic of Kazakhstan, as well as from other resources such as mass media publications and from the Internet.

SOCIAL SIGNIFICANCE OF YOUTH UNEMPLOYMENT

Declining youth employment rates denote a loss of potential human resources and talent, which are critical to the need for rejuvenating the labour force. Improving youth employment rates can have tremendous economic benefits, as unemployment leads to social exclusion, which in turn leads to higher dependence on welfare. It should also be borne in mind that young people under certain adverse conditions are quite capable of becoming a powerful destructive factor that may threaten social stability and public safety; and young unemployed people are more likely to show an increase in the number of delinquencies and violence. Although researchers argue that there is no direct link between unemployment and crime, and not all unemployed break the law, nevertheless the ground for crime is being formed. The reason for this is the inability of unemployed youth to spend their free time, and delinquency is seen as a way of survival (O'Higgins, 2018).

Unemployment creates adverse conditions for young people, changing their way of life. It changes the perception of themselves as individuals and leads to loss of confidence. Youth unemployment brings psychological trauma, as young people entering adulthood immediately become rejected, which leads to forming a deep disappointment in society. Feeling socially abandoned is tantamount to being deprived of your economic and civil rights and can lead to despair and resentment. The consequences of these early traumas are often deep and long-lasting and weaken job opportunities and income (Bell and Blanchflower, 2011).

The frustration of young people with the lack of job opportunities is evident, and their deep anxiety about their future life prospects is fuelling protests around the world, while they also express their frustration and opinions widely through the Internet and social media. Their concern is obvious: what do I want to do? What is my future? Unemployment? Such a situation is a breeding ground for political agitation, the emergence of political tensions, which can lead

to unforeseen changes and unwanted changes in the entire social structure and economic system (Karaalp-Orhan and Gülel, 2016).

As youth unemployment continues to be a problem in many developed and developing countries, there is a need to distinguish the priority areas where interventions are needed by identifying the factors that influence the situation, i.e., economic, social, legal, psychological, etc.

KEY FACTORS AFFECTING YOUTH UNEMPLOYMENT

Over the past two decades, much foreign and domestic research has focused on the study of factors affecting youth unemployment. It comprises comparative studies on the subject, including the use of econometric tools to estimate the effects these factors may have on youth unemployment at any given point in time considering the prevalent conditions in the economy and society.

Russell and O'Connell (2017) focus on youth unemployment in the European Union. They found that young people's employment prospects are influenced by age, gender, parental status, education level, and previous work experience, as well as individual circumstances such as the duration of unemployment for instance. Abugamea (2018) noted that demographic factors (gender, age, nationality, marital status, migration), and work experience matter and that a difference exists between the experience of young people leaving school and starting work at the age of 18 and others who already possess several years of work experience. This is corroborated by Tahlin and Westermann (2020) who concluded that experience is generally appreciated and valued by employers.⁴ In addition, it was also found that the influence of migration processes on the level and structure of employment is also one of the important factors, since migration processes affect the dynamics of the labour force and the emergence of imbalances between regions (Tahlin and Westermann, 2020).

Two Russian studies (Tikhomirova, 2017; Lukyanova, 2018) examine the significance of state social policy in wage regulation, including the establishment of a minimum wage in the regions. They concluded that there is a direct and immediate impact of the level of wages on unemployment. The authors show that 1 per cent decrease in unemployment increases real wages by 12 to 14 per cent. Khishaueva (2020) considers a specific factor: the degree of development of innovative industries in the region. The main conclusion is that the existence of a high share of innovative production practices in a region will require more highly qualified specialists. Therefore, wages will be higher and unemployment rates lower in this region.

Among the many factors affecting the probability of finding a job, the most important is the general economic situation in a country. Dolgikh (2018) identifies such socio-economic factors as gross regional product (GRP), investment in fixed assets, accrued wages, and the size of living wage as relevant. When the values of these factors deteriorate, the situation on the labour market is exacerbated. Furthermore, a decrease in wages in the context of inflation and economic crisis can cause unemployment, which in turn is a factor affecting the level and structure of employment. In order to identify the influence of factors on the level of employment of the population of the Russian Federation, the author employed regression analysis, which showed that the greatest influence is exerted by the change in GRP.⁵ Domestic economists Sabirova, et.al. (2018), while studying the problems of the youth labour market, also highlight economic factors as fundamental in shaping the situation on the labour market. Dzhusibalieva, et.al. (2020) point out the impact of entrepreneurship development is also a factor in employment development.

⁴ Specifically, experience is more highly valued (by employers) in high-skill than in low-skill jobs; and experience is more highly valued (by employers) than (post-compulsory) education in low-skill jobs.

⁵ The Kazakh researcher Kadyrzhhanov (2014) notes that a comparative analysis of social transformation of Kazakhstan, Russia and other post-Soviet countries indicates the similarity in the current configuration of the social structures of the two countries. In this connection, arguably, the factors presented above are also applicable in Kazakhstan.

Another important area for research is the analysis of the factors and causes of interregional differences in the youth unemployment rates. It is noted that interregional inequality in the quality of life of population can cause interregional differentiation of labour markets. This is because regions with higher living standards are more attractive for employment (Vakulenko, 2015).⁶ Thus, understanding the causes of interregional differentiation in the labour market is important for the selection of regional policy directions and the design of measures that will help reduce unemployment (Agnan, 2003; Badinger and Url, 2002). Additionally, a quantitative assessment of the impact of investment in fixed assets on the level of regional unemployment, carried out by many authors, revealed an inverse relationship between them. Moreover, research results show that regions with a high proportion of people with higher education have lower unemployment rates.

Thus, it seems that the analysis of youth unemployment, in conjunction with the structure and orientation of each region's economy and their impact on unemployment is of theoretical and practical interest. It has been shown that if the share of high-tech and knowledge-intensive industries is high in a region's economy, then regional unemployment will be lower, but if the share of raw materials extraction and agriculture is dominant, then unemployment will be higher (Sabirova, et.al., 2020).

In this connection, it seems that several factors may be identified that affect the dynamics of employment that are common across regions, such as demographic composition, scientific, technical and economic development, and various social factors, despite that each region may have its own characteristics on how their youth labour market functions. This study employs economic, demographic and educational factors for its analysis.

YOUTH EMPLOYMENT IN THE LABOUR MARKET IN THE REPUBLIC OF KAZAKHSTAN

Young people aged 15-29 accounted for 20.2 per cent of the total population of the country, or 3,760,154 people, at the beginning of 2021. However, the trend is downward as the number of young people due to migration and a decrease in the birth rate in the years of independence is declining. More than half of these young people – 56.4 per cent – live in urban areas with the remaining 43.6 per cent in rural areas. By region, the largest number of young people is concentrated in the Turkestan region: 22.6 per cent of the total. In the Mangistau region: 20.7 per cent, in the Atyrau region: 20.3 per cent and in the City of Almaty: 20.7 per cent, with the smallest number of young people living in the Aktobe region: 16.6 per cent (Statistics Committee, Ministry of National Economy of the Republic of Kazakhstan).

According to the data in Table 1, the number of employed people between the ages of 15 and 28 decreased by 1.3 per cent between 2019 and 2020 (from 2,045,900 to 2,019,400 people). At the same time, the number of self-employed people rose by 6.5 per cent (from 799,400 to 851,100 people). Most of the self-employed young people work in the field of information technology, trade, catering, and services. However, specialties related to the development of innovative digital technologies will be in demand in the future, therefore the availability of relevant qualifications and experience and knowledge of information technologies and their application in practice are necessary.

⁶ Based on Okun's law, Russian researchers assessed the impact of the regional gross product on the unemployment rate in the regions, by modelling the relationship between dynamics of GDP and unemployment (Gurvich and Vakulenko, 2018).

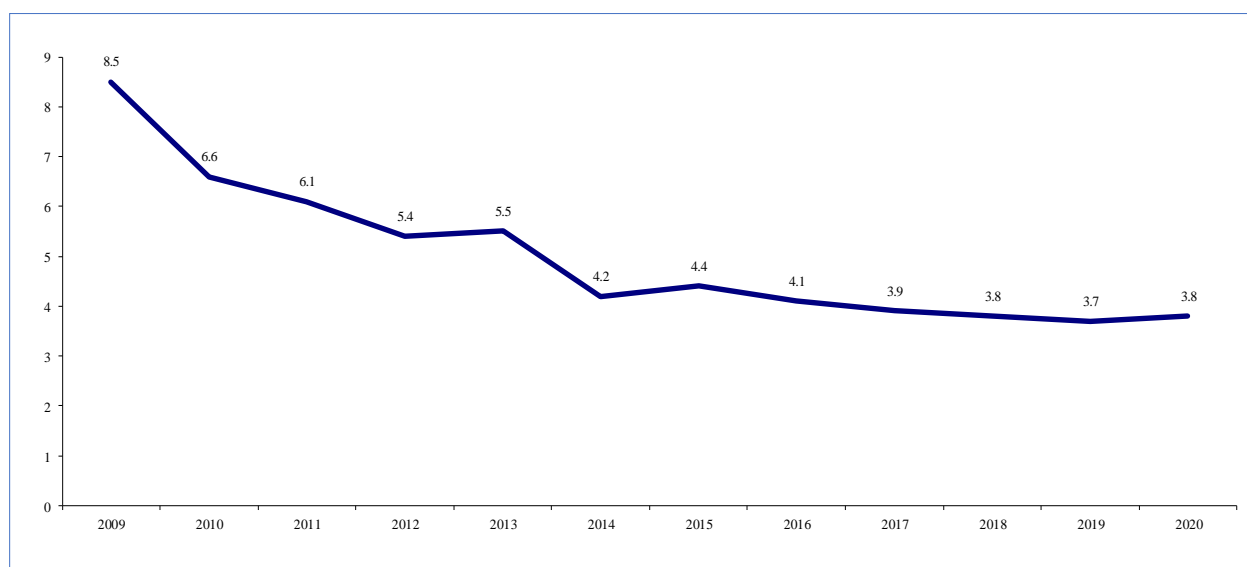
Table 1. Main indicators of the youth labour market (age 15-28) of the Republic of Kazakhstan 2010-2020 (in thousands)

| | 2010 | 2012 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Labour force (economically active population) | 2,335.4 | 2,429.6 | 2,445.0 | 2,379.9 | 2,275.5 | 2,141.0 | 2,087.6 | 2,124.9 | 2,099.8 |
| Employed population | 2,180.4 | 2,298.9 | 2,341.1 | 2,275.3 | 2,182.7 | 2,057.3 | 2,007.9 | 2,045.9 | 2,019.4 |
| Wage-earners | 1,329.3 | 1,480.2 | 1,673.8 | 1,734.8 | 1,669.7 | 1,564.8 | 1,536.6 | 1,307.6 | 1,329.3 |
| Self-employed | 851.1 | 818.7 | 667.3 | 540.5 | 513.0 | 492.5 | 471.3 | 799.4 | 851.1 |
| Unemployed population | 155.0 | 130.7 | 103.9 | 104.6 | 92.8 | 83.7 | 79.8 | 79.0 | 80.4 |
| Persons outside the labour force | 1,563.4 | 1,526.0 | 1,460.5 | 1,486.7 | 1,454.3 | 1,429.1 | 1,342.6 | 1,355.2 | 1,354.9 |

Source: National Bureau of Statistics, Republic of Kazakhstan

The youth unemployment rate in Kazakhstan at the beginning of 2021 was 3.8 per cent, as shown in Figure 1. Over the years youth unemployment was decreasing until 2019, due to the positive effect of state policy in this area. However, in 2020, youth unemployment increased by 0.1 per cent, as most young people work primarily in the service sector, which was hit the hardest by the pandemic in 2020. On the contrary, youth unemployment in the regions differs markedly (Figure 2). The highest level is observed in the cities of Almaty and Nur-Sultan, and in the Karaganda and Turkestan regions, and the lowest in the Atyrau, Zhambyl, Aktobe, and Pavlodar regions. The primary reason for the high unemployment rate in Almaty is the concentration of a large number of university graduates - two-thirds of students stay in the city after graduation, and a third of those who left return during the year. Understandably, this puts a lot of pressure on the labour market. In the Turkestan region, the higher unemployment rate is explained by the high population density and the existence of a relatively small number of manufacturing enterprises.

Figure 1. Level of youth unemployment in the Republic of Kazakhstan (2009-2020)

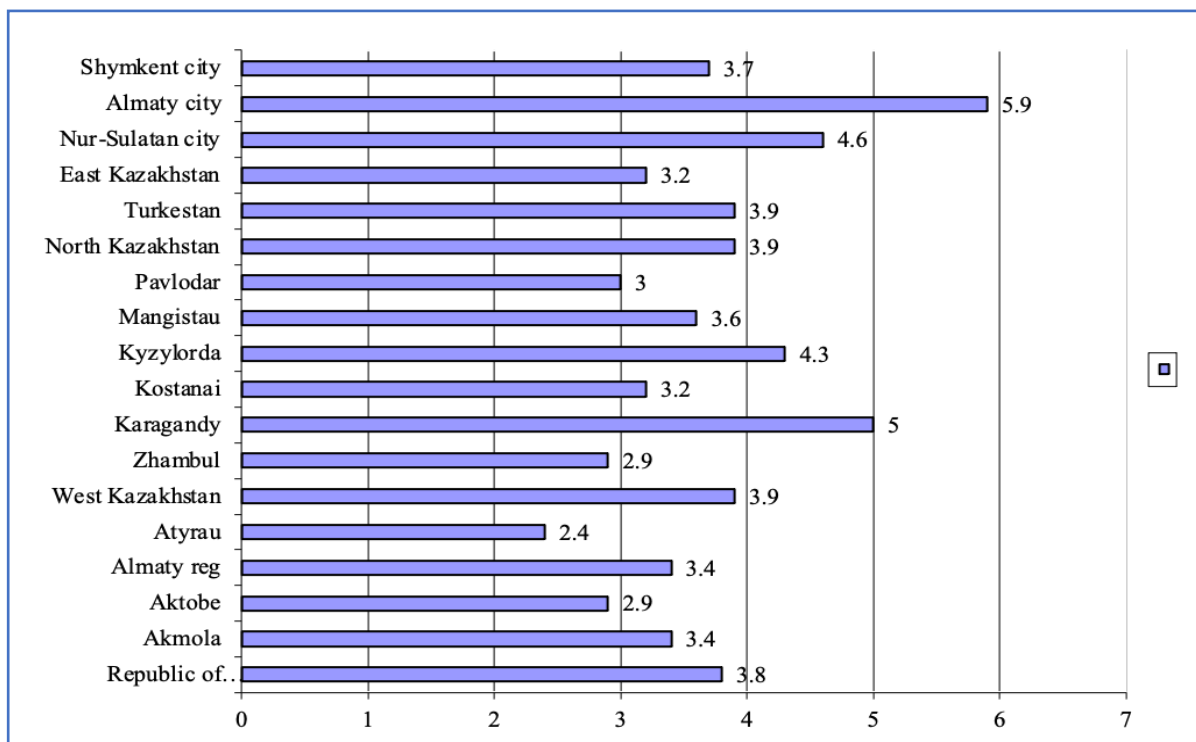


Source: National Bureau of Statistics, Republic of Kazakhstan

In Kazakhstan, the labour market is influenced by interregional differences. The demand and supply of labour is influenced by the industry specificity of the different regions, their economic development, population density, migration processes, the level of professional training, the activity of enterprises, and the activities of the public sector. Characteristically, the level of youth unemployment is higher in cities. This is because young people from rural areas migrate to urban centres in search of work. However, often, lacking the proper qualifications, rural

youth cannot easily compete for jobs in the labour market. Some of them find temporary work in the private sector of the economy, and others simply join the ranks of the unemployed.⁷

Figure 2. Level of youth unemployment in the Republic of Kazakhstan by region (2020)



Source: National Bureau of Statistics, Republic of Kazakhstan

Reducing youth unemployment is a top priority for the country, as the impact of unemployment can be devastating. An effective plan for the development of the labour market, which includes support for entrepreneurial potential, unemployed and under-employed youth, and measures to facilitate the transition of young people from the informal economy to the formal economy, will contribute to solving problems of supply and demand for labour.

Support and development of the competitiveness of youth is also an urgent and strategic priority of state policy of the Republic of Kazakhstan. The President of the Republic of Kazakhstan Kassym-Jomart Tokayev at the first session of the Parliament of the seventh convocation noted that one of the main tasks of state development is the improvement of youth policy and proposed to introduce an index of youth development in Kazakhstan. In 2020, the Government introduced comprehensive measures to support the youth of the country. Thus, national projects such as the "Tauelsizdik Urpaktary", laws on state youth policy, and volunteer activities are being prepared.

Today, there are various types of social protection for unemployed and self-employed youth: social benefits, retraining, career guidance and others. The State Development Programme "Trud" for 2017-2021 is in place, through which a social contract is in effect between an employer, the employment centre and an employee. According to this agreement, 35 per cent of the total salary is paid by state, and the remaining 65 per cent is paid by the employer). In total, 739,000 jobs for young people have been created through the state programme "Labour". In addition, thousands of young people completed internships (state programme "Enbek" for 2017 - 2021). Furthermore, short-term (up to 6 months) vocational training courses have been organised for young people who do not either study or work.

⁷ One of the important characteristics of the multi-structured economy of Kazakhstan is the existence of legal and illegal (shadow) economies. Problems of socialization of young people also exist in the formal economy, but they are especially acute in the informal one. Often here they are of a latent nature, they are an inhibitor of social tension. It should be noted that in recent years these problems have been in the focus of the state.

There are several ways to reduce youth unemployment and social protection benefits for unemployed youth, including increased government spending on education and investing in digital skills and technology. Lack of investment undermines long-term economic prospects and short-term costs for students, workers and their families. Therefore, it is necessary not to reduce the number of grants allocated by the state, especially in connection with digitalisation skills, as it is necessary to equip people with the appropriate skills by providing training courses to them.

The current situation in the youth labour market in Kazakhstan may be summarised as follows: (i) the long-term hidden unemployment continues to persist, accompanied by a shortage of labour, especially among able-bodied young people; and (ii) significant disruptions are observed in compensating the professional qualifications' structure, as in many occupational skill groups, graduates of educational institutions cannot compensate the lost experience and expertise of those workers who retire due to age. This threatens the sustainable development of many economic sectors and can lead to serious problems.

THE RESEARCH MODEL

The research model employed aspires to analyse the relationship between the various relevant factors that influence the level of youth unemployment in each region and across regions. Separate models were constructed for each region. The level of youth unemployment is treated as the resultant feature [dependent variable]. Explanatory [independent] variables include: (i) share of young people in total population; (ii) average per capita monetary income; (iii) share of population under subsistence level; (iv) inflation; (v) GRP; (vi) investment in fixed assets; (vii) average monthly salary; and (viii) share of young people with higher and specialised education.

The following hypotheses were tested to identify the factors that influence the level of youth unemployment by region.

- Hypothesis 1.1 - Significant direct relationship exists between the proportion of youth with respect to total population
- Hypothesis 1.2 - Significant inverse relationship exists between average per capita monetary income and unemployment rate
- Hypothesis 1.3 - Significant direct relationship exists between the proportion of population below subsistence level and unemployment
- Hypothesis 1.4 - Significant direct relationship exists between inflation and unemployment
- Hypothesis 1.5 - Significant inverse relationship exists between GRP and unemployment
- Hypothesis 1.6 - Significant inverse relationship exists between investment in fixed assets and unemployment
- Hypothesis 1.7 - Significant inverse relationship exists between average monthly wage and unemployment
- Hypothesis 1.8 - Significant inverse relationship exists between educational attainment and unemployment

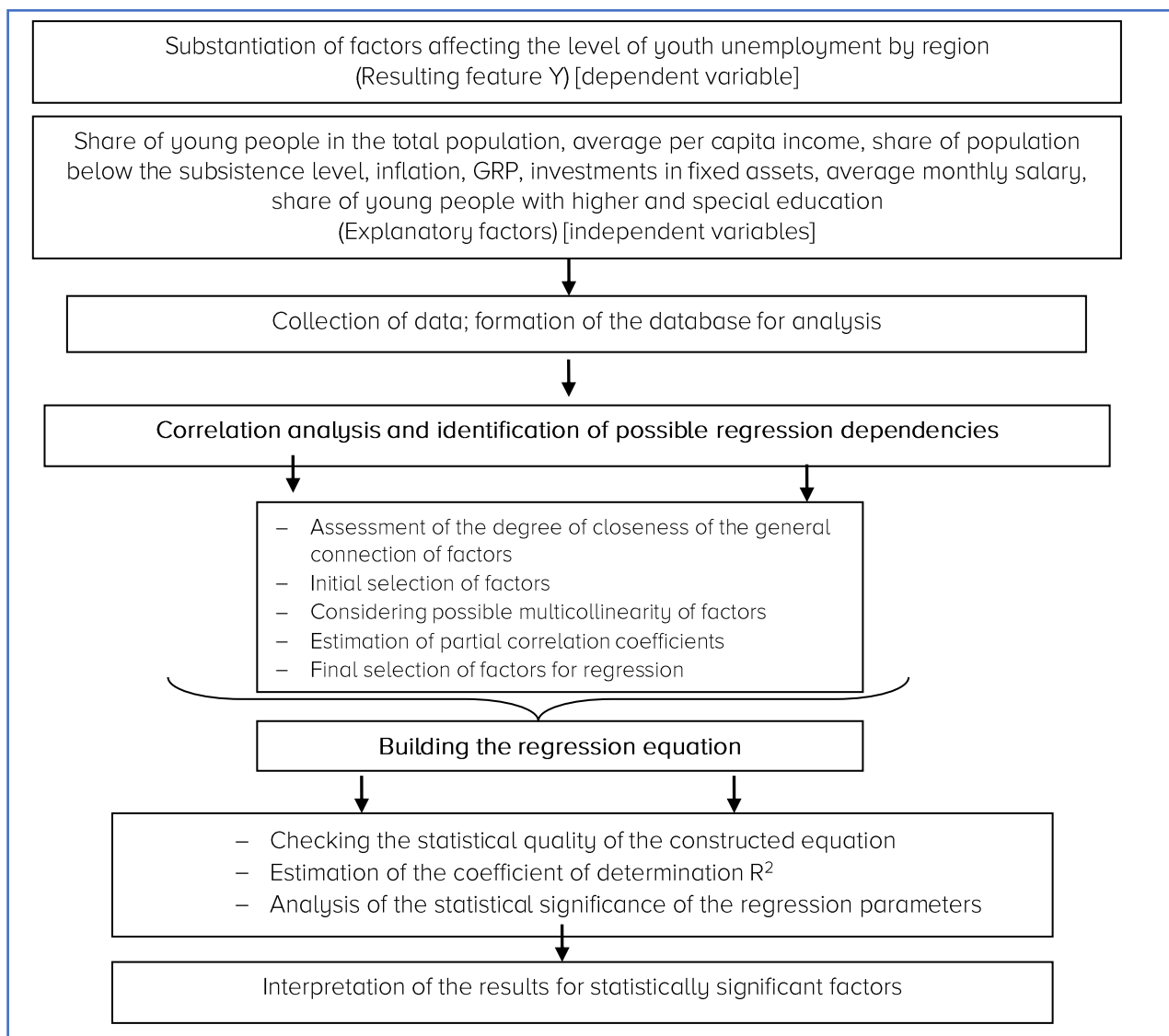
Another hypothesis also tests the assumption that the higher the economic position of a region, the lower its youth unemployment is, for making comparisons across regions.

The main determinants that influence youth unemployment in Kazakhstan were identified and analysed utilising regression analysis techniques. In fact, correlation dependence and multiple regression. In this context, a matrix of pair collection coefficients was built to determine the reliability between the presented factors and the level of youth unemployment in Kazakhstan.⁸

⁸ The correlation matrix is a square symmetric ($K \times K$) matrix whose i - j record is the correlation between columns i and j of matrix X . Large values in this matrix indicate severe collinearity between the variables involved. However, the absence of extreme correlations does not mean that there is no collinearity. Regression variables for multiple

Calculation steps are presented in Figure 3.

Figure 3. Model of influence of factors on youth unemployment by regions of the Republic of Kazakhstan



regression can be highly multicollinear even if there are no large pairwise correlations. For example, one of the variables can be approximated by a linear function of the other variables without a high correlation of any two variables. Consequently, pairwise correlations are of limited use as a diagnosis of collinearity. Examining the eigenvalues and eigenvectors of the correlation matrix provides the best means for detecting multicollinearity. After selection of independent variables, regression analysis is performed, which is considered as a statistical process of estimating the relationships between variables, and it is used to predict the variables. The relative relationship between variables can be demonstrated using the coefficients of regression equation.

The coefficient of determination R^2 is the ratio:

$$R^2 = \frac{\text{var}(\hat{y})}{\text{var}(y)} = \frac{\sum(\hat{y}_i - \bar{y})^2}{\sum(y_i - \bar{y})^2}$$

The more R^2 is close to 1, the more accurate prediction. An R^2 value of more than 0.5 is allowed, in which case the presented model is reliable, and you can rely on it when making a forecast. The parameters of the regression model were estimated using the least squares method. Its essence lies in the choice of model parameters at which the sum of the squares of the difference between the observed and predicted values of the dependent variable is folded (Wooldridge, 2012).

The data utilised originated from the Bureau of National Statistics of Agency for Strategic Planning and Reforms of the Republic of Kazakhstan (<http://stat.gov.kz/>). Average per capita monetary income, the share of the population below the subsistence level, inflation, GRP, investment in fixed assets, the average monthly salary by region is available on each region’s website. The share of youth in the total population was calculated as the ratio of the number of young people aged 14 to 28 to the total population in the region (data from the collections Youth of Kazakhstan by region <https://stat.gov.kz/edition/publication/collection>). The share of young people with higher and special education was calculated as the ratio of the number of young people with education (data from the collections Youth of Kazakhstan by region) to the total number of young people in the region. The data cover an 11-year period (2009-2020). The data for 2020 were extracted from the preliminary dataset presented in "Publications" by region.

Table 2. Definition of variables and their data sources

| Variables | Data sources |
|---|--|
| Share of youth in the total population (X1) | Data from the Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan (Data from the collections Youth of Kazakhstan by region https://stat.gov.kz/edition/publication/collection). |
| Average per capita money income (X2) | |
| Share of the population below the subsistence level (X3) | |
| Consumer price index per cent (X4) | |
| Gross regional product (GRP), million tenge (X5) | |
| Fixed capital investments, million tenge (X6) | |
| Average monthly salary, tenge (X7) | |
| Share of young people with higher and special education, thousand people (X8) | |

Results

This section presents the results of the correlation and regression analysis. Using the data for Akmola region an example calculation is presented. The statistical results of such calculation are presented in Table 3. The N=11 and M=8.

Table 3: Initial data for checking multicollinearity of dependence of the level of unemployed youth on external factors (Akmola region)

| year | Youth unemployment rate (15-28) | Share of youth in total population of the region (%) | Average per capita nominal cash income (in tenge) | Share of population with income below subsistence level (%) | CPI (%) | Gross Regional Product, GRP (in million tenge) | Fixed capital investments (In million tenge) | Average monthly salary (In tenge) | Share of young people with higher and special education (In thousands) |
|-------------|---------------------------------|--|---|---|---------|--|--|-----------------------------------|--|
| 2009 | 9.4 | 25.0 | 28,435 | 5.9 | 107,8 | 524,837.0 | 149,532 | 47,794 | 29,8 |
| 2010 | 5.6 | 24.6 | 31,169 | 4.4 | 107.4 | 585,965.4 | 106,864 | 54,557 | 34.7 |
| 2011 | 5.4 | 24.1 | 39,120 | 6.2 | 107.0 | 804,754.5 | 122,793 | 64,495 | 33.6 |
| 2012 | 4.8 | 23.7 | 44,665 | 3.9 | 105.9 | 799,967.3 | 143,782 | 74,685 | 35.5 |
| 2013 | 5.2 | 23.0 | 47,253 | 3.9 | 104.8 | 955,620.2 | 141,716 | 79,127 | 39.0 |
| 2014 | 3.0 | 22.4 | 52,771 | 2.9 | 107.4 | 1,051,057.8 | 181,328 | 85,412 | 45.2 |
| 2015 | 3.1 | 21.9 | 56,579 | 2.9 | 113.0 | 1,121,025.0 | 199,021 | 89,176 | 44.3 |
| 2016 | 3.3 | 20.8 | 65,213 | 3.0 | 108.1 | 1,344,334.6 | 223,045 | 104,816 | 49.2 |
| 2017 | 3.0 | 20.2 | 72,866 | 2.9 | 107.1 | 1,552,703.8 | 264,892 | 110,766 | 43.9 |
| 2018 | 2.9 | 19.7 | 80,809 | 4.2 | 104.9 | 1,699,883.9 | 278,177 | 121,361 | 45.0 |
| 2019 | 3.0 | 19.3 | 91,933 | 4.3 | 105.1 | 1,933,580.2 | 333,723 | 140,272 | 46.4 |
| 2020 | 3.4 | 19.4 | 101,340 | 4.5 | 107.4 | 2,307,423.0 | 425,979 | 168,513 | 42.2 |

A matrix of pair correlation coefficients was constructed utilising the STATA programme, to determine the reliability between the factors included and the level of unemployment among young people in the Akmola region. The matrix of pair correlation coefficients of the eight-factor regression model is presented in Table 4.

Table 4. Matrix of pair correlation coefficients of eight factor regression model (Akmola region)

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. pwcorr YouthUnemRate1528 ShareYouthtotalpopulregion AverPercapitaNomincashincom
> epop SharePopulincombelowsubsistlevel ConsumerPriceIndex GrossRegionProduct Fix
> edcapitalinvestm Avermonthllysalary Shareyoungpeoplhighereduc, star(0.05) sig

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| | You~1528 | ShareY~n | AverPe~p | ShareP~l | Consum~x | GrossR~t | Fixedc~m |
|--------------|--------------------|--------------------|-------------------|--------------------|-------------------|-------------------|-------------------|
| YouthUn~1528 | 1.0000 | | | | | | |
| ShareYouth~n | 0.7932* 0.0021 | 1.0000 | | | | | |
| AverPercap~p | -0.7212* 0.0081 | -0.9712* 0.0000 | 1.0000 | | | | |
| SharePopul~l | 0.7069* 0.0102 | 0.4442 0.1479 | -0.3039 0.3368 | 1.0000 | | | |
| ConsumerPr~x | -0.0417 0.8976 | 0.1263 0.6956 | -0.1686 0.6004 | -0.2705 0.3952 | 1.0000 | | |
| GrossRegio~t | -0.6912* 0.0128 | -0.9577* 0.0000 | 0.9961* 0.0000 | -0.2603 0.4138 | -0.1650 0.6084 | 1.0000 | |
| Fixedcapit~m | -0.5542 0.0615 | -0.9000* 0.0001 | 0.9643* 0.0000 | -0.1789 0.5779 | -0.0974 0.7633 | 0.9736* 0.0000 | 1.0000 |
| Avermonthl~y | -0.6965* 0.0119 | -0.9448* 0.0000 | 0.9931* 0.0000 | -0.2839 0.3711 | -0.1579 0.6242 | 0.9951* 0.0000 | 0.9715* 0.0000 |
| Shareyoung~c | -0.8860* 0.0001 | -0.8412* 0.0006 | 0.7284* 0.0072 | -0.7524* 0.0048 | 0.0833 0.7969 | 0.6951* 0.0121 | 0.5929* 0.0422 |
| | | Avermo~y | Sharey~c | | | | |
| Avermonthl~y | | 1.0000 | | | | | |
| Shareyoung~c | | 0.6951* 0.0121 | 1.0000 | | | | |

The analysis of the results of the pair correlation coefficients shows that the dependent variable, i.e., the unemployment rate in Akmola region is closely related to almost all included factors presented, except with the Consumer Price Index. As the Consumer Price Index (X4) factor demonstrates a weak connection with the dependent variable ($r=-0.0417$), it is excluded it from the model.

Multicollinearity is observed in such indicators as Gross Regional Product (GRP) (X5) and Share of Youth in Total Population (X1) ($r=-0.95765$), Average per Capita Monetary Income (X2) ($r=0.99609$). The factor Investment in Fixed Assets (X6) shows high collinearity with X1 ($r=0.89997$), X2 ($r=0.964304$) and X5 ($r=0.973595365$). The factor Average Monthly Salary" (X7) shows high collinearity with X1 ($r=-0.94476$), X2 ($r=0.993114$) and X5 ($r=0.995123338$). In this regard, X1, X2, X6, and X7 only are excluded from the model, since these factors correlate

highly with each other. Other indicators, such as Share of Population with Incomes Below Subsistence Level (X3), Gross Regional Product (X5), Share of Young People with Higher and Special Education (X8) did not show a strong connection and hence no multicollinearity, thus they are considered as factors included in the model.

The N was equal to 11 and M equal to 8, at the start of the calculations. However, after excluding the insignificant factors in this case, the N equals 11 and M equals 3. Using STATA, the regression equation was calculated, and the results were obtained. The equation function is:

$$\text{YouthUnempl} = 0.450\text{SharePopIncombelow} - 9.607\text{GRP} - 0.156\text{ShareYoungPeopleEduc} + 10.035$$

Table 5. Regression analysis results

| Source | SS | df | MS | Number of obs | = | 12 |
|----------|------------|----|------------|---------------|---|--------|
| Model | 32.8473603 | 3 | 10.9491201 | F(3, 8) | = | 11.87 |
| Residual | 7.38180639 | 8 | .922725799 | Prob > F | = | 0.0026 |
| | | | | R-squared | = | 0.8165 |
| | | | | Adj R-squared | = | 0.7477 |
| Total | 40.2291667 | 11 | 3.65719697 | Root MSE | = | .96059 |

| YouthUnemR~1528 | Coef. | Std. Err. | t | P> t | [95% Conf. Interval] |
|-----------------|-----------|-----------|-------|-------|----------------------|
| SharePopulinc~1 | .4509456 | .4759719 | 0.95 | 0.371 | -.6466476 1.548539 |
| GrossRegProduct | -9.61e-07 | 8.72e-07 | -1.10 | 0.303 | -2.97e-06 1.05e-06 |
| Shareyoungpeo~c | -.1562329 | .1170965 | -1.33 | 0.219 | -.426258 .1137922 |
| _cons | 10.03955 | 5.719704 | 1.76 | 0.117 | -3.150111 23.22921 |

The results indicate that an increase in the Share of Population with an Income by 1 per cent leads to an increase in the level of Youth Unemployment in the Akmola region by an average of 0.45 per cent. Conversely, an increase in the Gross Regional Product by 1 per cent leads to a decrease in Youth Unemployment by an average of 9.607 per cent and an increase in the level of education leads to a decrease in unemployment by 0.15 per cent.

For assessing the significance of the regression equation, the coefficient of determination (R^2) is examined. Its value is 0.81, which means that 81 per cent of the influence on youth unemployment is explained by these factors, and 19 per cent by others. Thus, because the P-value is greater than 0.05, it seems that these results are non-statistically significant values. In other words, these factors may not be considered as determinants that affect the level of unemployment in Akmola region.

Similar calculations were carried out for all regions of the Republic of Kazakhstan and those factors that influenced the dependent variable the most are also highlighted (the calculation results regression equations are summarised in Appendices 1 and 2). It seems that an increase in the proportion of population with higher and secondary vocational education contributes to a decrease in the level of youth unemployment in all regions. Notably, this factor had the highest influence in the West-Kazakhstan, Kyzylorda, and Mangistau regions. This may be explained by the fact that these regions are primarily active in the mining and oil extraction industries that require a highly qualified workforce.⁹

⁹ The Doshchangkoye oil field is in the Kyzylorda region. Furthermore, a joint Kazakh Chinese company has begun to develop the Irkol uranium deposits, and the construction of Beineu-Bozoi-Shymkent gas pipeline has begun, designed to transport gas from fields in western Kazakhstan to supply natural gas to the south of Republic, as well as export gas supplies to Kazakhstan-China gas pipeline. In addition, the construction of Western Europe-Western China highway has been launched. The Mangistau region is unique as it is the only one in Kazakhstan that is autonomous in energy production – Mangyshlak nuclear power plant, a division of “Kazatomprom” - and water

An inverse relationship between the growth of GRP and level of youth unemployment was observed for all regions. This means that as the economy continued to develop a decrease in socially vulnerable segments of population was observed. In some regions, a strong direct relationship between the proportion of population with incomes below subsistence level and the level of unemployment exists. Thus, it seems from the data analysis that our hypotheses were only partially confirmed, as only 3 out of the 8 pre-selected factors showed a strong relationship with the level of youth unemployment, the resulting feature.

CONCLUSIONS, STUDY LIMITATIONS

This study utilised correlation and regression analysis of economic, demographic, social factors to assess their influence on the level of youth unemployment in the different regions of Kazakhstan. Notably, the highest level of youth unemployment is in agrarian and raw-material extraction regions, and the lowest is in regions where the share of services in the structure of employment is high.

The results of the study indicate that a decrease in the share of population with incomes below the subsistence level, an increase in GRP and in the share of educated people contribute to a decrease in the level of youth unemployment in the regions of Kazakhstan. The level of education has the greatest influence in large cities; this is clearly manifested in the case of the West Kazakhstan, Kyzylorda, and Mangistau regions.

At this, point, it is worth noting that the statistics on youth unemployment do not quite reflect the prevalent realities. For instance, there are many young people between 14-29 years, who are engaged in various forms of education. Furthermore, youth unemployment indicators do not account for factors specifically related with gender, i.e., men: conscription service in the Armed Forces, and women: child-bearing. In addition, only those individuals who are registered with employment agencies are officially classified as unemployed, while the remaining young people, who have not found a job after graduation and have not registered with employment agencies, are classified as self-employed. Therefore, domestic statistics do not fully reflect the situation on the youth labour market, but nevertheless, they reflect certain trends.

Consequently, further research is needed to explore other factors that may influence youth unemployment. For example, it would be of interest to study the relationship between gender, marital status, and migrants and youth unemployment. It would also be interesting to explore the adaptive capabilities of young people in the labour market by narrower age groups. For instance, in order to capture the specific characteristics different age groups, it may be advantageous to segregate youth according to the following age groups: 14-15 years old, 16-17 years old, 18-20 years old, 21-24 years old, and 25-29 years old.

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REFERENCES

- Abugamea, G. (2018). Determinants of unemployment: empirical evidence from Palestine. MPRA Document №89424. Munich Personal Archives
- Agnan (2003). Explaining Pattern of Regional Unemployment: The Case of the Midi-Pyrénées Region. *Papers in Regional Science*, 82/2, 155-174

supply. In fact, 559 industrial enterprises are registered to operate in this region, of which 70 are medium and large-size operations.

- Badinger, H., & Url, T. (2002). Determinants of Regional Unemployment: Some Evidence from Austria. *Regional Studies*, 36/9, 977-988
- Beisembayev, S. (2018). Trends in the socio-demographic development of Kazakhstani society (based on sociological research). *Central Asia and the Caucasus*, 12/2, 83-100
- Bell, D., & Blanchflower, D. (2011). Young People and the Great Recession. *Oxford Review of Economic Policy*, 27/2, 241-267
- Dolgikh, E. (2018). The position of youth on labour market in the Russian Federation. *Materials of 13th scientific-practical conference «Actual problems of management-2018»*
- Dzhusibalieva, A., Akhmetova, G., Saubetova, B., & Baykadamov, N. (2020). State support and regulation of entrepreneurship as factors of employment development. *Central Asian Economic Review*, 1/130, 8–20.
- Gurvich, E., & Vakulenko, E. (2018). Research of Russian labor market and economic policy, *Journal of new economic association*, 1, 203-212
- Information on the implementation of State Program for Development of Productive Employment and Mass Entrepreneurship for 2017 - 2021 "Enbek".
- Kadyrzhanov, R. (2014). Ethnocultural Symbolism and National Identity of Kazakhstan, *Institute of Philosophy, Political Science and Religious Studies*, 168
- Karaalp - Orhan, H., & Gülel F. (2016). Regional Unemployment in Turkey: A Spatial Panel Data Analysis. *Journal of Social Security*, 2, 48-67
- Khishauyeva, Z. (2020). The state of labour market in Kazakhstan and the development of self-employment of the population, *Economy of Central Asia*, 4/2, 101-112
- Lukyanova, A. (2018). Minimal wages and minimum wages, *Journal of new economic association*, 1, 176-186
- O'Higgins, S. (2018). Trends in the Youth Labour Market in Developing Countries and Countries with Economies in Transition. *World Bank Social Protection Discussion Series*, 321, 50
- Pheko, M., & Molefhe, K., (2017). Addressing Employability Challenges: A Framework for Improving the Employability of Graduates in Botswana, *International Journal of Adolescence and Youth*, 22/4, 455 – 469
- Russell, H., & O'Connell, P. (2017). Work in Europe: Moving from Unemployment to youth work in nine European Countries. *Work Employment and Society*, 15/1, 1-24
- Sabirova, R., Utepkalieva, K., & Kurmasheva, S. (2018). Actual problems of youth labour market, *Economics and Statistics*, 3, 124–130
- Sabirova, R., Utepkalieva, K., & Bisembieva Z. (2020). The problem of youth unemployment in conditions of uncertainty. *Central Asian Economic Review*, 2/130, 18–27
- State program for development of productive employment and mass entrepreneurship for 2017 - 2021 "Enbek". Resolution of Government of the Republic of Kazakhstan dated November 13, 2018, №746
- Tahlin, M., & Westerman, J. (2020). Youth employment decline and the structural change of skill. *European Societies*, 22/1, 47 – 76
- Tikhomirova, T. (2017). Functions of wages: theoretical aspect and analysis of implementation, *Economy of region*, 4, 46-51
- Vakulenko, E. (2015). Analysis of relationship between regional labour markets in Russia using Okun's model. *Applied Econometrics*, 4, 28-48
- Wooldridge, J. (2012). *Introductory Econometrics: A modern approach*, Fifth Edition,
- World Employment and Social Outlook: Trends 2020, WESO
- Xiaoya, S., & Tay, N. (2016). Some Challenges to Economic Growth and Stability in China, the Chinese Economy, 49/5, 301-306

APPENDICES

Appendix -1

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---------------------------------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|-------------------------------|-----------------------------|-------------------------------|-------------------------------|
| | Youth Unemp Rate 1528 | Youth Unemp Rate 1528 | Youth Unemp Rate 1528 | Youth Unemp Rate 1528 | Youth Unemp Rate 1528 | Youth Unemp Rate 1528 | Youth Unemp Rate 1528 | Youth Unemp Rate 1528 |
| Share Popul incom below subsist level | 0.451 (0.476) | | 0.461 (0.251) | 0.0491 (0.217) | | | 0.624* (0.252) | 0.790 (0.503) |
| Gross Region Product | -0.000000961 (0.000000872) | -0.00000495** (0.00000152) | -0.000000697 (0.00000116) | -0.00000117 (0.00000132) | -0.000000666 (0.000000757) | 0.00000112 (0.00000134) | -0.000000979 (0.000000558) | -0.000000292 (0.000000254) |
| Share young people higher educ | -0.156 (0.117) | -0.184 (0.122) | -0.145 (0.155) | -0.0284 (0.0495) | -0.175 (0.0789) | -0.203** (0.0624) | -0.0887 (0.0644) | -0.0920 (0.131) |
| _cons | 10.04 (5.720) | 15.92** (3.913) | 10.71 (5.080) | 7.491 (3.374) | 14.20*** (1.941) | 11.29*** (1.131) | 7.454* (3.072) | 8.172 (5.612) |
| <i>N</i> | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| <i>R</i> ² | 0.817 | 0.747 | 0.821 | 0.592 | 0.807 | 0.752 | 0.862 | 0.721 |

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Model-1: Akmola region

Model-2: North-Kazakhstan region

Model-3: Pavlodar region

Model-4: South-Kazakhstan region (Turkestan)

Model-5: Mangistau region

Model-6: Kyzylorda region

Model-7: Kostanay region

Model-8: Karaganda region

Appendix -2

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|-----------------------------|----------------------------|------------------------------|-----------------------------|-------------------------------|-------------------------------|--------------------------------|-------------------------------|
| | Youth Unemp Rate 1528 | Youth Unemp Rate 1528 | Youth Unemp Rate 1528 | Youth Unemp Rate 1528 | Youth Unemp Rate 1528 | Youth Unemp Rate 1528 | Youth Unemp Rate 1528 | Youth Unemp Rate 1528 |
| Gross Region Product | -0.00000433 (0.00000195) | -7.61e-08 (0.000000335) | 0.000000165 (0.000000220) | 0.000000150 (0.00000108) | -0.000000972 (0.000000540) | -0.000000241 (0.000000197) | -0.000000378* (0.000000120) | -0.00000203* (0.000000790) |
| Share young people higher educ | 0.0383 (0.118) | -0.0547* (0.0190) | -0.175 (0.0821) | -0.0606 (0.0868) | -0.0315 (0.0563) | 0.00246 (0.0621) | -0.103 (0.0518) | 0.0542 (0.0594) |
| Share Popul income below subsis tlevel | | 0.530*** (0.0951) | 0.389 (0.176) | 0.262 (0.138) | 0.287 (0.159) | | -0.507 (0.468) | |
| _cons | 8.435** (2.466) | 5.271*** (0.904) | 9.049* (3.420) | 4.879* (2.090) | 6.103* (1.893) | 9.235*** (1.911) | 13.46** (3.074) | 8.020*** (0.877) |
| <i>N</i> | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| <i>R</i> ² | 0.625 | 0.955 | 0.867 | 0.704 | 0.791 | 0.422 | 0.847 | 0.773 |

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Model-1: Zhambyl region

Model-2: West-Kazakhstan region

Model-3: Aturay region

Model-4: Almaty region

Model-5: Aktobe region

Model-6: Almaty city

Model-7: Nur-Sultan city

Model-8: East-Kazakhstan region