







# “Relationships between tax burden, incomes, and poverty in rural areas of Kazakhstan: Regional evidence”

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# RELATIONSHIPS BETWEEN TAX BURDEN, INCOMES, AND POVERTY IN RURAL AREAS OF KAZAKHSTAN: REGIONAL EVIDENCE

**Abstract**

The purpose of this study is to assess the relationship between tax burden, income, and the level of poverty in rural areas of Kazakhstan. Panel regional data are analyzed for the period 2010–2024, obtained from the Bureau of National Statistics of Kazakhstan and the State Revenue Committee. The methodological framework includes regression analysis and econometric modeling. Five models were constructed showing that the growth of the gross regional product has a positive association with the incomes of the rural population ( $\beta = 0.927$ ,  $p < 0.001$ ). On the contrary, the relationship with the tax burden is statistically insignificant ( $\beta = 0.001$ ). The study showed that before the 2018 tax reform, the fictitious indicator was  $\beta = -0.014$ ; after that,  $\beta = 0.251$ , indicating a structural shift in household incomes of about 25–29%. The regional resource-based model shows that in non-oil regions, the tax burden is positive ( $\beta = 0.014$ ), whereas in oil regions, it is statistically significant but negative ( $-0.021$ ). The results suggest that higher GRP levels are not statistically associated with corresponding improvements in rural income indicators and poverty rates. In these cases, it is necessary to undertake comprehensive actions to improve the social well-being of the rural population, including strengthening the institutional environment, promoting regional economic development, and ensuring equitable distribution of benefits from economic growth.

**Keywords**

tax burden, income, poverty, rural areas, panel regression, tax reform, Kazakhstan

**JEL Classification**

H20, I32, R11

**INTRODUCTION**

Social security of the population remains the most important task of socio-economic policy in many countries. Around the world, countries with strong social policies seeking to improve the quality of life for their populations are achieving sustainable economic development. In this regard, Kazakhstan is striving to reduce social development imbalances and improve the quality of life, as 37.6% of its population lives in rural areas (BNS, 2024a). According to the World Bank, rural poverty (11.4%) is significantly higher than urban poverty (6.6%) in Kazakhstan (World Bank, 2024). Despite government programs (Adilet, 2021) aimed at rural development and reduced income inequality, a significant portion of the rural population still faces limited opportunities. There is also heterogeneous economic development in Kazakhstan, which is acutely felt between oil and non-oil regions, where gross regional product per capita in oil regions is several times higher than in non-oil regions. This suggests pronounced spatial disparities in income distribution across regions. In this context, fiscal policy and the tax burden increasingly shape income distribution and poverty outcomes in rural areas.

Kazakhstan has a centralized fiscal system, where a significant share of the tax burden is redistributed through the national budget, limiting the fiscal autonomy of regions. Additional interest stems from the 2018 tax reform, which was accompanied by the new Tax Code of the Republic of Kazakhstan (Adilet, 2017). It was assumed that implementing the reform would balance business development and increase the tax burden for the budget, which, in the future, could become a tool for the social development of rural areas. However, the empirical effects of the reform on rural welfare and interregional disparities remain insufficiently studied. In the context of economic transformations in Kazakhstan, the relationship between tax burden, rural income, and poverty levels is becoming increasingly important. In this regard, the effectiveness of tax policy and its role in ensuring social well-being are indisputable. However, existing empirical studies are largely conducted at the macro level and pay limited attention to regional heterogeneity, particularly differences between oil-producing and non-oil regions.

## 1. LITERATURE REVIEW AND HYPOTHESES

The relationship between fiscal policy and social development remains crucial in public policy and academic research, particularly in countries with significant regional disparities. Fiscal policy plays a dual role: it forms and redistributes the state budget (Özer & Karagöl, 2018; Tarawalie & Kargbo, 2020; El Husseiny, 2023). Consequently, the effectiveness of fiscal mechanisms affects not only macroeconomic stability but also the state's ability to redistribute resources and support vulnerable groups. Initially, the relationships between government revenues and expenditures and the social sphere were discussed in classical and Keynesian economic theories (Schumpeter & Keynes, 1936; Musgrave, 1959; Stiglitz, 2000), where the importance of fiscal policy, in addition to ensuring sustainable development of the country, also supports economic activity and employment. In this regard, changes in the tax system, including adjustments to tax rates, the introduction of tax incentives, and improved administration, can significantly affect the behavior of economic agents (Kalaš et al., 2017; Gnanon & Brun, 2019; Kutasi & Marton, 2024; Adekunle, 2025). In addition, there may be a different tax burden on territories, particularly to stimulate development (Buss, 2001; Hicks & LaFaive, 2011; Rachevski & Shami, 2024). Differentiated tax instruments can influence regional development by affecting investment activity and economic diversification (Chaisse & Ji, 2020; Afida & Widodo, 2023; Tolosa-Iscala et al., 2025). It depends on the level of institutional development, the quality of infrastructure, the availability of human capital, and the specifics of the territory's economic structure. Thus, fiscal policy's functions are diverse, but its

effectiveness varies. In Kazakhstan, regions have distinct economic specializations and varying levels of socio-economic development (Khajieva & Aida, 2020; Sermagambet et al., 2022). Because Kazakhstan's tax system is centralized, the ability of fiscal policy to influence social outcomes may vary across regions and industries. This is especially acute in rural areas and resource-dependent regions, where opportunities for income generation and budget allocations vary significantly.

Fiscal policy is often linked with social outcomes through public spending and redistribution channels (Hart, 2005; Götze & Rothgang, 2014; Kangalakova & Rakhmetova, 2021; Xia et al., 2022). Therefore, differences in tax burdens may translate into differences in regional income opportunities and poverty-reduction outcomes. Regions with a limited tax base may be more dependent on inter-budget transfers, while economically stronger regions may generate higher budget revenues. Thus, the same tax burden may have a different relationship with regional income levels and poverty reduction.

The effectiveness of fiscal policy in achieving social goals depends on the institutional environment, the quality of public administration, and the structure of budget expenditures (Afonso & Jalles, 2016; Hussen, 2020; Kostarakos & Varthalitis, 2024; Alhamdany et al., 2025). Consequently, effective fiscal policy management and tax reforms can contribute to balanced economic development, support the business environment, and reduce social inequality by improving income distribution and reducing poverty. However, the effectiveness of fiscal policy also varies, depending on regional economic potential, the structure of local incomes,

and the degree of dependence on specific sectors. In regions with limited budgetary resources, mechanisms for redistributing funds and inter-budgetary transfers are becoming important tools for maintaining social development and reducing territorial disparities. Thus, fiscal policy should be considered not only as an instrument of economic growth, but also as a mechanism of regional redistribution that affects income levels and poverty dynamics.

The problems of rural welfare and poverty remain an important area of research in social policy. Poverty is much more acute in rural areas, where economic opportunities are limited, diversification of employment is difficult, and production is often focused on low-value-added activities (Moyo, 2005; Smeeding, 2005; Griffith, 2022; Pattayat et al., 2022; Pei et al., 2024). Despite significant research on fiscal policy and its contribution to economic and social development (Lee & Gordon, 2005; Arnold, 2008; Bozatlı & Albayrak, 2026; Kirkby et al., 2026), the relationship between the tax burden and social outcomes at the regional level remains poorly understood. Existing research focuses mainly on national-level indicators and pays less attention to how tax instruments affect rural populations and territories with varying levels of economic development. Many studies examine the impact of tax policy on enterprise development and production capacity (Auerbach & Hassett, 1992; Ohrn, 2019; Lerche, 2025). There is also limited research on the relationship between tax burdens, rural incomes, and poverty reduction, especially in regions with varying financial opportunities and economic structures. This issue is particularly relevant for Kazakhstan, which has regional economic differences; resource-rich and non-resource regions may differ in tax burdens and the social opportunities they provide to the population. In such circumstances, the same level of tax burden may have a different relationship with the well-being of rural residents, depending on regional specifics and mechanisms for redistributing budget funds.

Thus, to address this research gap, the aim is to assess the relationship between tax burden, income, and the level of poverty among the rural population in Kazakhstan's regions. Accordingly, the following hypotheses were developed:

*H1: Regional tax burden is positively associated with rural household income.*

*H2: The 2018 tax reform does not show a statistically significant direct association with rural incomes and poverty.*

*H3: In non-oil regions, the tax burden is positively related to the income of rural residents.*

*H4: The relationship between tax burden and rural incomes differs between resource-rich and non-resource regions.*

## 2. METHOD

This study uses a quantitative approach to assess the relationships among tax burden, income, and poverty in rural populations. The empirical basis consists of panel data covering the years 2010–2024 and 14 regions of Kazakhstan. Although there are 20 regions in Kazakhstan, three are cities of national importance, and since rural areas are included, these regions are excluded. In addition, three more regions were excluded because they were formed in 2022, and their data are only available for two years, which does not reflect their current state. The data were obtained from official sources, including the Bureau of National Statistics of the Republic of Kazakhstan and the State Revenue Committee of the Ministry of Finance of the Republic of Kazakhstan. All estimates were performed in Stata 19.0. The methodological framework is based on regression analysis and econometric modeling. The analysis uses dependent and independent variables, as well as control variables, which are presented in Table 1. The income level of the rural population and the poverty level were selected as dependent variables in the logarithmic representation. This approach, which uses the natural logarithm of rural per capita income ( $\ln\_income$ ), facilitates the interpretation of the results, and the choice of a variable in the form of the poverty depth index ( $poverty$ ) exceeds the poverty coefficient, since it indicates the number of poor people and the degree of poverty they experience. It most profoundly characterizes the concept of poverty. It should also be noted that statutory tax rates do not differ across the regions of Kazakhstan, as they are established at the national level under the Tax Code. This study examines differences in the regional tax burden (key inde-

**Table 1.** Main variables of econometric analysis

Indicator	Type of variable	Unit of measurement	Description	Source
ln_income	Dependent (in M1, M3, M5)	Log (tenge)	The natural logarithm of monetary income per capita in rural areas	Bureau of National Statistics (BNS, 2024a)
Poverty	Dependent (in M2, M4)	%	The poverty depth index reflects the prevalence and intensity of poverty below the poverty line	Bureau of National Statistics (BNS, 2024b)
tax_burden	Key independent	% from GRP	(Tax revenue / 1000) / GRP × 100. Fiscal intensity relative to the size of the regional economy	State Revenue Committee (SRC, 2024)
ln_grp	Control	log(mln tenge)	The natural logarithm of the gross regional product is the level of regional economic development	Bureau of National Statistics (BNS, 2024c)
unemp_rural	Control	%	Unemployment rate in rural areas – labor market conditions in rural areas	Bureau of National Statistics (BNS, 2024d)
post_reform	Dummy	0/1. 1 if after 2018	A structural shift as a result of the reform of the new Tax Code	Our elaboration
tb_reform	Interaction	–	tax burden × post–reform – differentiated tax relationship after the 2018 reform	Our elaboration
oil_region	Dummy	0/1	1 for Atyrau, Mangystau, and Western Kazakhstan as resource-producing regions	Our elaboration
tax_oil	Interaction	–	tax burden × oil_region is an asymmetric fiscal and social relationship in oil regions	Our elaboration

pendent), measured as the ratio of tax revenues to gross regional product (GRP). Although statutory tax rates are uniform nationwide, the effective tax burden varies significantly across regions due to differences in their economic structure and sectoral composition.

The key independent variable is the regional tax burden, which was calculated using

$$tax_{burdenit} = \left( \frac{Tax_{it} / 1,000}{GRP_{it}} \cdot 100 \right), \quad (1)$$

where  $TAX_{it}$  – total regional tax burden in thousands of tenge,  $GRP_{it}$  – gross regional product in million tenge (this indicator is subject to a technical adjustment of the measurement for the correct interpretation of the results).

Accordingly, a basic panel regression with fixed effects was built in the study. A test was conducted to compare the fixed-effects model with the random-effects model (Borenstein et al., 2010). The Hausman test results supported the use of the fixed-effects model rather than the random-effects model ( $\chi^2(3) = 66.17, p < 0.001$ ). To assess structural heterogeneity across reform periods and region types, two interaction members were created. The interaction after the reform ( $tb\_reform = tax\_burden \times post\_reform$ ) allows the relationship between taxes and incomes to have a different

slope before and after the 2018 Tax Code reform (Interaction – 0 before the tax reform, Dummy – 1 after the tax reform). Further, the interaction of the oil region ( $tax\_oil = tax\_burden \times oil\_region$ ) tests whether the relationship between the fiscal and social spheres differs across regions with significant resource extraction, in line with the “resource curse” hypothesis at the subnational level (interaction 0 – non-oil regions, dummy 1 – oil regions). Therefore, five regression models are estimated, corresponding to the hypotheses.

The first basic models 1 and 2 (M1 and M2) represent the following specifications:

$$\ln\_income_{it} = \alpha + \beta_1 tax\_burden_{it} + \beta_2 \ln\_grp_{it} + \beta_3 unemp\_rural_{it} + \mu_i + \varepsilon_{it}, \quad (2)$$

$$Poverty_{it} = \alpha + \beta_1 tax\_burden_{it} + \beta_2 \ln\_grp_{it} + \beta_3 unemp\_rural_{it} + \mu_i + \varepsilon_{it}. \quad (3)$$

The following models (M3 and M4) were modified by including a fictitious variable representing a tax reform. Also checking for structural gaps in financial well-being relationships:

$$\ln\_income_{it} = \alpha + \beta_1 tax\_burden_{it} + \beta_2 \ln\_grp_{it} + \beta_3 unemp\_rural_{it} + \beta_4 post\_reform_{it} + \beta_5 tb\_reform_{it} + \mu_i + \varepsilon_{it}, \quad (4)$$

$$\begin{aligned}
 Poverty_{it} = & \alpha + \beta_1 tax\_burden_{it} \\
 & + \beta_2 \ln\_grp_{it} + \beta_3 unemp\_rural_{it} \\
 & + \beta_4 post\_reform_t + \beta_5 tb\_reform_{it} \\
 & + \mu_i + \varepsilon_{it}.
 \end{aligned} \tag{5}$$

Finally, Model 5 (M5) verifies the hypothesis of the resource curse of the regions by interacting the tax burden with a binary indicator for oil-producing regions:

$$\begin{aligned}
 \ln\_income_{it} = & \alpha + \beta_1 tax\_burden_{it} \\
 & + \beta_2 tax\_oil_{it} + \beta_3 \ln\_grp_{it} \\
 & + \beta_4 unemp\_rural_{it} + \mu_i + \varepsilon_{it}.
 \end{aligned} \tag{6}$$

In all specifications,  $i = 1, \dots, 14$  denotes the region;  $t = 2010, \dots, 2024$  denotes the year;  $\mu_i$  is a fixed effect specific to the region. In the last fifth model, the overall fiscal effect in the oil regions is  $\beta_1 + \beta_2$ .

Thus, the use of panel regression with fixed effects controls for regional heterogeneity that remains unchanged over time and provides estimates of the association between fiscal factors and rural income and poverty indicators. The inclusion of additional parameters allows us to account for the structure of differences, and reliable standard errors, grouped by region, will be adjusted for potential violations of the assumptions of homoscedasticity and the absence of autocorrelation, thereby increasing the reliability of statistical conclusions. However, the results reflect regional averages and do not account for intra-group heterogeneity in the rural population or the possible influence of unobservable factors that change over time.

### 3. RESULTS

Rural areas cover about 90% of Kazakhstan, while the rural population accounts for about 37.6% of

the country's total population. Accordingly, assessing the relationship between the tax burden and the social status of rural areas will allow for a more differentiated tax policy. The World Bank (2024) report notes that rural poverty (11.4%) is significantly higher than urban poverty (6.6%) and concludes that national-level fiscal policy remains insufficiently pro-poor. The present study is consistent with this assessment. It extends it by quantifying the regional financial mechanism using panel regression and identifying which specific regional configurations explain the wealth gap between rural and urban areas. Table 2 provides descriptive statistics. Thus, the average income of the rural population is 13.1, which is equivalent to 493 thousand tenge (1,030 dollars). In addition, the poverty depth index averages 0.66 percent, with a range of 0.1 to 2.4 percent. The unemployment rate in rural areas shows the least variability across the entire sample (standard deviation 0.61 percent).

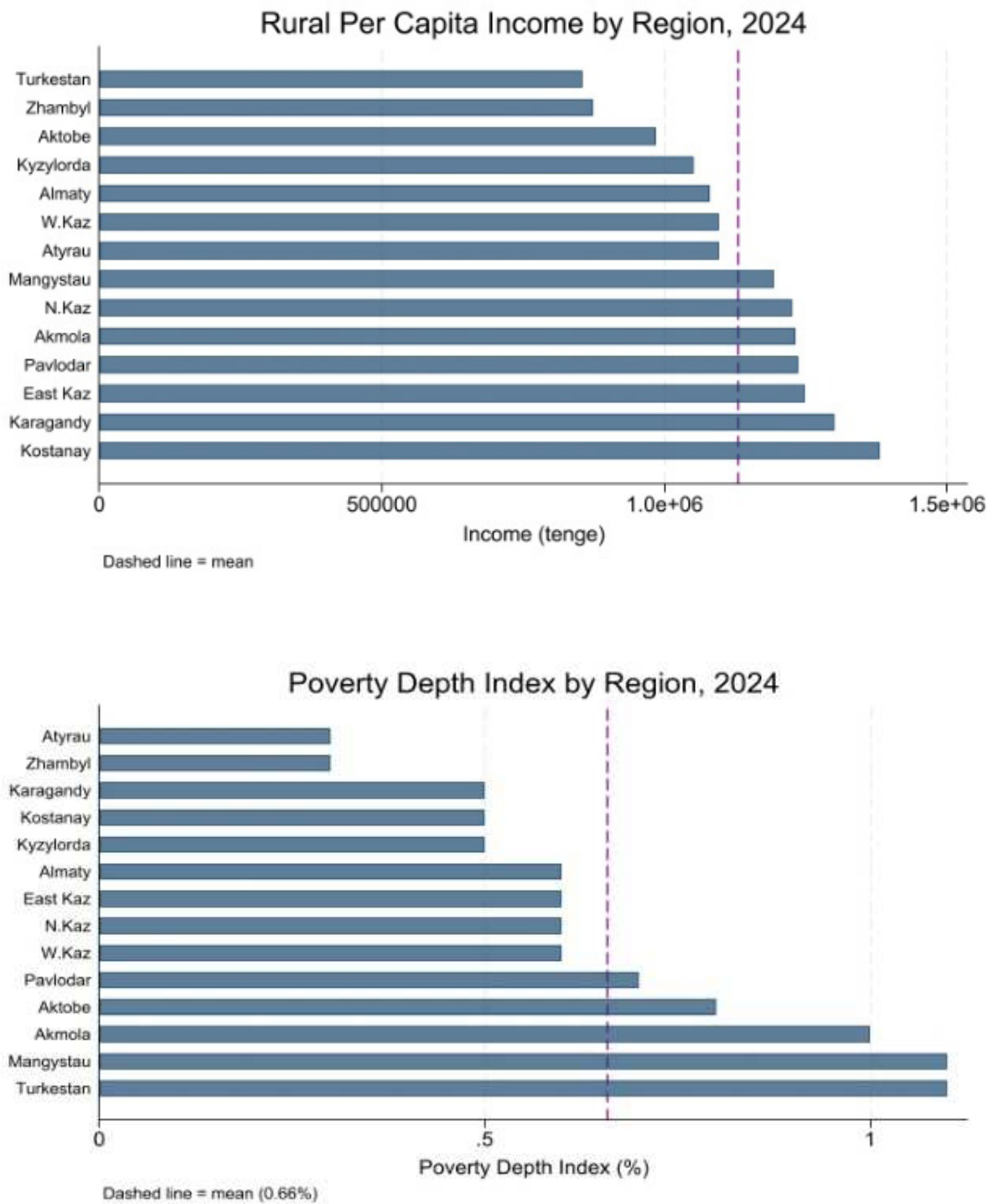
The data confirm that rural areas of Kazakhstan exhibit distinct development patterns and characteristics, and therefore, the use of fixed effects in a panel regression is justified. The heterogeneity in rural incomes in Kazakhstan and the depth of poverty are illustrated in Figure 1.

Further, descriptive statistics show that the tax burden on income in rural areas averages 11.5% of GRP, but the range is wide, indicating significant inter-regional differences. The dynamics of the tax burden for 2010–2024 are shown in Figure 2.

The dynamics of the tax burden vary markedly by region type. The oil-producing regions of Atyrau, Mangystau, and West Kazakhstan demonstrate significantly higher and more volatile fiscal intensity throughout the period, with a marked surge in 2018 coinciding with the reform of the Tax Code. On the contrary, non-oil regions maintain a relatively stable and mod-

**Table 2.** Descriptive statistics (n = 210, 14 regions, 2010–2024)

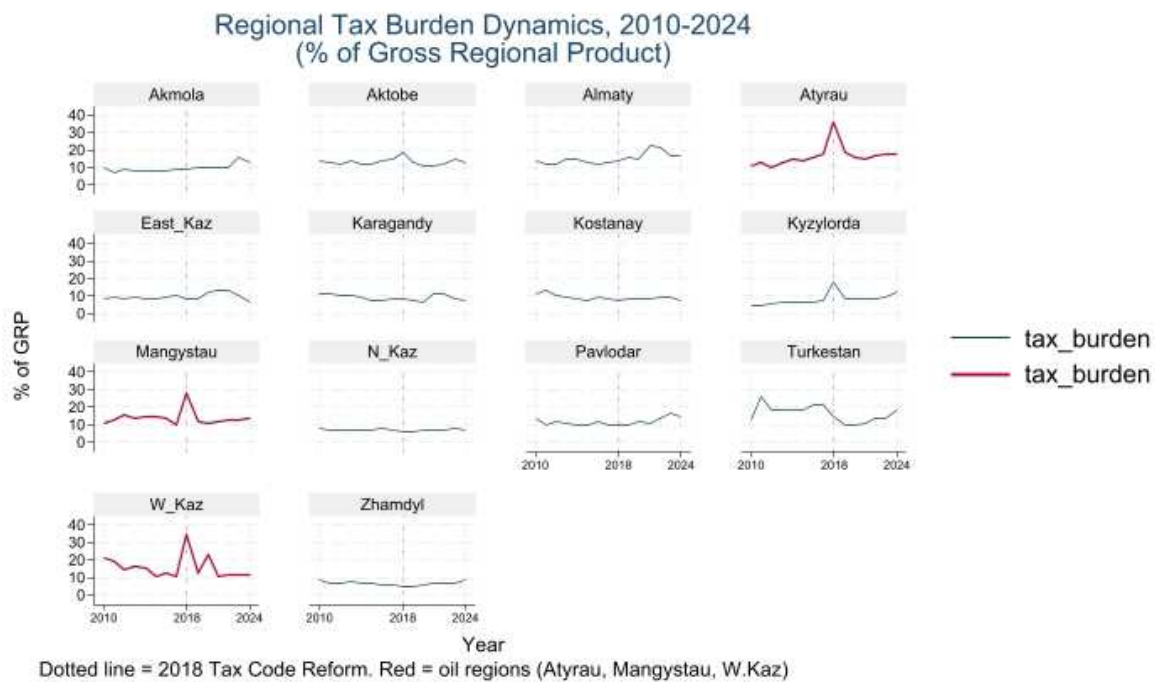
Variables	Mean	Std. Dev.	Min	Max	Obs
ln_income	13.107	0.487	11.948	14.139	210
tax_burden (%)	11.495	4.790	4.233	35.938	210
ln_grp	14.645	0.652	13.009	16.539	210
poverty (%)	0.659	0.384	0.100	2.400	210
unemp_rural (%)	4.884	0.606	2.600	7.300	210



**Figure 1.** Interregional differences in income and depth of poverty in rural areas of Kazakhstan (regions = 14, year = 2024)

erate tax burden, usually below 15 percent of GRP. The 2018 reform year (dotted vertical line in Figure 2) is associated with a visible structural shift in the budget trajectories of the oil regions, while there are no comparable gaps in

the non-oil regions. Thus, diagnostic tests were performed at the next stage of the study to ensure the validity of the analysis and to justify the model selection. Table 3 shows the four diagnostic tests performed.



**Figure 2.** Dynamics of the tax burden for 2010–2024

**Table 3.** Diagnostic test results

Test	The null hypothesis	Statistic	p-value	Result
Hausman test (sigmamore)	There is no systematic difference between FE and RE	$\chi^2(3) = 66,17$	0,000	Rejected – FE is preferable;
F-test: all $u_i = 0$	The regional FE is collectively zero	$F(13,193) = 67,74$	0,000	Rejected – The joint significance of fixed effects
Modified Wald (xttest3)	$H_0: \sigma_i^2 = \sigma^2$ for all $i$ – checks the equality of error variances across regions	$\chi^2(14) = 99,51$ 0,000	0.000	Rejected – confirmed heteroscedasticity
Wooldridge-type AR(1)	There is no autocorrelation in the FE residues	$F(1,13) = 13.32$ $\rho \approx 0.511$	0.003	Rejected – autocorrelation is confirmed

The Hausman test rejects the null hypothesis that there is no systematic difference between FE and RE ( $\chi^2(3) = 66.17$ ,  $p < 0.001$ ), confirming that FE is a suitable estimator. This result is further confirmed by the correlation between regional effects and regressors:  $\text{corr}(\mu_i, X_{it}\beta) = -0.642$ , which directly violates the random effects assumption of orthogonality between error components and regressors, implying that the results of the RE estimation will be biased and untenable. Therefore, the chosen model specification is correct, and the results are not random. Further, the  $F$ -test confirms that all regional fixed effects are jointly significant ( $F(13,193) = 67.74$ ,  $p < 0.001$ ), indicating that the FE is justified. The modified Wald test indicates the presence of heteroscedasticity ( $\chi^2(14) = 99.51$ ,  $p < 0.001$ ), and the Wooldridge type test

rejects the absence of autocorrelation ( $F(1,13) = 13.32$ ,  $p = 0.003$ ,  $p \approx 0.511$ ). To correct both issues simultaneously, all models are evaluated using robust standard errors grouped by region (Arellano, 1987; Cameron & Miller, 2015).

Table 4 presents the regional averages of the key indicators, along with the estimated fixed effects, which measure the systematic deviation of each region from the sample average after accounting for all model variables.

Fixed effects range from +0.733 (Northern Kazakhstan) to -1.018 (Atyrau). Five regions show positive fixed effects above +0.2: Kostanay (+0.225), Northern Kazakhstan (+0.733), Akmola (+0.423), Zhambyl (+0.292), and Kyzylorda (+0.241). Atyrau

**Table 4.** Regional differences in income, tax burden, poverty, and estimated fixed effects

Region	Mean Income (tenge)	Regional Tax Burden (% of GRP)	Poverty Depth (%)	Fixed Effect
Mangystau	660,393	14	0.7	+0.019
Kostanay	639,181	9	0.8	+0.225
Karaganda	617,124	9	0.5	-0.472
North Kazakhstan	600,109	7	0.8	+0.733
Pavlodar	599,800	12	0.5	+0.020
Akmola	589,586	9	0.9	+0.423
Almaty reg.	568,898	15	0.4	-0.018
East Kazakhstan	562,774	10	0.7	-0.210
Aktobe	528,436	13	0.6	-0.064
Atyrau	525,024	16	0.4	-1.018
West Kazakhstan	522,140	16	0.8	-0.117
Kyzylorda	498,284	8	0.7	+0.241
Zhambyl	445,889	7	0.6	+0.292
Turkestan	408,138	16	1.0	-0.055
Total (mean)	554,698	11	0.7	-

Note: \*Regional tax burden is calculated as the ratio of tax revenues to gross regional product (GRP), reflecting the fiscal intensity of the regional economy. Green indicates positive fixed effects; red indicates negative fixed effects or oil-producing regions.

shows the most negative fixed effect (-1.018), despite the highest tax burden (16%) in the sample. Turkestan is characterized by the lowest average income (408,138 tenge), the highest poverty depth (1.0%), and a tax burden of 16%. Thus, panel data are suitable and reliable for conducting fixed-effects regression analysis. Table 5 presents the full results for all five models, with robust standard errors, grouped by region, in parentheses.

The first basic model (M1) shows the relationship between the tax burden and rural incomes, with

$R^2 = 0.916$  explaining 91.6% of income differences between regions ( $F = 178.82$ ,  $p < 0.001$ ). In addition,  $\ln\_grp = 0.927$ ,  $p < 0.001$ , which indicates that a 1% increase in the gross regional product is associated with a 0.927% increase in rural incomes. In addition, the tax burden coefficient is positive, but statistically insignificant ( $\beta = 0.001$ ). The second basic model (M2) shows the relationship between the tax burden and the depth of poverty, with  $R^2 = 0.005$  and an insignificant  $F$ -statistic ( $F = 0.31$ ), indicating that it does not adequately explain differences in the depth of poverty. In this model, no

**Table 5.** Results of panel regression with fixed effects

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
tax_burden	0.001 (0.005)	-0.004 (0.007)	0.011 (0.010)	-0.023* (0.012)	0.014* (0.007)
tax_oil	-	-	-	-	-0.021** (0.007)
ln_grp	0.927*** (0.040)	0.032 (0.050)	0.847*** (0.049)	-0.417*** (0.100)	0.928*** (0.041)
unemp_rural	-0.019 (0.032)	-0.014 (0.052)	-0.022 (0.028)	-0.019 (0.041)	-0.014 (0.033)
post_reform	-	-	0.251* (0.125)	0.308*** (0.094)	-
tb_reform	-	-	-0.014 (0.009)	0.018 (0.013)	-
Constant	-0.397 (0.600)	0.298 (0.902)	0.650 (0.769)	6.893*** (1.634)	-0.494 (0.635)
Within R <sup>2</sup>	0.916	0.005	0.923	0.224	0.921
F-statistic	178.82***	0.31	121.95***	7.86***	162.03***
Obs / Regions	210 / 14	210 / 14	210 / 14	210 / 14	210 / 14

Note: \*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$ .

coefficient is statistically significant at generally accepted levels. Thus, GRP is the main variable statistically associated with higher levels of well-being in rural regions of Kazakhstan. However, the relationships between tax burden and income and the level of poverty in these regions are statistically insignificant, failing to provide empirical support for H1.

Further, the results of the income analysis of rural residents, taking into account the 2018 tax code reform, are presented in M3 format. Adding variables related to the 2018 reform improves the model's fit to the data, with  $R^2 = 0.923$  ( $F = 121.95$ ). The  $\ln\_grp$  coefficient remains dominant ( $\beta = 0.847$ ). The fictitious post-reform indicator is positive and marginally significant ( $\beta = 0.251$ ) (unlike the *tb-reform* indicator, which is negative ( $\beta = -0.014$ ) and insignificant), indicating a structural shift toward increasing rural incomes by about 25–29% after the 2018 tax code reform, regardless of GRP growth. At the same time, M4 presents the results on the depth of poverty in the context of the 2018 tax code reform. This model is the most informative, as the coefficient of determination ( $R^2$ ) increases sharply from 0.005 to 0.224 ( $F = 7.86$ ). The tax burden is negative, equal to  $\beta = -0.023$ , indicating the effect of poverty reduction from the fiscal burden in the base period before the reform. Post-reform  $\beta = 0.308$ , indicating a structural shift toward higher living standards after 2018 and requiring long-term study. Thus, hypothesis 2 is partially confirmed, suggesting that the tax reform caused a structural shift in rural incomes.

Finally, to better understand the relationship between the tax burden and household income, the M5 indicator was introduced, as descriptive statistics show strong volatility in oil-bearing regions (Figure 2). The M5 coefficient shows a fundamental asymmetry in the relationship between the fiscal economy and well-being in various types of regions ( $R^2 = 0.921$ ,  $F = 162.03$ ). In non-oil regions, the tax burden is positively and slightly related to rural incomes ( $\beta = 0.014$ ): an increase in the fiscal burden by 1 point is associated with an increase in rural incomes by 0.014 percent, which is consistent with hypothesis 3 that budget revenues finance public services and social benefits in rural areas. On the contrary, the “oil tax” is negative and statistically significant ( $\beta = -0.021$ ), so the overall ef-

fect in oil-producing regions is  $-0.007\%$  per percentage point of the tax burden, which is effectively zero or slightly negative, confirming hypothesis 4. This pattern is consistent with a stronger association between fiscal capacity and rural incomes in non-oil regions, which may reflect differences in public service provision. On the contrary, in oil-producing regions, the association between tax burden and rural incomes is weaker or negative. This may be related to institutional features of fiscal centralization and differences in regional economic structure.

## 4. DISCUSSION

The descriptive statistics indicate that regions of Kazakhstan have different levels of income and poverty in rural areas and different tax burdens, which also generally indicate differentiated economic development. Taken together, all this indicates significant heterogeneity and the presence of stable, unobservable structural factors affecting the well-being of the rural population. These differences may also reflect the influence of broader macroeconomic factors, including changes in commodity prices, inflationary processes, exchange rate fluctuations, the COVID-19 pandemic, and institutional reforms (Mukayev et al., 2023). For example, regions such as Atyrau, Turkestan, and West Kazakhstan oblasts account for a significant share of the tax burden even when their rural income levels are lower than average. This indicates that regional differences in income and poverty are determined not only by the tax burden but also by regional economic development, as well as deeper institutional, sectoral, and infrastructural characteristics. This statement is consistent with Abdulla (2021), who concluded that the availability of raw materials, labor resources, and structural composition can explain three-quarters of the income differences between regions of Kazakhstan. In addition, the presence of high positive fixed effects in the regions of Northern Kazakhstan, Zhambyl, and Kyzylorda indicates favorable social and institutional conditions, which may contribute to the quality of life of rural populations in these regions, which is consistent with Rodríguez-Pose et al. (2025).

The panel regression shows that  $\ln\_grp$  is statistically significant in all five models, indicating that the well-being of the rural population depends

directly on regional economic development. In other words, economic growth remains the main mechanism for improving well-being (Barro, 1991) in rural regions of Kazakhstan. At the same time, the relationship between the determinants proved statistically weak and unstable, indicating that the tax burden alone does not determine the level of well-being of the rural population without accounting for the broader regional economic context. This is due to additional indicators introduced to assess the relationship with the 2018 tax reform. In accordance with this reform, benefits were introduced to support small and medium-sized businesses, preferences were introduced to stimulate certain industries, and the digitalization of tax control was strengthened, which generally has a positive effect on doing business in both urban and rural areas.

In addition, the results show significant fluctuations in the tax burden across oil-producing regions, including Mangystau, Atyrau, and Western Kazakhstan. In contrast, the dynamics of the tax burden remained unchanged in other regions. These data indicate that the oil regions are more sensitive to changes in tax policy and external commodity market conditions, prompting consideration of a model that includes the `tax_oil` variable. The simulation results show a negative relationship between the tax burden and social well-being in rural areas in oil regions. This result suggests that the fiscal relationship between resource-rich and non-resource regions differs, potentially associated with differences in economic structure, revenue distribution, and regional development patterns. However, the specific mechanisms underlying this relationship require further investigation using additional data on budget revenues, expenditures, and intergovernmental transfers. In such circumstances, an increase in tax burden may strengthen inter-regional differences rather than reduce them. These findings are consistent with Howie and Atakhanova (2014),

who confirm that oil regions can exacerbate territorial differences and social asymmetries. As for the results on the relationship between the tax burden and poverty, the observed association is limited and requires additional indicators to explain it. A higher tax burden may be associated with poverty reduction but may also coincide with increasing social inequality, depending on regional conditions. The results for oil-producing regions may be interpreted as being consistent with the resource curse hypothesis, as resource-rich regions demonstrate a weaker relationship between fiscal capacity and rural well-being. However, this interpretation requires further validation using additional data on fiscal redistribution mechanisms and regional budget flows.

From an economic policy perspective, the results indicate that tax policy alone cannot be considered an independent tool for increasing the profitability of the rural population and reducing poverty in rural areas. Improving rural well-being depends more on regions' ability to generate sustainable growth and on a more flexible government policy for the equitable distribution of benefits from regional production. In particular, the role of public spending and inter-budgetary transfers requires further investigation to determine how fiscal resources are redistributed between regions. Namely, the oil regions of Kazakhstan require a more targeted socio-economic policy to improve profitability and reduce poverty in these regions. The statistically insignificant effect of rural unemployment may be explained by the limitations of the indicator itself, as rural unemployment statistics may not fully capture informal employment, seasonal agricultural work, or underemployment. Therefore, future studies may consider broader labor market indicators. In general, the study shows that the observed relationship between the tax burden and social well-being is limited, and to improve social life in rural areas, it is necessary to strengthen regional production and improve the institutional environment.

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## CONCLUSION

The purpose of this study is to assess the relationship between tax burden, income, and poverty among rural populations across Kazakhstan. The empirical analysis showed that regional gross domestic product, which reflects regional economic development, is the main factor associated with rural income growth: a 1% increase in GRP is associated with a 0.927% increase in rural incomes. At the same time, the tax burden demonstrates a weak and differentiated relationship with rural well-being: in non-oil re-

gions, a one percentage point increase in the tax burden is associated with approximately 1.4% increase in rural income, while in oil-producing regions the relationship is negative. Regarding poverty depth, the estimated relationship with the tax burden is negative but limited ( $\beta = -0.023$ ), and the poverty models exhibit weaker explanatory power than the income models. Therefore, the findings suggest that the tax burden itself is not a dominant factor statistically associated with rural social outcomes; rather, its association varies across regional economic development and structural conditions. The results imply that improving rural well-being will likely require not only tax policy adjustments but also broader regional development measures to strengthen economic capacity and improve the distribution of fiscal resources. Further research may examine budget expenditures, intergovernmental transfers, and comparable regional evidence from other Central Asian countries to better understand the relationships between fiscal policy and rural welfare.

## AUTHOR CONTRIBUTIONS

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## REFERENCES

1. Abdulla, K. (2021). Regional convergence and structural transformation in a resource-dependent country. *Structural Change and Economic Dynamics*, 59, 548-557. <https://doi.org/10.1016/j.strueco.2021.10.004>
2. Adekunle, A. O. (2025). The relationship between tax revenue, economic growth, and trade openness in developing countries. *Reviews of Management Sciences*, 7(2), 23-37. <https://doi.org/10.53909/rms.07.02.0312>
3. Adilet. (2017). *On the enactment of the Code of the Republic of Kazakhstan "On Taxes and Other Mandatory Payments to the Budget" (Tax Code), the Law of the Republic of Kazakhstan dated December 25, 2017, No. 121-VI SAM.* (In Russian). Retrieved from <https://adilet.zan.kz/rus/docs/Z1700000121>
4. Adilet. (2021). *Resolution of the Government of the Republic of Kazakhstan dated October 12, 2021, No. 729 on the approval of the national project "Strong Regions – A driver of the country's development"*. (In Russian). Retrieved from <https://adilet.zan.kz/rus/docs/P2100000729>
5. Afida, C. N., & Widodo, C. (2023). The location-based tax incentives in Indonesia: Special economic zones. *Jurnal Pajak Indonesia*, 7(2), 11-17. <https://doi.org/10.2139/ssrn.4983288>
6. Afonso, A., & Jalles, J. T. (2016). Economic performance, government size, and institutional quality. *Empirica*, 43, 83-109. <https://doi.org/10.1007/S10663-015-9294-2>
7. Alhamdany, S. N., Alhamdany, M. N., Mohammed, A. Q., & Alhamdany, S. N. (2025). The impact of fiscal policy on economic and social development in Iraq. *Wseas Transactions on Business and Economics*, 22, 788-803. <https://doi.org/10.37394/23207.2025.22.69>
8. Arellano, M. (1987). Computing robust standard errors for within-group estimators. *Oxford Bulletin of Economics and Statistics*, 49(4), 431-434. <https://doi.org/10.1111/j.1468-0084.1987.mp49004006.x>

9. Arnold, J. M. (2008). *Do tax structures affect aggregate economic growth? Empirical evidence from a panel of OECD countries* (OECD Economics Department Working Papers No. 643). Paris: OECD Publishing. <https://doi.org/10.1787/236001777843>
10. Auerbach, A. J., & Hassett, K. A. (1992). Tax policy and business fixed investment in the United States. *Journal of Public Economics*, 47(2), 141-170. [https://doi.org/10.1016/0047-2727\(92\)90046-I](https://doi.org/10.1016/0047-2727(92)90046-I)
11. Barro, R. J. (1991). Economic growth in a cross section of countries. *Quarterly Journal of Economics*, 106(2), 407-443. Retrieved from <https://faculty.econ.ucdavis.edu/faculty/gclark/210a/readings/Barro-QJE.pdf>
12. Borenstein, M., Hedges, L. V., Higgins, J. P., & Rothstein, H. R. (2010). A basic introduction to fixed-effect and random-effects models for meta-analysis. *Research Synthesis Methods*, 1(2), 97-111. <https://doi.org/10.1002/jrsm.12>
13. Bozatlı, O., & Albayrak, M. (2026). Corporate tax and economic growth: A Fourier-based analysis in the context of Türkiye. *Uluslararası Sosyal Siyasal ve Mali Araştırmalar Dergisi*, 6(1), 108-118. <https://doi.org/10.70101/ussmad.1884515>
14. Bureau of National Statistics of the Republic of Kazakhstan (BNS). (2024a). *Statistics of standard of living*. Retrieved from <https://stat.gov.kz/en/industries/labor-and-income/stat-life/>
15. Bureau of National Statistics of the Republic of Kazakhstan (BNS). (2024b). *Expenses and incomes of the population*. Retrieved from <https://stat.gov.kz/en/industries/labor-and-income/stat-life/publications/365364/>
16. Bureau of National Statistics of the Republic of Kazakhstan (BNS). (2024c). *GRP statistics*. Retrieved from <https://stat.gov.kz/ru/industries/economy/national-accounts/publications/279581/>
17. Bureau of National Statistics of the Republic of Kazakhstan (BNS). (2024d). *Employment and unemployment*. Retrieved from <https://stat.gov.kz/en/industries/labor-and-income/stat-empt-unempl/>
18. Buss, T. F. (2001). The effect of state tax incentives on economic growth and firm location decisions: An overview of the literature. *Economic Development Quarterly*, 15, 105-90. <https://doi.org/10.1177/089124240101500108>
19. Cameron, A. C., & Miller, D. L. (2015). A practitioner's guide to cluster-robust inference. *Journal of Human Resources*, 50(2), 317-372. <https://doi.org/10.3368/jhr.50.2.317>
20. Chaisse, J., & Ji, X. (2020). The pervasive problem of special economic zones for international economic law: Tax, investment, and trade issues. *World Trade Review*, 19, 567-588. <https://doi.org/10.1017/S1474745620000129>
21. El Husseiny, I. A. (2023). The relative effectiveness of fiscal and monetary policies in promoting Egypt's output growth: An empirical investigation using an ARDL approach. *Journal of Economic Structures*, 12, Article 4. <https://doi.org/10.1186/s40008-023-00298-8>
22. Gnangnon, S. K., & Brun, J. (2019). Trade openness, tax reform and tax revenue in developing countries. *The World Economy*, 42(12), 3515-3536. <https://doi.org/10.1111/TWEC.12858>
23. Götze, R., & Rothgang, H. (2014). Fiscal and social policy: Financing long-term care in Germany. *SSRN Electronic Journal*. <https://doi.org/10.2139/SSRN.2191995>
24. Griffith, R. (2022). Obesity, poverty and public policy. *The Economic Journal*, 132(644), 1235-1258. <https://doi.org/10.1093/ej/ueac013>
25. Hart, N. A. (2005). The role and effectiveness of fiscal policy. *The Economic and Labour Relations Review*, 16(1), 17-41. <https://doi.org/10.1177/103530460501600103>
26. Hicks, M. J., & LaFaive, M. D. (2011). The influence of targeted economic development tax incentives on county economic growth: Evidence from Michigan's MEGA credits. *Economic Development Quarterly*, 25(2), 193-205. <https://doi.org/10.1177/0891242410395135>
27. Howie, P., & Atakhanova, Z. (2014). Resource boom and inequality: Kazakhstan as a case study. *Resources Policy*, 39(1), 71-79. <https://doi.org/10.1016/j.resourpol.2013.11.004>
28. Hussen, M. S. (2020). Institutional quality and economic growth in Sub-Saharan Africa: A panel data approach. *Journal of Economics and Development*, 25(4), 332-348. <https://doi.org/10.1108/JED-11-2022-0231>
29. Kalaš, B., Mirović, V., & Andrašić, J. (2017). Estimating the impact of taxes on the economic growth in the United States. *Economic Themes*, 55(4), 481-499. <https://doi.org/10.1515/ethemes-2017-0027>
30. Kangalakova, D. M., & Rakhmetova, D. (2021). Structural features of the intellectual potential of the regions and its impact on the development of the country. *Economics: The Strategy and Practice*, 16(3), 22-34. (In Kazakh). <https://doi.org/10.51176/1997-9967-2021-22-34>
31. Khajieva, G., & Aida, O. (2020). Problems of socio-economic development of Kazakhstan's regions in the context of adaptation to the sustainable development. *The Economy: Strategy and Practice*, 2(15), 167-178. (In Russian). Retrieved from <https://esp.ieconom.kz/jour/article/view/210/206>
32. Kirkby, R., Vu, H. N., & Yao, Y. (2026). Macroeconomic effects of income and consumption tax reforms in New Zealand. *Journal of Macroeconomics*, 88, Article 103757. <https://doi.org/10.1016/j.jmacro.2026.103757>
33. Kostarakos, I., & Varthalitis, P. (2024). Growth effects of fiscal policy: An application of the unobserved common factor model. *Oxford Economic Papers*, 77(3), 675-702. <https://doi.org/10.1093/oep/gpae045>

34. Kutasi, G., & Marton, Á. (2024). The optimal tax structure from GDP-growth perspective. *Revista Finanzas y Política Económica*, 16(1), 121-143. <https://doi.org/10.14718/revfinanzpolitecon.v16.n1.2024.6>
35. Lee, Y., & Gordon, R.H. (2005). Tax structure and economic growth. *Journal of Public Economics*, 89(5-6), 1027-1043. <https://doi.org/10.1016/J.JPUBE-CO.2004.07.002>
36. Lerche, A. (2025). Direct and indirect effects of investment tax incentives. *American Economic Review*, 115(8), 2781-2818. <https://doi.org/10.1257/aer.20220656>
37. Moyo, S. (2005). Land policy, poverty reduction and public action in Zimbabwe. In A.H. Akram-Lodhi, S.M. Borras Jr., & C. Kay (Eds.), *Land, Poverty and Livelihoods in an Era of Globalization: Perspectives from Developing and Transition Countries* (1<sup>st</sup> ed.). Routledge. <https://doi.org/10.4324/9780203962251-11>
38. Mukayev, A., Satpayeva, Z. T., Kangalakova, D. M., Doskeyeva, G. Z., & de Matos Pedro, E. (2023). Assessment of the population's quality of life in Kazakhstan during COVID-19: The effectiveness of public policy. *Problems and Perspectives in Management*, 21(3), 69-83. [https://doi.org/10.21511/ppm.21\(3\).2023.06](https://doi.org/10.21511/ppm.21(3).2023.06)
39. Musgrave, R. A. (1959). *The theory of public finance: a study in public economy*. New York: McGraw-Hill. Retrieved from <https://www.econbiz.de/Record/the-theory-of-public-finance-a-study-in-public-economy-musgrave-richard-abel/10000034488>
40. Ohrn, E. (2019). The effect of tax incentives on U.S. manufacturing: Evidence from state accelerated depreciation policies. *Journal of Public Economics*, 180, Article 104084. <https://doi.org/10.1016/j.jpubeco.2019.104084>
41. Özer, M., & Karagöl, V. (2018). Relative effectiveness of monetary and fiscal policies on output growth in Turkey: An ARDL bounds test approach. *Equilibrium. Quarterly Journal of Economics and Economic Policy*, 13(3), 391-409. <https://doi.org/10.24136/EQ.2018.019>
42. Pattayat, D. S., Parida, J. K., & Awasthi, I. C. (2022). Reducing rural poverty through non-farm job creation in India. *The Indian Journal of Labour Economics*, 65, 137-160. <https://doi.org/10.1007/s41027-022-00359-9>
43. Pei, P., Zhang, S., & Zhou, G. (2024). Digital inclusive finance, spatial spillover effects and relative rural poverty alleviation: Evidence from China. *Applied Spatial Analysis and Policy*, 17, 1129-1160. <https://doi.org/10.1007/s12061-024-09580-z>
44. Rachevski, I., & Shami, L. (2024). Twice as effective: Business environment, SME owners' satisfaction, and local government revenue performance. *Local Government Studies*, 51, 524-546. <https://doi.org/10.1080/03003930.2024.2378965>
45. Rodríguez-Pose, A., Bartalucci, F., & Rau, G. (2025). One Kazakhstan, multiple nations: On a growing regional divide amidst economic dynamism. *Asia-Pacific Journal of Regional Science*, 9, 629-651. <https://doi.org/10.1007/s41685-025-00385-7>
46. Schumpeter, J. A., & Keynes, J. M. (1936). The general theory of employment, interest and money. *Journal of the American Statistical Association*, 31(196), 791-795. <https://doi.org/10.2307/2278703>
47. Sermagambet, U., Satpayeva, Z. T., Smagulova, G. S., Urban, W., & Yessenzhigitova, R. (2022). Socio-economic inequality in Kazakhstani regions: Assessment and impact on regional development management. *Problems and Perspectives in Management*, 20(3), 487-500. [https://doi.org/10.21511/ppm.20\(3\).2022.39](https://doi.org/10.21511/ppm.20(3).2022.39)
48. Smeeding, T. (2005). Public policy, economic inequality, and poverty: The United States in comparative perspective. *Social Science Quarterly*, 86, 955-983. <https://doi.org/10.1111/J.0038-4941.2005.00331.X>
49. State Revenue Committee of the Republic of Kazakhstan. (2024). *Dynamics of tax burden and payments to the state budget*. Retrieved from <https://kgd.gov.kz/en/section/statistika>
50. Stiglitz, J. E. (2000). The contributions of the economics of information to twentieth century economics. *Quarterly Journal of Economics*, 115, 1441-1478. <https://doi.org/10.1162/003355300555015>
51. Tarawalie, A. B., & Kargbo, N. (2020). Efficacy of fiscal and monetary policy in Sierra Leone: An ARDL bound testing approach. *International Journal of Economics and Financial Issues*, 10(3), 217-224. <https://doi.org/10.32479/ijefi.9407>
52. Tolosa-Iscala, P. A., Niño-Mejías, X. I., Contreras-Durán, M. A., & Eslava-Zapata, R. (2025). Income tax and employment: Benefits of the special economic and social zone regime. *Salud, Ciencia y Tecnología – Serie de Conferencias*, 4(637), 1-12. <https://doi.org/10.56294/sctconf2025637>
53. World Bank. (2024). *Kazakhstan poverty and equity assessment 2024*. World Bank Group. Retrieved from <https://openknowledge.worldbank.org/entities/publication/9072f72e-e54d-4b7f-ae23-d75cf89d1814>
54. Xia, Y. D., Hu, W., & Su, Z. (2022). Economic policy uncertainty, social financing scale and local fiscal sustainability: Evidence from local governments in China. *Sustainability*, 14(12), Article 7343. <https://doi.org/10.3390/su14127343>