ECONOMIC SECURITY OF REGIONS: A PREREQUISITE FOR DIVERSIFYING THE AZERBAIJAN ECONOMY

Shafa Aliyev
Sumgait State University, Sumgait, Azerbaijan
UNEC Centre for Karabakh Economic Research, Azerbaijan State University of Economics (UNEC), Baku, Azerbaijan
Western Caspian University, Baku, Azerbaijan

Farid Babayev
Baku State University, Baku, Azerbaijan

Ummuhabiba Galandarova
Baku State University, Baku, Azerbaijan

Galib Gafarli
Baku State University, Baku, Azerbaijan
Azerbaijan State Agrarian University, Ganja, Azerbaijan

Tahmina Balajayeva
Baku State University, Baku, Azerbaijan

ABSTRACT

This article aimed to empirically substantiate the development of priority sectors to improve the economic security of the regions in Azerbaijan to achieve the goals of diversifying the national economy. We calculated an integral indicator of the economic security of areas by combining various socioeconomic development indicators, accounting for their variations from 2005 to 2022. The research established the relationship between the integral indicator of economic security in Azerbaijan's regions and the availability and efficiency of production factors in critical sectors of the economy, including Mining and quarrying, Manufacturing, Construction, Agriculture, forestry and fishing, and Trade. By applying the regression method, we concluded that agriculture and trade play a decisive role in increasing regional economic security in modern conditions. The research highlighted those growing factors: the number of employees, wages, and investments in fixed assets in these sectors, would be instrumental in achieving the adequate diversification of the country's economy.

Keywords: economic security; regions; diversification of the economy; Azerbaijan economy; regional development

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INTRODUCTION

Since 1996, Azerbaijan has demonstrated remarkable resilience in its economic trajectory, predominantly driven by its rich oil and gas reserves. The economy shown about 8% growth of GDP per year till the beginning of 2023 (The World Bank Group, 2023). The lucrative energy sector remains a pivotal pillar of Azerbaijan's economy, bestowing immense revenues that have funded ambitious infrastructure projects and social development initiatives. Nevertheless, this dependence on oil has also exposed the nation to inherent risks arising from fluctuating oil prices and global market uncertainties. As the government navigates these challenges, it becomes increasingly evident that over-reliance on the oil sector negatively impacts various facets of Azerbaijan's capacity - natural, industrial, technical, and intellectual - putting the nation's long-term economic security at stake (Hampel-Milagrosa et al., 2020).

And now, the nation aims to double its economic output within the next decade, primarily by focusing on the non-oil sector. Emphasizing acceleration in growth has become a top priority for Azerbaijan's post-conflict and post-pandemic era, as evident in the country's "Azerbaijan 2030: National Priorities for Socioeconomic Development" (SEDS) (President of the Republic of Azerbaijan, 2021) aligning with the United Nations' "Transforming our World: The 2030 Agenda for Sustainable Development" (United Nations, 2023). Following the peace agreement with Armenia in November 2020, Azerbaijan immediately commenced efforts to decontaminate, reconstruct, rehabilitate, and reintegrate the liberated Karabakh region, which had endured significant destruction during its 30-year occupation. This reintegration of newly-released territories and the prospect of 10.68 million people by 2030 are both novel opportunities and challenges from the perspective of further economic growth (Azernews, 2017).

The Strategic Roadmap for the development of the national economy of Azerbaijan sets ambitious but realistic targets for the country's economic growth over the medium term. As part of its vision for 2030, Azerbaijan aims for an annual GDP growth rate of 3-4 percent, which is a sustainable and steady rate conducive to long-term economic stability. Crucially, within this framework, the government also envisions a robust growth rate of nearly 5 percent in the non-oil and gas sector (International Bank for Reconstruction and Development, 2022). This emphasis on diversification is pivotal for the country to lessen its dependence on the oil and gas industries and unlock the potential of other sectors in driving economic expansion. However, to sustain this impressive growth trajectory and address emerging challenges, continued strategic planning and policy initiatives will be crucial for the nation to achieve its long-term economic objectives. The projections suggest from the World Bank's long-term growth simulations that the country's average GDP growth rate could be limited to only 0.5 percent during 2024-2050 without appropriate measures (International Bank for Reconstruction and Development, 2022).

Azerbaijan's pursuit of sustainable growth and economic security necessitates thoroughly examining the intricate relationship between diversification and the efficient utilization of production factors within critical sectors. The Mining and Quarrying, Manufacturing, Construction, Agriculture, Forestry, Fishing, and the Trade sector serve as crucial pillars of the nation's economy, presenting unique opportunities and challenges for regional development and overall economic stability (The State Statistical Committee of the Republic of Azerbaijan, 2023). By understanding and harnessing the potential of these critical sectors through efficient production factors, Azerbaijan can pave the way for a more resilient, inclusive, and prosperous future while reducing its reliance on oil revenues and fostering sustainable development for generations to come.

Moreover, examining the availability and efficiency of production factors within key sectors is crucial for regional development. The Mining and Quarrying sector, driven by natural resources, requires sustainable practices to mitigate environmental impact (Maddala et al., 2021). Maximizing factors like skilled labor and technological advancements within Manufacturing can drive innovation and competitiveness (Pianta & Reljic, 2022). The Construction sector, through strategic investments, can enhance infrastructure and regional economic development (Wang et al., 2022). The Agriculture, Forestry, and Fishing sectors play a critical role in rural economies, demanding efficient land use and modern

agricultural techniques (Niftiyev, 2020). Additionally, the Trade sector facilitates goods and services exchange for regional integration (United Nations Development Coordination Office, 2021; Akhter, Mir & Megits, 2022).

This paper aims to delve into the intricate relationship between regional economic security, the maximization of industry factors, and the possibility of diversifying the economy in Azerbaijan. By analyzing the strengths and challenges within each sector, we aim to provide evidence-based insights and recommendations to guide policymakers in formulating comprehensive strategies for sustainable regional development and economic security.

LITERATURE REVIEW

The "Dutch disease" phenomenon has been extensively studied in the context of resource-rich economies, highlighting the challenges it poses to economic security. The "Dutch disease" is a term that refers to the negative consequences that can arise from a country's overreliance on natural resource exports, leading to adverse effects on other sectors of the economy. The concept was first introduced in the academic literature by economists W. Max Corden and J. Peter Neary in their seminal paper titled "Booming Sector and De-industrialization in a Small Open Economy," published in the Economic Journal in 1982 (Corden & Neary, 1982). In their form, Corden and Neary (1982) presented a theoretical model to analyze the effects of a resource boom (such as an increase in oil or commodity prices) on the domestic economy of a small open country. They demonstrated that when a country experiences a significant increase in revenues from its resource exports, the appreciation of its currency can lead to a decline in the competitiveness of its non-resource sectors, including Manufacturing and agriculture. This, in turn, can lead to a process of "de-industrialization" as non-resource sectors become less competitive and lose market share, resulting in a shift of resources towards the booming resource sector. Subsequent research by Shah et al. (2022), Lashitew, Ross, and Werker (2021), and Singh et al. (2023) extended the analysis of the Dutch disease to other resource-rich countries. The studies highlighted that the Dutch disease could adversely impact economic security by weakening non-resource sectors and increasing reliance on volatile commodity exports.

Contemporary researchers Shah et al. (2022) have explored the heterogeneous impact of the Dutch disease on various economic sectors. While the manufacturing sector is often considered the most vulnerable, studies, have shown that other sectors, such as agriculture and services, can also be affected. Such scholars as Olanubi (2023), Ahmad, Pentecost, and Stack (2023) recognize that natural resource booms do not solely drive the Dutch disease. They acknowledge that a combination of factors, including exchange rate policies, fiscal management, governance, and the economy's structure, can contribute to the manifestation and severity of the Dutch disease.

Research by Singh et al. (2023) focused on the resource curse hypothesis, emphasizing that over-reliance on a single resource can hinder economic development and result in volatile economic performance. The study highlighted the need for diversification to reduce vulnerability to fluctuations in commodity prices and promote sustainable growth. Furthermore, Lashitew, Ross, and Werker (2021) investigated the relationship between economic diversification and growth in resource-dependent economies. They found that economic diversification can lead to higher and more stable growth rates, suggesting that promoting non-resource sectors can contribute to overall economic security. This contributes to overall economic stability and enhances a nation's capacity to withstand adverse events.

Hausmann and Klinger (2007) introduced the "economic complexity" concept to assess the potential for diversification in resource-rich countries. Their research showed that economies with higher economic complexity are better equipped to diversify their production structures and reduce reliance on primary commodities. This finding underscores the importance of building a diverse economic base to enhance resilience against commodity price fluctuations. Moreover, El-Saharty et al. (2020) analyzed the determinants of economic diversification in resource-rich countries, considering human capital, institutions, and geographical location factors. Their study suggested that sound institutions and human capital development play crucial roles in fostering economic diversification.

Additionally, Bassey, Ugboaku, and Peter

(2020) examined the impact of skilled labor and technological advancements on factor utilization in the manufacturing sector of resource-rich countries. They found that human capital and technology investments can increase productivity and facilitate economic diversification.

Numerous studies have emphasized the importance of economic security for the stability and resilience of nations' economies, and work by Rodríguez, Vassallo, and Castillo (2023) explored the impact of external shocks on economic growth and stability in developing countries. They found that vulnerability to external shocks, such as fluctuations in commodity prices, significantly affects economic security, leading to lower growth rates and increased macroeconomic instability. Research on regional economic security in resource-rich countries emphasizes the importance of balanced development across regions. Yang, Liu, and Liu (2022) studied the relationship between regional disparities and economic diversification in China's provinces. Their study revealed that reducing regional differences through targeted policies is essential for promoting economic diversification and reducing the vulnerability of resource-rich regions.

The efficient utilization of production factors within crucial sectors has been a focus of research to promote economic growth and competitiveness. Awan and Yaqoob (2023) conducted an empirical study examining the relationship between factor inputs and total factor productivity in manufacturing industries. Their findings suggested that factors like skilled labor, technological advancements, and research and development are crucial in enhancing productivity and driving economic growth. Malik, Efendi, and Zarlis (2018) utilized Data Envelopment Analysis (DEA) to assess the efficiency of factor utilization in various industries. Their research identified sectors with suboptimal use of resources, providing insights for policymakers to prioritize investment and reallocation strategies.

Research on factor utilization in non-oil sectors highlights the importance of efficient resource allocation and productivity gains. Yoshino et al. (2021), Hajiyeva (2021) investigated the role of infrastructure investment in enhancing factor utilization in Azerbaijan's agriculture and manufacturing sectors. Their findings suggested that targeted infrastructure development can significantly boost productivity and competitiveness in non-oil sectors.

Despite the valuable contributions of existing research, some gaps remain in the scientific literature on the interdependence between economic security, factor utilization, and economic diversification.

First, there is a need for more long-term studies that track the progress and outcomes of economic diversification efforts over extended periods. Such studies could better understand countries' challenges and barriers as they strive to diversify their economies and enhance financial security. Also, the interconnections and linkages between different economic sectors and their implications for economic diversification have not been extensively explored. Understanding how advancements in one industry can stimulate growth and opportunities in other sectors can be crucial for formulating effective diversification strategies. And studying each country as a unique case is essential when exploring the prospect of diversifying the economy and maximizing economic security, and as such, focusing on Azerbaijan as a particular case is crucial. By taking a context-specific approach, the study can provide valuable insights into the prospects for diversifying the economy, fostering sustainable growth, and maximizing economic security for the country's long-term development.

METHODOLOGY

The assessment of the prospects for diversifying the economy in Azerbaijan included determining the availability of resources for the development of various sectors of the economy, the effectiveness of their use, and the impact on the economic security of the economic regions in Azerbaijan. We have used data from all areas of Azerbaijan to identify promising sectors of diversification for each region and to determine the features of economic diversification under different economic development conditions (different levels of income, investment, etc.).

We carried out the assessment using the following stages:

- Extractive industry, in particular the oil industry, as an industry that accounts for 46.6% of the country's GDP in 2022. (The

State Statistical Committee of the Republic of Azerbaijan, 2023);

- Agriculture, the share of which in GDP is 5.1% in 2022 and is considered a promising sector of economic development in Azerbaijan (The State Statistical Committee of the Republic of Azerbaijan, 2023; Niftiyev, 2020). The effect of this industry to ensure economic security is essential not only from the standpoint of creating a regional product but also for ensuring food security;
- manufacturing industry (5.4% of the country's GDP) (The State Statistical Committee of the Republic of Azerbaijan, 2023). The development of this industry contributes to the introduction of new technologies, improving productivity and competitiveness, and is the basis of economic development for developed countries;
- construction, which makes up 5.2% of the GDP and is considered an alternative sector of economic growth in Azerbaijan (The State Statistical Committee of the Republic of Azerbaijan, 2023);
- trade (8.9% of GDP) - as one of the most resistant industries to the impact of crises (the example of COVID-19) (The State Statistical Committee of the Republic of Azerbaijan, 2023).

The research methodology involved using regression analysis in the EViews 10 program. The list of independent variables for building regression models to assess the prospects for economic diversification in Azerbaijan was formed based on the Classical Theory of Factors (Kurz, 2020) and Institutional Theory (Hodgson, 2019). According to the Classical Theory of Factors (Kurz, 2020), these are indicators that characterize the availability and efficiency using such resources as land (raw materials for the development of the relevant industry), labor (security of the economically active population and its mobility), capital (investment in fixed capital). The list of indicators was also supplemented with indicators that characterize the development of the institutional environment (according to Institutional Theory). It is the presence of hospitals, educational, and sports facilities. The use of these indicators is because they affect the development of human capital as a factor of production and its mobility between economic regions in Azerbaijan.

The assessment did not use indicators of the availability of natural resources as a constraint for developing Mining and quarrying. The basis of this industry is oil and gas production. The explored reserves of these resources are enough for about 100 years (Azernews, 2010), which cannot be considered a resource constraint. There is also potential for agricultural development in Azerbaijan: suitable relief, climate, and fertile soil (RAE Aliyev ZH, 2018), which does not create restrictions on the development of the industry. For other industries, resource constraints are measured by the value created in the sector in the retrospective period and in other industries. For Manufacturing, the value created in Mining and quarrying and Agriculture, forestry, and fishing; for Construction, the value created in Mining and quarrying Manufacturing; for Agriculture, forestry, and fishing - the value created in Manufacturing; for trade - the value created in Manufacturing, Agriculture, forestry and fishing, Mining and quarrying.

The dependent variable is an integral indicator of economic security, calculated based on an additive reconciliation of gross regional product per capita indicators, employment rate, investment in fixed capital, and household income (formulas 1-3). The list of indicators for assessing economic security is substantiated by Economic Growth and Development Theory (Alenda-Demoutiez, 2022).

$$k_i = \frac{1 - e_i}{\sum_{i=1}^{n}(1 - e_i)} \quad (1)$$

$$e_i = -(P_i \times \ln P_i), \quad (2)$$

$$P_i = \frac{|v_i|}{\sum_{i=1}^{n}|v_i|}, \quad (3)$$

where k_i –significance for the i-th indicator of economic security;

e_i – information entropy for the i-th indicator of economic security;

P_i – the probability of a decrease in the region's economic security as a result of the variability for the i-th indicator of economic security;

v_i – a variation of private indicators of the region's economic security;

n – the number of indicators to assess the region's economic security.

Economic security - ensuring the economic growth of the region, the well-being of the

population, and resistance to the influence of threats, which provided red not only by a high level of socioeconomic indicators at the time of assessment but also in dynamics. Therefore, we calculated the integral indicator based on the coefficient of information entropy, which allows us to consider the stability of socioeconomic indicators (Zhang et al., 2018). As an indicator of uncertainty in the formula, variations were used, which characterize the probability of economic security loss.

The list of indicators to assess the prospects for diversification of the economy and its impact on economic security in Azerbaijan is given in Table. 1.

Table 1: Indicators to assess the prospects for economic diversification and its impact on economic security in Azerbaijan

Indicators	Symbol
Gross regional product per capita (manats)	*Val*
Investment in fixed assets in the region (thsd. manats)	*Inv*
Incomes of the population in the region (manats)	*Inc*
Number of employees (thousand persons)	Emp_m^*, Emp_{man}, Emp_c, Emp_a, Emp_t
Labor productivity is the ratio of the cost of goods produced to the number of employees	$Prod_m$, $Prod_{man}$, $Prod_c$, $Prod_a$, $Prod_t$
Average salary (manats)	Wag_m, Wag_{man}, Wag_c, Wag_a, Wag_t
Fixed capital investment (thsd. manats)	Inv_m, Inv_{man}, Inv_c, Inv_a, Inv_t
Investment efficiency, calculated as the ratio of the cost of manufactured products to the amount of investment in fixed capital	Ef_m, Ef_{man}, Ef_c, Ef_a, Ef_t
The cost of manufactured products (thsd. manats)	Val_m, Val_{man}, Val_c, Val_a, Val_t
Economically active population in the region (thousand persons)	*Pop*
Unemployment rate in the region (percent)	*Unemp*
Number of new jobs created per capita (workplaces)	*Job*
Housing stock area per capita (kv.m)	*Hous*
Number of accommodated persons in hotels and similar establishments (persons)	*Hot*
Passenger turnover (mln.passenger.km)	*Pas*
The volume of telecommunication services (thousand manats)	*Com*
Internet users per 100 inhabitants (persons)	*Inter*
Mobile telephone subscribers per 100 inhabitants (numbers)	*Mob*
The number of physicians per 10,000 population (persons)	*Doc*
The number of sports establishments (units)	*Sport*
The number of day general educational institutions at the beginning of the school year by towns and regions of the country (number)	*Ed*

* - indexes indicate the industry: *m* - Mining and quarrying, *man* - Manufacturing, *c* - Construction, *a* - Agriculture, forestry and fishing, *t* - Trade

For statistical confirmation of the direction of causality, the Granger causality test in the EViews 10 program was used. The regression models used variables whose influence on the dependent variable is statistically significant at 0.05. The application of this Granger causality test was made possible by the stationarity of the data. The stationarity of the data was verified using the augmented Dickey-Fuller test (Rajbhandari & Zhang, 2021). In the case of a time lag with the influence of independent variables on the dependent, the Akaike, Schwartz, and Hann-Quinn criteria were used to determine the lag length (Kim, Shim & Park, 2022).

The Ramsey Test was used to confirm the correct choice of regression type in the simulation, calculated in the EViews 10 program. The test value (0.34-0.82) exceeding 0.05

indicates the right choice of the kind of regression in all models. As criteria for the adequacy of the constructed regression models, we also used the Normality Test of the distribution of data and residuals of the model, the t-criterion, and the F-criterion, testing for heteroscedasticity and multicollinearity (Cunningham, Weathington & Pittenger, 2013). Independent variables, the correlation between which is statistically significant, are combined into an integral indicator calculated by the formula (4):

$$I = \frac{r_i}{\sum_{i=1}^{n} r_i} \times s \qquad (4)$$

where is – the standardized value of the i-th indicator;

r_i – the arithmetic mean modulo value of the correlation coefficient of the i-th indicator with other indicators of the socioeconomic development of the region;

n – the number of correlated indicators of the region's socioeconomic development.

Using this integral indicator allowed us to avoid multicollinearity while not losing the statistically significant impact of correlated indicators on the economic security of regions.

The study used data for 2005-2022 in the context of the economic regions of Azerbaijan. (The State Statistical Committee of the Republic of Azerbaijan, 2023). These data were combined into one sample. The prospects for diversification of the economy were assessed by calculating changes in the integral indicator of economic security by industry with an increase in the indicators of the number of employees, wages, and investments in fixed assets in the industry.

RESULTS

The values of the integral indicator of economic security for the regions of Azerbaijan for 2022 were calculated using formulas (1-3) (Table. 2).

Table 2: Values of the integral indicator of economic security by regions in Azerbaijan for 2022

Region	Integral indicator	Region	Integral indicator
Guba-Khachmaz economic region	0,066	Eastern Zangazur economic region	0,073
Absheron-Khizi economic region	0,141	Nakhchivan Autonomous Republic	0,322
Baku city	0,824	Ganja-Dashkasan economic region	0,066
Shirvan-Salyan economic region	0,061	Gazakh-Tovuz economic region	0,119
Lankaran-Astara economic region	0,07	Shaki-Zagatala economic region	0,132
Mil-Mughan economic region	0,086	Central Aran economic region	0,058
Karabakh economic region	0,11	Daghlig Shirvan economic region	0,105

The highest economic security is Baku City - 0.824, due to the highest GRP per capita, per capita income, investment in fixed assets, and stability. Despite the high value of the integral indicator, it does not reach the potential level "1". The potential for the development of economic security for Baku city lies in the fight against unemployment, which in 2022 amounted to 5.7%. For comparison, the unemployment rate in the Nakhchivan Autonomous Republic is 0.1%, the Shaki-Zagatala economic region is 4.4%, Gazakh-Tovuz economic region is 5%, Daghlig Shirvan economic region is 5.1% (The State Statistical Committee of the Republic of Azerbaijan, 2023).

For the Nakhchivan Autonomous Republic, the value of the integral indicator is 0.322. The region has the lowest unemployment rate and one of the highest regional product costs. The importance of the crucial indicator for other areas is in the range of 0.058-0.141.

The value of the integral indicator less than "1" indicates the need to improve the economic security of all regions. Using regression analysis, the potential for increasing the economic security of the areas through the diversification of the economy was assessed.

Among the indicators that affect the development of economic sectors by region (as determined using the Granger causality test): is the number of employees by industry, labor productivity in the sector, wages in the industry, and investment in fixed assets by industry. The level of employment characterizes the provision

of the industry with labor resources as a factor of production and labor productivity in the industry - the efficiency of using this type of resource. Wages in the industry characterize the industry's attractiveness and the possibility of mobilizing labor resources. Investments in fixed capital describe the provision of the industry with money. The influence of these indicators is statistically significant at a significance level of 0.05.

The level of economic security is also affected by the cost of manufactured products in the studied industries in retrospect (with a lag of 1 year). A higher cost indicates the availability of fixed assets, production technologies, processing, and raw materials. It also affects the price of manufactured products in other industries that provide raw materials and means of production.

In addition to indicators of the availability and efficiency of the use of factors of production by industry, the region's economic security is statistically significantly affected by indicators of socioeconomic development at the regional level. These are the region's economically active population, the region's unemployment rate, the number of new jobs created per capita, and the area of the housing stock per capita. These indicators are not published in the context of economic sectors; therefore, their regional values were used to determine the competitive advantages of regions. The number of economically active populations in the area is an indicator characterizing the availability of labor resources. The high indicator is the potential for the development of all sectors of the region. A similar effect is produced by new jobs created per capita. The impact of this indicator on economic sustainability in all industries is more significant ($p \leq 0.02$). The creation of employment and the expansion of the area of the housing stock act as an augment for the internal migration of the able-bodied population between regions. The unemployment rate in the region is a disincentive for any industry and a reason for migration from the area.

An intermediate check of regression models for adequacy testified to a statistically significant correlation between several indicators (Table 3). The impact of these indicators on the development of industries, regions, and economic security is explained by the fact that they affect the mobility of labor resources. Due to the close correlation between these indicators, an integral indicator of the development of the institutional environment was built on their basis by additive reconciliation (formula 2). This critical indicator acted as an independent variable in the Construction of regression models for assessing the prospects for economic diversification and its impact on economic security in Azerbaijan

Table 3: Paired Correlation Coefficients Between Indicators of the Development of the Institutional Environment in Azerbaijan

	Hot	Pas	Com	Inter	Mob	Doc	Sport	Ed
Hot	1	0.68**	0.63*	0.68**	0.75**	0.65*	0.66*	0.79**
Pas		1	0.66*	0.73**	0.6*	0.68**	0.72**	0.74**
Com			1	0.97***	0.91***	0.65*	0.77**	0.68**
Inter				1	0.95***	0.69**	0.63*	0.7**
Mob					1	0.71**	0.68**	0.6*
Doc						1	0.81***	0.75**
Sport							1	0.8***
Ed								1

* - statistically significant correlation coefficient at the significance p=0.1; ** - statistically significant correlation coefficient at the significance p=0.05; *** - statistically significant correlation coefficient at the significance p=0.01; *Hot* - Number of accommodated persons in hotels and similar establishments; *Pas* - Passenger turnover; *Com* - Volume of telecommunication services; *Inter* - Internet users per 100 inhabitants; *Mob* - Mobile telephone subscribers per 100 inhabitants; *Doc* - The number of physicians per 10 000 population; *Sport* - The number of sports establishments; *Ed* - The number of days general educational institutions at the beginning of the school year by towns and regions of the country

Regression models to assess the prospects for economic diversification and its impact on economic security in Azerbaijan are given in Table 4.

Table 4: Regression models to assess the prospects for economic diversification and its impact on economic security in Azerbaijan

Mining and quarrying	Manufacturing	Construction	Agriculture, forestry, and fishing	Trade
Models				
$ES = -1.7*Emp_m^2 + 4.1*Emp_m + 0.97*Prod_m - 1.88*Wag_m^2 + 4.1*Wag - 1.74*Inv_m^2 + 4.11*Inv_m + 0.86*Efm + 1.1*Val_m(-1) + 0.36*Pop - 0.62*Unemp + 0.72*Job + 0.7*Hous + 0.42*IE$	$ES = 1.38*Emp_{man}^2 + 0.91*Prod_{man} + 0.86*Wag_{man}^2 + 1.28*Inv_{man}^2 + 0.93*Efman + 1.11*Val_{man}(-1) + 0.91*Val_m(-1) + 0.8*Val_a(-1) + 0.53*Pop - 0.58*Unemp + 0.75*Job + 0.71*Hous + 0.36*IE$	$ES = 0.9*Emp_c + 0.76*Prod_c + 0.81*Wag_c + 0.96*Inv_c + 0.91*Efc + 1.13*Val_c(-1) + 0.92*Val_m(-1) + 1.1*Val_{man}(-1) + 0.61*Pop - 0.77*Unemp + 0.78*Job + 0.93*Hous + 0.36*IE$	$ES = 0.92*Emp_a + 0.77*Prod_a + 0.85*Wag_a + 0.81*Inv_{a+0.83*Efa} + 1.04*Val_a(-1) + 0.84*Val_{man}(-1) + 0.49*Pop - 0.73*Unemp + 0.76*Job + 0.90*Hous + 0.37*IE$	$ES = 0.84*Emp_t + 0.71*Prod_t + 0.88*Wag_t + 1.01*Inv_t + 0.88*Eft + 1.17*Val_t(-1) + 1.15*Val_m(-1) + 0.94*Val_{man}(-1) + 0.74*Val_a(-1) + 0.59*Pop - 0.83*Unemp + 0.88*Job + 0.93*Hous + 0.33*IE$
Model Adequacy Criteria				
Ramsey Test = 0.34 F-test = 28.21 t-test = |3.11|-|3.85|	Ramsey Test = 0.46 F-test = 30.66 t-test = |3.08|-|3.98|	Ramsey Test = 0.80 F-test = 49.16 t-test = |3.26|-|4.16|	Ramsey Test = 0.82 F-test = 51.11 t-test = |3.24|-|4.20|	Ramsey Test = 0.53 F-test = 38.72 t-test = |3.15|-|3.97|

*- changes are modeled using the average of indicators for Azerbaijan; *ES* is an integral indicator of the region's economic security; Emp_m, Emp_{man}, Emp_c, Emp_a, Emp_t – standardized value of the number of people employed in the industry (indices indicate the industry: *m* - Mining and quarrying, *man* - Manufacturing, *c* - Construction, *a* - Agriculture, forestry and fishing, *t* - Trade); *Prod* - a standardized value of labor productivity in the industry; Wag is the standardized value of wages; *Inv* - a standardized value of investments in fixed capital; *Ef* is the standardized value of investment efficiency; *Val (-1)* - a standardized value of the cost of manufactured products for the studied industries with a lag of 1 year; *Pop* is the standardized value of the economically active population in the region; *Unemp* - the standardized value of the unemployment rate in the region; *Job* - a standardized value of the number of new jobs created per capita; *Hous* is the standardized value of the area of the housing stock per capita; *IE* - an integral indicator of the development of the institutional environment

The empirical values of the F-test and t-test for independent variables for all models exceed the critical importance at a significance level of 0.05. The Heteroskedasticity Test value was 0.37-0.62, which indicates the adequacy of the constructed regression models. The sufficiency is also evidenced by the sufficient sample size (241 observations), which is at least 17 times greater than the number of independent variables.

Table. 5 shows the priority sectors of prospective development in the regions of Azerbaijan. These industries provide the most significant increase in the integral indicator of economic security. If the growth rate for different industries differs by no more than five p.p., then Table 5 was also listed.

Table 5: Priority sectors of prospective development by regions in Azerbaijan

Region	Priority sectors		Region	Priority sectors	
	Δ10%	Δ50%		Δ10%	Δ50%
Guba-Khachmaz economic region	T	T	Eastern Zangazur economic region	C	C
Absheron-Khizi economic region	MAN, C	MAN, C	Nakhchivan Autonomous Republic	C, T	C, MAN
Baku city	M, MAN	M, MAN	Ganja-Dashkasan economic region	A, T	A
Shirvan-Salyan economic region	A, T	A	Gazakh-Tovuz economic region	A	A
Lankaran-Astara economic region	T	T	Shaki-Zagatala economic region	A, T	A
Mil-Mughan economic region	A	A	Central Aran economic region	A, T	A
Karabakh economic region	C	C	Daghlig Shirvan economic region	A	A

* - increasing the number of employees, wages, and investments in fixed assets by 10%; ** - increasing by 50%; *M* - Mining and quarrying, *MAN* - Manufacturing, *C* - Construction, *A* - Agriculture, forestry, and fishing, *T* - Trade

DISCUSSION

The conducted empirical study provides valuable insights into the relationship between labor resources, capital accumulation, and economic security in Azerbaijan. The findings reveal that expanding labor and capital resources across sectors contributes to an overall increase in economic security. However, significant variations in growth rates and industry priorities are observed, highlighting the need for targeted diversification efforts.

The mining and quarrying sectors initially experienced higher growth rates due to the current availability of resources and industry development. However, as investment efficiency decreases, the growth rates decline, indicating the need for a shift in priority toward Manufacturing. The Manufacturing sector shows lower growth rates with smaller investments but higher growth rates as labor resources and capital accumulate. The industry's growth requires substantial investments in diverse and expensive equipment, innovation, and employee training, reflecting its potential to drive technological advancements and support other sectors.

Furthermore, the study indicates that economic security can be increased by focusing on the development of Construction, Agriculture, forestry, fishing, and Trade. These sectors show more even growth patterns with the initial accumulation of capital and labor resources, demonstrating higher industry security. The results emphasize the importance of diversifying the economy by investing in Manufacturing, Construction, Agriculture, forestry, fishing, and trade to achieve long-term and stable positive effects on economic security. The results obtained in this study align with modern research on economic diversification and its impact on economic security. The studies of Shah et al. (2022), Bassey, Ugboaku, and Peter (2020), and Yoshino et al. (2021) support the notion that investing in Manufacturing, Construction, Agriculture, forestry, fishing, and trade can positively affect economic security. But these studies did not reflect a diversified approach considering the regional economy.

A diversified approach that considers the unique characteristics of each region is crucial for optimizing the process of economic diversification and enhancing economic security in Azerbaijan. The results obtained in your study provide valuable insights that can justify the priority development of specific industries for particular regions of the country. By taking a region-specific approach, policymakers can tailor their strategies to the strengths and opportunities of each area, as well as address the specific challenges they may face. This targeted strategy allows for the efficient allocation of resources and investments, ensuring that the

development efforts have the most significant positive impact on economic security and diversification.

Our results showed that, with an increase of 10% in the number of employees, wages, and investments in fixed capital for most regions of Azerbaijan, the focus on developing agriculture and trade emerges as a priority for 86% of the areas. Only 14% of the regions would prioritize the development of the Mining and quarrying, Manufacturing, and Construction sectors. This prioritization suggests that enhancing economic security and deepening economic diversification is more feasible and beneficial by investing in agriculture and trade for most regions.

Several factors can explain the preference for agriculture and trade:

1. Resource Endowments: Many regions in Azerbaijan have favorable natural conditions for agricultural activities. Increased investment in agriculture can capitalize on these resources and enhance the sector's competitiveness, leading to economic diversification and improved food security.
2. Employment Generation: Agriculture is known for its labor-intensive nature. By increasing the number of employees in the sector, regions can address unemployment challenges and foster inclusive growth, benefiting rural communities.
3. Market Access: Developing the trade sector can facilitate the integration of regional economies into national and global markets. Improved trade relations can promote the export of agricultural products and diversify income sources.
4. Resilience to External Shocks: Agriculture and trade sectors can provide regions with a buffer against external shocks, such as fluctuations in global commodity prices. By diversifying the economy away from reliance on a single industry (e.g., oil and gas), regions can enhance their economic security.

However, the study also suggests that if there is a significant increase of 50% in the number of employees, wages, and investments in fixed assets, agriculture becomes a priority industry for most regions. This finding indicates that the potential benefits of developing the agriculture sector become even more apparent with more substantial resource allocation.

The increased investment in agriculture can improve productivity, technological advancements, and value addition, making it a more attractive option for economic diversification and enhancing economic security across most regions of Azerbaijan.

CONCLUSION

The empirical study underscores the importance of developing agriculture and trade to bolster the economic security of regions and achieve adequate economic diversification in Azerbaijan, aligning with modern trends in economic development. These industries hold the potential to expedite the country's diversification process.

The proposed approach to assessing the prospects for economic diversification considers static and dynamic characteristics, production factors' availability, and efficiency. This comprehensive approach enables a prospective evaluation of the need to diversify the economy and identifies priority sectors to ensure the region's and the country's economic security. The universality of this approach is evident in its application to areas with varying resource potential and priority sectors of the economy.

The study utilizes data from periods of economic growth and during crises caused by external factors like the COVID-19 pandemic and financial downturns. By considering different economic contexts, the research provides a robust understanding of the challenges and opportunities for economic diversification.

However, the study has limitations. It primarily focused on assessing the prospects for economic diversification based on extensive growth and did not fully account for indicators of resource use efficiency and labor productivity changes. Future research could incorporate more comprehensive efficiency assessments to refine the findings.

Additionally, it is essential to recognize that the study's conclusions may be specific to the unique context of Azerbaijan, including its resource endowments, geographic attributes, and existing economic structure. The priorities for economic diversification may vary in other countries or regions with distinct economic conditions and challenges.

Nonetheless, the research offers valuable insights for policymakers and stakeholders in Azerbaijan. By focusing on the development of agriculture and trade and considering targeted investments in specific sectors, the country can accelerate economic diversification and enhance overall economic security. As the economy evolves, ongoing assessments and adaptive strategies will be necessary to ensure sustained progress toward Azerbaijan's resilient, diversified, and prosperous future.

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ABOUT THE AUTHORS

Shafa Aliyev, e-mail: shafaaliyev@gmail.com

Shafa Aliyev, Doctor of economic sciences, Professor of Sumgait State University, Head of the UNEC Centre for Karabakh Economic Research, Azerbaijan State University of Economics (UNEC), Western Caspian University, Baku, Azerbaijan.

Farid Babayev, Ph.D. in economic sciences, Associate professor, Department of World Economy of Baku State University, Azerbaijan.

Ummuhabiba Galandarova, Ph.D. in economic sciences, Associate professor, Department of World Economy of Baku State University, Azerbaijan.

Galib Gafarli, Ph.D. in economic sciences, Headteacher, Department of World Economy of Baku State University, Doctorate of Azerbaijan State Agrarian University, Ganja, Azerbaijan.

Tahmina Balajayeva, Lecturer of Department of World Economy of Baku State University, Azerbaijan.