

ASSESSMENT OF MACROECONOMIC VULNERABILITY OF THE ECONOMY BASED ON THE EXAMPLE OF SOUTH CAUCASUS COUNTRIES

Tatul Mkrtchyan¹
Knarik Vardanyan
Gayane Avagyan
Melanya Gharagyozyan
Michael Navasardyan

Received 30.07.2025.
Revised 27.10.2025.
Accepted 18.11.2025.

Keywords:

*Economic Vulnerability, Macroeconomic
Vulnerability Index, Stability, Economic
Shocks*

A B S T R A C T

At different stages of development of the post-Soviet economies of the Transcaucasus, including Armenia, certain disparities and obstacles to economic progress have been formed, which increase the risks of external shocks penetrating the national economies and intensify the effects of these shocks, making the economies of the countries more vulnerable. In order for the macroeconomic policy aimed at mitigating the consequences of external negative shocks on the economy to be effective, it is first necessary to have an accurate and complete understanding of the indicators, factors, their nature and the degree of vulnerability of the economy. Within the framework of this research, in order to assess the degree of vulnerability of the economy, the main factors causing macroeconomic instability were clarified, and then, based on their quantitative assessments, a macroeconomic vulnerability index was developed.

The reasons and trends of the change in the macroeconomic vulnerability index in the countries under discussion have been identified, based on the analysis of the movements of the components that form the basis for calculating the index. In the current study we try to clarify how and by what mechanisms external shocks affect the economies of Armenia, Georgia and Azerbaijan, given their varying degrees of vulnerability.



© 2026 Published by Faculty of Engineering

1. INTRODUCTION

The degree of macroeconomic vulnerability characterizes the ability of a country's economy to

withstand external and internal economic shocks, to respond to crisis situations, and to minimize their negative consequences. The study of the phenomenon of macroeconomic vulnerability provides an opportunity to find out how to reduce the risks of various shocks,

implement accommodation policies to mitigate their consequences, and how to strengthen the resilience of the economy and ensure sustainable development by transforming the structure of the economic system and making it more flexible.

The economies of Armenia and other Transcaucasian countries are often exposed to adverse impacts that significantly undermine their macroeconomic stability. Studies of the consequences of global shocks recorded over the past decade show that the economies of these countries are quite vulnerable, and that the risks of vulnerability are not decreasing over time, but rather increasing. Although the risks of macroeconomic vulnerability differ somewhat due to the specifics of the economies of the countries under consideration, there are common problems that increase the level of vulnerability of all three economies. These problems relate to trade shocks, dependence on imports of strategic goods, instability of financial markets, growing social and environmental tensions, and other phenomena, which as a result significantly limit the potential for economic development of the countries. These vulnerabilities require detailed study and assessment in order to develop effective countermeasure policies.

Vulnerability indices such as EVI, INFORM index or MVI are calculated by international organizations, are generic indices that, in addition to economic components, also have ecological, geopolitical components, components describing various disasters and hazards as well. Moreover, their assessments, due to the methodology used, are often contradictory. Within the framework of this study, our attention has been focused mainly on the macroeconomic components of vulnerability, the main economic factors that cause macroeconomic instability of economies have been studied, their nature and degree of impact have been revealed. Taking into account these factors, a macroeconomic vulnerability index has been developed, which, we believe, more accurately assesses the vulnerability of the economies of the Republic of Armenia and the other two countries under consideration. The choice of countries is conditioned by the fact that some of the macroeconomic vulnerability factors of the Armenian economy have a geopolitical or regional origin and are also applicable to neighboring countries. It should also be noted that in terms of economic size, structure, resistance to external shocks, shock transmission mechanisms and vulnerability of economies, the economies of Azerbaijan and Georgia are relatively more comparable to the Armenian economy. Therefore, within the framework of the research, the degrees of macroeconomic vulnerability of the economies of Armenia, Azerbaijan and Georgia were assessed using the same methodology, and a comparative analysis of the macroeconomic vulnerability indices and vulnerability risks of the economies of these countries was carried out.

2. LITERATURE REVIEW

Vulnerability is defined as the propensity to incur adverse shocks. A country is deemed vulnerable if it is at risk of suffering from poor long-term development due to the persistence of exogenous factors that it cannot control (Bates et al., 2014): This concept of vulnerability implies a measurement of risk related to physical, social, economic aspects and consequences that arise from the system's ability to withstand shocks (Proag, 2014). According to UN, a country is considered vulnerable if it is at risk of long-term adverse development due to a persistence of exogenous factors that it cannot control. The likelihood of such impacts occurring is known as risk, which is divided into three components: hazard, impact, and vulnerability (UNDRR, 2019).

Vulnerability includes accumulations of internal and external imbalances, such as current account deficits, credit booms, and property price increases (Sondermann & Vansteenkiste, 2019). Natural disasters, supply chain disruptions, conflicts, civil unrest, and global pandemics also cause shocks. Their impacts can be both short-term and long-term.

Macroeconomic vulnerability is often viewed as the exposure of an economy to external shocks as a result of its openness and export concentration (Briguglio et al., 2008). They are determined both by the structural and development characteristics of the economy, as well as by the influence of external factors (Oyadeyi et al., 2024). The economy's dependence on imports of strategic goods and foreign markets is emphasized, which contributes to limiting economic diversification and increasing risks. Some researchers consider macroeconomic vulnerability from a financial and economic point of view.

Financial vulnerability includes the risks of currency, debt and banking crises, while economic vulnerability refers to the volatility of economic growth and the impact of external shocks. Economic vulnerability is a risk of harm from exposure to adverse external economic shocks. Moreover, the risk of vulnerability increases with increasing integration. According to some studies (Klompa & de Haan, 2009), political instability and policy uncertainty also contribute to it.

Assessments of the consequences of the 2019–2020 global pandemic crisis showed (Estrada, 2020) that it can significantly increase the external sector vulnerability in the short run. In emerging markets and developing economies it is expressed in increased sensitivity to external shocks, such as global market fluctuations and financial pressures. These economies are particularly sensitive to the increase in external debt burden, which significantly slows down economic growth (Ruch, 2020). Empirical estimates of external debt vulnerability also support this view. Research shows that domestic debt and economic openness have played a passive role, failing to mitigate the negative effects of external debt

vulnerability. Furthermore, the results revealed that domestic credit and openness of economy played a passive role and were therefore unable to cushion the adverse effect of debt vulnerability. Capital stock, however, stands out as the only variable that played a significant positive role in facilitating economic growth (Edo & Oigiangbe, 2024). Countries are most vulnerable when external debt is higher than the potential for economic stability and growth.

One of the risks of vulnerability is inflation, which is particularly significant for countries dependent on imported fuel and raw materials. Perhaps this is why external factors have a greater impact on inflation in developed countries compared to low-income countries (Galí, 2010). Researchers believe that strengthening productive capacities in these countries will contribute to economic growth and reduce the volatility of economic growth. This is especially evident in countries that face a high degree of structural vulnerability of the economy (Gnangnon, 2025).

Often, the vulnerability of the economy is determined by military and political factors, for example, the 2023 report of the International Monetary Fund (IMF, 2023) notes that the unresolved regional conflict, to which Armenia is a party, creates unpredictable external shocks for it, and on the other hand, the Russian-Ukrainian war has brought about new economic shocks.

The Central Bank of Armenia links potential risks to financial stability, especially in an environment of high geopolitical uncertainties, to a decrease in future economic activity and the emergence of new inflationary pressures (Central Bank of Armenia, 2024).

In summary, macroeconomic vulnerability is defined as a combination of macroeconomic imbalances that increases the risk of macroeconomic instability. At the macro level, economic vulnerability is the risk to the development of a national economy.

Economic vulnerability assessment is often seen in academic research as a means of assessing the economic stability of countries (UNCDP, 2023), and as we can see, researchers have emphasized specific components of macroeconomic vulnerability and their impact mechanisms, as a result of which the proposed indices for assessing vulnerability differ both in the included components and their weights, as well as in calculation methods. Thus, the United Nations has developed an Economic Vulnerability Index (EVI), which is a composite indicator derived from eight variables with equal weights. Five of them are macroeconomic indicators – Share of agriculture, forestry & fishing in GDP, Remoteness and landlockedness, Merchandise export concentration, Instability of exports of goods and services, Instability of agricultural production (UNCDP, 2023). Other indicators are non-economic and not applicable to all countries (Share of population living in

drylands, Share of population in low elevated coastal zones, Victims of disasters); This indicator is currently used to assess the vulnerability of least developed countries. Some researchers (Guillaumont, 2009) suggest expanding this index to take into account additional variables related to economic resilience, namely the ability of a country's economy to recover after a shock. Another approach suggests graph theory to structure a network of variables that depict vulnerability and resilience from a sustainable development perspective. Existing literature on vulnerability was supplemented by the calculation of COVID-19 economic vulnerability (Diop et al., 2021) and resilience indices based on data from 150 countries.

Reviewing the design of the economic vulnerability index, the relationship between the economic vulnerability index and economic volatility was examined, which was measured by the coefficient of variation of detrended real GDP per capita. The result of a regression analysis indicated that revision of the economic vulnerability index designed by the United Nations is recommended. In addition to the weights used to aggregate the index, the variables included in the index should be moderately modified as necessary (Wang, 2013).

In recent years, interest in the economic problems of developing countries has grown. The global economic crises have highlighted the high level of sensitivity of these countries' economies to international market fluctuations, and the significant differences in the size and nature of the impacts have once again highlighted the need for a differentiated approach. The vulnerability factors of economies, depending on their geographical location, region, form, nature, structure of the economy, mentality of the population and many other factors, change over time and space. Therefore, vulnerability factors and their weights may vary greatly for countries, or a particular group of countries.

Based on the results of the study of scientific literature, to assess economic vulnerability, we have identified the main factors contributing to the formation of economic instability, on the basis of which a macroeconomic vulnerability index has been developed. It will more accurately assess the vulnerability of the economies of Armenia, Georgia, and Azerbaijan.

3. RESEARCH METHODS

The research uses some methodological approaches to assessing economic vulnerability proposed in various scientific studies. They were adapted taking into account the specifics of the macroenvironment of the countries under study and refined to provide more accurate results. The calculation of the macroeconomic vulnerability indices of Armenia, Georgia and Azerbaijan was carried out using data from 2000–2023 (World Bank, n.d.). The choice of countries is due to the fact that all three are

post-Soviet countries with small economies, which simultaneously left the Soviet Union and, after gaining independence, due to the rupture of former trade and economic ties, appeared with high dependence on the economy of the Russian Federation. Subsequently, despite the differences in the resource potential of the countries, different vectors and rates of development, as well as existing contradictions, all three countries were exposed to similar or the same risks and challenges, provided relatively comparable levels of development and living standards of the population and are in the same income group with above-average incomes per capita according to the World Bank classification.

12 indicators form the index, which are classified into three groups that characterize the structural, financial and social aspects of vulnerability of each economy.

1. Structural

- 1.1 Final consumption expenditure, % of GDP
- 1.2 Export concentration by product group, Herfindahl-Hirschman Index
- 1.3 Export concentration by partner countries, Herfindahl-Hirschman Index
- 1.4 The share of exports to Russia in total exports, %
- 1.5 Net migration
- 1.6 Gross capital formation, % of GDP
- 1.7 Current account balance, % of GDP

2. Financial

- 2.1 Inflation, consumer prices, annual %
- 2.2 Foreign direct investment, net inflows, % of GDP
- 2.3 Central government debt, total, % of GDP
- 2.4 Personal remittances, received, % of GDP

3. Social

- 3.1 Unemployment, total, % of total labor force

The selection of indicators for assessing the macroeconomic vulnerability of the economies of these three South Caucasus countries was carried out according to 2 principles. First, the classical macroeconomic indicators describing the macroeconomic state of the countries' economies and thereby assessing the existing risks were selected, which are typical for all countries: inflation, unemployment, net FDI inflow, gross fixed capital formation, current account balance, public debt/GDP. The exclusion of the "economic growth" indicator from this composition is due to the great influence of natural resources on the latter, and in this regard, high or low growth rates are, if not an indicator, then at least a small indicator of the vulnerability or absence of an economy.

The second principle by which the vulnerability indicators were selected is the negative phenomena characteristic of the economies of the three countries, which limit or reduce the potential for economic development and which are constantly present in these countries. Thus, after the collapse of the Soviet Union,

the economies of the three countries faced the problem of widespread unemployment and poverty, which led to mass emigration and a culture of working abroad. As a result, Personal remittances make up a significant share in the structure of household income. Although, along with the development of economies, primary incomes of the population increased, reducing the significance of transfers, they still remain one of the permanent sources of income formation of households in these countries. In addition, the mentioned countries are characterized by a low standard of living of the population, as a result of which the majority of disposable income is directed to final consumer spending, the share of which in GDP in some years has approached the 100% threshold. All this is accompanied by a shortage of resources and a lack of modern technological solutions that limit the economic development of the three countries, which is expressed in the excess of imports over exports and a large share of a small group of goods in exports and high geographical concentration. Of course, all three countries have overcome the socio-economic decline after the collapse of the Soviet Union, however, the mentioned problems continue by inertia in all countries.

In order to make the collected indicators comparable, they have been normalized according to the distance to frontier approach. In case of indices, the need for normalization is due to the precondition of bringing indicators with different measurement units and scales to the same dimension of comparability.

$$X'_{ij} = \frac{X_{ij} - X_{\min}}{X_{\max} - X_{\min}}, i = \overline{1, 78}, j = \overline{1, 13}, \quad (1)$$

where i and j represent the certain country and indicator, respectively. X_{ij} is the raw value of the i -th country for j -th indicator. $X_{\min}$ and $X_{\max}$ are the recorded minimum and maximum values of j -th indicator for the entire period observed, respectively.

For indicators where a higher value indicates better performance (e.g. Gross capital formation or Net migration), the distance to the border is reversed so that higher scores indicate worse performance, as the index describes the level of vulnerability: the higher it is, the more vulnerable the economy is.

Next, let's turn to the determination of the weights of indicators in the index structure. It should be noted that there is no unanimously accepted and impeccable approach to determining the weights of composite indices.

Equal weighting is the most common approach, used in the calculation of well-known indices, such as the Human Development Index (UNDP, n.d). The advantage of the method lies in its simplicity and transparency. The advantage of the method lies in its simplicity and transparency. Some alternative aggregation options (such as principal component analysis or regressionbased approach) exist in the literature but present several

inconveniences for our purpose. The principal component analysis is difficult to apply when it comes to aggregating more than three variables, which is the case for the “growth fundamentals” index. Similarly, the validity of the regression-based approach depends heavily on the quality of the regressions, including notably issues related to the endogeneity of the regressors. Another approach is statistical or objective. In methods included in it, economic-mathematical methods are used, which introduce a clear pattern into the process of determining weights. The main ones are the methods of efficiency frontier, factor analysis, regression analysis, principal component analysis, and data encapsulation analysis. An objective method has been used in determining weights, for example, in the methodology of the Global Social Progress Index (Stern et al., 2021). Such methods are not very common due to several reasons. First, they are not clear, transparent, and balanced, such as the method described above, on the other hand the weights obtained as a result of their application often appear to be absurd from the point of view of interpretation. The limitations of their calculation and application are problematic as well. For example, the principal component analysis is difficult to apply when it comes to aggregating more than three variables (Mlachila et al., 2016). Potential problems are also the multifaceted nature of the coefficient to be calculated by us and the range of considered entities. As a result, it is often practically impossible to build an objective system of evaluating a phenomenon for different subjects using objective methods.

4. RESULTS

The analysis of macroeconomic vulnerability factors in the Republic of Armenia (RA) examines the ways and the extent to which these factors influence the economy’s vulnerability to external and internal shocks, as well as the stages at which specific risks or vulnerability components become predominant.

Based on the findings from a professional literature and the insights from the authors, a Macroeconomic vulnerability index has been developed, which allows assessing the economic, financial, and social risks affecting the stability of the economies of the Transcaucasian countries.

According to the estimates, among the three countries being compared, economy of Armenia is the most vulnerable, with the average value 49.6 of calculated index, which is 3.5 points higher than the corresponding indicator of Georgia and 13.0 points higher than that of Azerbaijan. Eventually Armenia has the most vulnerable economy in the region, which is determined by the following main factors:

- **The high share of public debt in GDP**, which averaged 42% during the period under review. At the beginning of the period, this indicator decreased from about 40% to 16%, but the public debt, raised to withstand the global financial and economic crisis, sharply increased the government debt/GDP ratio to

40%. The RA government also tried to overcome the subsequent two crises, the financial crisis of 2015 and the COVID-19 crisis of 2019–2020, with large accumulations of debt, as a result of which the government debt/GDP indicator in 2016 was 56.7%, and in 2020 – already 67.4%. For comparison, note that this indicator estimated for Georgia is also quite high – the average for the period under review is 38.8%, and the Georgian economy is also quite vulnerable in this regard. In contrast, Azerbaijan maintains a significantly lower level of public debt, averaging 12.4% of GDP. Moreover, Azerbaijan is the best not only among the South Caucasian countries, but also in the world in terms of its low level of public debt burden.

- **A large share of final consumption expenditures in GDP.** During the observed period, Armenia “outperforms” neighboring countries both in terms of the average value of this indicator and in terms of the maximum recorded values. Thus, the final consumption expenditures/GDP ratio in 2000–2023 averaged 93.5% in Armenia, 91.4% in Georgia, and 61.4% in Azerbaijan. This indicates that economies of Armenia and Georgia were not able to generate the internal funds necessary for investments – savings. In separate years, this indicator exceeded 100% in both Armenia and Georgia. This usually indicates a low standard of living of the population, but is also an indicator of a more consumption-driven economy (Figure 1).

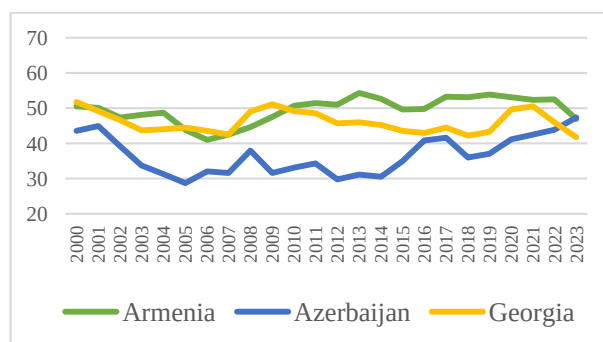


Figure 1. Dynamics of macroeconomic vulnerability indices 2000–2023.

- **A large share of private remittances in GDP.** Usually, a large volume of private remittances from abroad indicates a country’s vulnerability in a number of respects: labor migration, a vulnerable structure, high level of dependence on the other economies, etc., and these, in turn, indicate much deeper problems, such as a small potential of the economy and weak development. In this regard, a large volume of private remittances from abroad has been and remains a significant component of the income of the population of RA. During the observed period, private remittances amounted to an average of 14.4% of GDP, and since 2012–2013 this indicator has a steady downward trend, falling from about 20% to 10%. For comparison, let us note that Georgia and

Azerbaijan, which also have a large number of labor migrants, are distinguished by more modest indicators of private remittances to GDP ratio: in Georgia, the average is 9.9%, in Azerbaijan – 2.8%.

- **Large negative net migration balance.** In all years of the observed period, the RA net migration indicator was negative, except for 2022 and 2023. In 2000–2021, the negative net migration balance of Armenia amounted to more than -653000 people, and in 2022–2023, it was -113001 people. The overall outflow remains substantial, totaling a net loss of 540,084 people over the entire period. The most vulnerable of the three countries in terms of this indicator is Georgia. During the indicated period, the net migration balance in Georgia was negative in all years, as a result of which 665770 people left Georgia. Azerbaijan does not face any vulnerability risks with this indicator, since net migration during the indicated period, except for 2023, was positive, and the net migration balance amounted to 85585 people.
- **A low share of net direct foreign investment in GDP.** Although the three countries had net FDI inflows in almost all the years under review (the exceptions in 2021 and 2022, when Azerbaijan had net FDI outflows), Armenia's indicator was still very modest compared to neighboring countries throughout the period. Armenia's net FDI inflow averaged just 4.4% of GDP, with peak values of 8.1% and 8.8% during the period under review. Georgia's average indicator is 8.3%, and the maximum value was 15.1% in 2006. As for Azerbaijan, its average indicator was 12.4%, and the maximums were in 2003–2004: 55.1% and 54.3%, respectively.
- **A high dependence on Exports to Russia.** Until 2022, the share of Russia in Armenia's exports as a partner was already quite large, averaging 18.5%, which has been constantly increasing over the period under review and reached 26.8% by the end of 2021, and doubled as a result of the Russian-Ukrainian war in 2022, reaching 45%. In fact, a significant part of this growth in 2022–2023 is the result of re-exports, due to the sanctions imposed on Russia. However, neither Azerbaijan nor Georgia have such a high dependence on Russia and are less vulnerable in this regard: Georgia's exports to Russia account for an average of 7.9% of Georgia's total exports, while Azerbaijan's are 3.9%.
- The share of the chronically large negative **balance of the current account in GDP.** Over the observed period, Armenia's imports have traditionally exceeded exports, in some years even up to 4 times, which naturally caused a rather large negative balance of the current account in relation to GDP. This situation may indicate deeper reasons for the vulnerability of the economy (low competitiveness of the country's products in the international market, capital outflow, the presence of a consumer society, etc.), nevertheless, the chronically large negative balance of the current account leads to the

depreciation of the country's currency, growth of public debt, increased dependence on foreign investments and "pressure" on the size of foreign exchange reserves. During the period under review, the share of the negative balance of the current account in GDP in Armenia averaged – 6.7%, and if we exclude large exports in 2022–2023, it will be – 7.3%. The same indicator in Georgia averaged – 9.9%. The picture is completely different in the case of Azerbaijan: the negative current account balance in 2000–2004 turned into a positive one in 2005. In subsequent years, Azerbaijan had a negative current account balance only during times of global economic instability, due to the financial crises of 2015–2016 and the COVID-19 crises in 2020. Due to the restructuring of fuel supply chains in the global market as a result of the Russian-Ukrainian war, the positive current account balance of Azerbaijan in 2022 reached up to 30% of GDP. In 2023, this indicator decreased almost threefold, but remained in the positive range.

- **High geographical concentration of exports.** Export concentration, both in terms of product and geography, increases the dependence of a given country on either product groups or countries, and thereby makes it vulnerable. Usually, exports are considered highly concentrated if the Herfindahl-Hirschman index is greater than 0.25. The geographical centralization of Armenia's exports is about 0.23, therefore, Armenia is considered moderately concentrated, but considering that it is quite close to the lower threshold of high concentration, there is a fairly high risk that a small increase in the index will move Armenia to a zone with high export concentration, and therefore also vulnerability.

The vulnerability risks of the Georgian economy are generally comparable to those of Armenia, as a result of which external shocks have similar effects. In Georgia, as in Armenia, the high shares of government debt, private remittances, and final consumption expenditures in relation to GDP pose vulnerability risks. Dependence on the external conditions, and therefore vulnerability, is evidenced by the chronically large negative current account balance in GDP, the average indicator of which during the period under review was – 9.9%, and in individual years it reached as high as – 22%. On the other hand, large migration flows also generate vulnerability risks in the economy in both the short and long term.

- The economy is also vulnerable due to **the high unemployment rate** (average 14.7%). Despite the downward trend recorded in 2009–2023, as a result of which this indicator amounted to 11.6% from 20.7%, unemployment is currently one of the most vulnerable aspects of the Georgian economy. For comparison, in Armenia the unemployment rate throughout the observed period was 11.2% on average, and in Azerbaijan – 6.6%.

- Georgia is less dependent on Russia than Armenia, and therefore also faces lower risks of vulnerability in terms of **export concentration to Russia**. Although the average value of this indicator in Georgia during the observed period was around 8%, it has shown a constant downward trend since 2008 and at the end of the period, in 2023, it amounted to 5.5%.

Azerbaijan, in our assessment, has the least vulnerable economy among the countries being compared. The main factors determining its vulnerability are:

- **The relatively high level of inflation**, which exceeded the same indicators in neighboring countries during the observed period. Inflation in Azerbaijan during the observed period averaged 6.5%, and in individual years reached up to 21%. According to this indicator, Armenia is the least vulnerable of the countries being compared, recording the lowest inflation rate both on average for the period – 3.7%, and the highest recorded rate – 8.9%. The average inflation rate in Georgia during the observed period was 5.2%, and the maximum – 12%. Unlike Armenia and Azerbaijan, where highest inflation rates were recorded in 2008 during the financial and economic crisis, its rate in Georgia was formed in 2022, due to a sharp increase in aggregate demand as a result of a large inflow of human and financial capital.
- The Azerbaijani economy is most vulnerable in terms of **export concentration**, both geographical and product concentration. Thus, the sum of the three countries with the largest share in Azerbaijan's exports (Italy – 41.0%, Turkey – 14.4%, Russia – 4.4%) is about 60%, as a result of which the Herfindahl-Hirschman index of concentration by partner countries during the observed period averaged 0.236, which is very close to the minimum threshold for being considered highly concentrated.
- As for the commodity structure of exports, this factor is the most vulnerable for Azerbaijan, since more than 85% of exports are energy exports (oil – about 54.5%, gas – 29.5%). And the average value of the Herfindahl-Hirschman index of export commodity concentration is more than 3.2 times higher than the minimum threshold of high concentration.

5. CONCLUSION

The results of the calculated index reveal interesting trends. It would be logical that the macroeconomic policy implemented in the Republic of Armenia in recent years, after the 2008 financial and economic crisis, would have been aimed at withstanding economic shocks and reducing vulnerability, but we note that the subsequent financial shock of 2016 increased vulnerability. As we can see, there is a need to develop and implement a macroeconomic policy that will be based on structural reforms, risk forecasting and management, and will aim to increase the stability of the economy, taking into

account the effects of possible internal and external shocks.

The external vulnerability of the Armenian economy is mainly due to its high dependence on the Russian economy, which is reflected in the significant share of the Russian Federation in both exports and imports, as well as in personal transfers. In the long term, this dependence will limit the diversification and resilience of the Armenian economy, and in the event of economic or political tensions, the Armenian economy will find itself in a risky situation. The fact that the Russian Federation is the only supplier of a number of strategic goods to the Republic of Armenia further increases this dependence and inflation risks.

Despite the structural improvement trends, there are also accumulated risks of vulnerability in the public debt, the volumes of which are steadily increasing, and the debt/GDP ratio is again approaching the threshold. As a result, debt servicing will require more funds, which will curb economic activity, and it already happens in the economy of Armenia.

From a vulnerability perspective, the overall demand structure of RA reveals significant risks due to the predominance of household consumption expenditures in it. It is obvious that changes in the population's consumption behavior and preferences can affect economic stability.

In recent years, as a result of the growth of economic activity due to short-term factors, the structure of demand has improved due to the reduction of the share of consumption, which has created opportunities for increasing domestic investments, the exportable sector of the economy, and public spending. We believe that the Government of Armenia, taking advantage of the favorable situation, should develop and implement a policy that stimulates investments in the real sector of the economy, which will allow the transition from consumption-based economic growth to investment-based, increasing the stability of the economy.

Comparing the dynamics of vulnerability indices, we note that economies respond differently to global shocks, due to the peculiarities of the economic structure. According to the vulnerability index and its change trends, Armenia and Georgia are closer to each other and have similar vulnerability risks. Both economies are vulnerable due to their dependence on foreign investments and transfers, high government debt, large-scale labor migration, as well as a large chronic negative current account balance.

The vulnerability of the Azerbaijani economy is largely due to its dependence on fuel exports and inflationary pressures, but the risks accumulated in the fiscal sector are not particularly large, economy is more financially stable and, as a result, has a low level of vulnerability.

References:

- Bates, S., Angeon, V., & Ainouche, A. (2014). The pentagon of vulnerability and resilience: A methodological proposal in development economics by using graph theory. *Economic Modelling*, 42, 445-453. doi: 10.1016/j.econmod.2014.07.027
- Briguglio, L., Cordina, G., Farrugia, N., & Vella, S. (2008). Economic vulnerability and resilience: Concepts and measurements. *Oxford Development Studies*, 37(3), 229-247. doi: 10.1080/13600810903089893
- Central Bank of Armenia. (2024, April 30). *Financial Stability Report*, 2023. Yerevan, Armenia. Retrieved from https://www.cba.am/file_manager/Finstability-reports-en/Stability_Report_2023.pdf
- Diop, S., Asongu S., & Nnanna, J. (2021). COVID-19 economic vulnerability and resilience indexes: Global evidence. *International Social Science Journal*, 71(S1), 37-50. doi: 10.1111/issj.12276
- Edo, S., & Oigiangbe, O. (2024). External debt vulnerability in developing countries: The economic and policy perspectives. *Journal of Financial Economic Policy*, 16(4): 483-500. doi: 10.1108/JFEP-05-2023-0129
- Estrada, A. M. R. (2020). How much can COVID-19 increase the external sector vulnerability of a country? SSRN. doi: 10.2139/ssrn.3723228
- Galí, J. (2010). Commentary: Inflation pressures and monetary policy in a global economy. *International Journal of Central Banking*, 6(1), 93-102.
- Gnangnon, S. K. (2025). Productive capacities, economic growth and economic growth volatility in developing countries: Does structural economic vulnerability matter? *Journal of International Commerce, Economics and Policy*, 16(01), 2550001. doi: 10.1142/S1793993325500012
- Guillaumont, P. (2009). An economic vulnerability index: Its design and use for international development policy. *Oxford Development Studies*, 37(3), 193-228. doi: 10.1080/13600810903089901
- Klompa, J., & de Haan, J. (2009). Political institutions and economic volatility. *European Journal of Political Economy*, 25(3), 311-326. doi: 10.1016/j.ejpoleco.2009.02.006
- Mlachila, M., Tapsoba, R., & Tapsoba, S. J. A. (2016). A quality of growth index for developing countries: A proposal. *Social Indicators Research*, 134, 675-710. doi: 10.1007/s11205-016-1439-6
- Oyadeyi, O. O., Ibukun, C. O., Arogundade, S., Oyadeyi, O. A., & Biyase, M. (2024). Unveiling economic resilience: exploring the impact of financial vulnerabilities on economic volatility through the economic vulnerability index. *Discover Sustainability*, 5, 253. doi: 10.1007/s43621-024-00438-5
- Proag, V. (2014). The concept of vulnerability and resilience. *Procedia Economics and Finance*, 18, 369-376. doi: 10.1016/S2212-5671(14)00952-6
- International Monetary Fund (IMF). (2023). Republic of Armenia: 2023 Article IV Consultation and Second Review Under the Stand-By Arrangement and Request for Modifications of Performance Criteria and Monetary Policy Consultation Clause-Press Release; Staff Report; and Statement by the Executive Director. *IMF Country Report No. 23/416*. Washington, DC: IMF. doi: 10.5089/9798400262418.002
- Ruch, F. U. (2020). *Prospects, risks, and vulnerabilities in emerging and developing economies: Lessons from the past decade*. Washington, DC: World Bank Group. Retrieved from <https://documents1.worldbank.org/curated/en/787881584027048587/pdf/Prospects-Risks-and-Vulnerabilities-in-Emerging-and-Developing-Economies-Lessons-from-the-Past-Decade.pdf>
- Sondermann, D., & Vansteenkiste, I., (2019). Did the euro change the nature of FDI flows among member states?, *Working Paper Series 2275*, European Central Bank.
- Stern, S., Harmacek, J., Htitch, M., & Krylova, P. (2021). *Social Progress Index, 2021: Methodology Summary*. Washington, DC: Social Progress Imperative. doi: 10.13140/RG.2.2.13723.13600
- UN Committee for Development Policy (UNCDP). (2023). *Review of the least developed country criteria*, 2023. New York, NY: UNCDP. Retrieved from <https://www.un.org/development/desa/dpad/wp-content/uploads/sites/45/CDP-excerpt-2023-4.pdf>
- UN Office for Disaster Risk Reduction (UNDRR). (2019). *UNDRR – Annual Report*. Retrieved from <https://www.undrr.org/publication/undrr-annual-report-2019>
- United Nations Development Programme (UNDP). (n.d.). *Human Development Index*. Retrieved from <https://hdr.undp.org/data-center/human-development-index>
- Wang, C. -C. (2013). Reconsidering the economic vulnerability index of the United Nations. *Canadian Journal of Development Studies*, 34(4), 553-568. doi: 10.1080/02255189.2013.814566
- World Bank, (n.d.). *World Development Indicators*. Retrieved from <https://databank.worldbank.org/source/world-development-indicators>

Tatul Mkrtchyan

Armenian State University of
Economics, Yerevan, Armenia
tatulmkrtchyan@yahoo.com
ORCID 0000-0003-2057-8590

Knarik Vardanyan

Armenian State University of
Economics, Yerevan, Armenia
knariktereza@gmail.com
ORCID 0000-0002-7198-3740

Gayane Avagyan

Armenian State University of
Economics, Yerevan, Armenia
avagyangayaneasue@yahoo.com
ORCID 0000-0003-3395-2473

Melanya Gharagyozyan

Armenian State University of
Economics, Yerevan, Armenia
melanyagharag@gmail.com
ORCID 0000-0002-3087-699X

Michael Navasardyan

Armenian State University of
Economics, Yerevan, Armenia
navasardianmichael@gmail.com
ORCID 0000-0002-5474-6401
