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Ayshan Rovshan gızı VALİBAYLİ
Odlar Yurdu University, lecturer of the departament of "Economics and Economics Relations"
Emai l- aishanvalibayli.edu@gmail.com
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ECONOMIC DIVERSIFICATION AND MACROECONOMIC STABILITY OF AZERBAIJAN

Summary

The purpose of the research is to model the impact of economic diversification on macroeconomic stability in order to reduce Azerbaijan's dependence on the oil sector.

The methodology of the research was measured by using HHI, export and sector concentration of the economy, and correlation and regression models were used to analyze the relationship between HHI indicator and GDP stability.

The practical significance of the research is to promote strengthening of macroeconomic stability through economic diversification of Azerbaijan, rapid development of non-oil sector and expansion of export portfolio, thus increasing resistance to economic fluctuations.

The results of the research as a result of the economic diversification of Azerbaijan, the development of the non-oil sector supports stable macroeconomic growth and forms a more sustainable, diversified economic structure by expanding the country's sources of income.

The originality and scientific novelty of the research, the application of HHI indicators to real annual and sectoral studies makes this study unique, at the same time, the combination of real 2025 indicators with academic analysis creates a basis for creating a new integrative approach.

Keywords*: *economic diversification, non-oil sector, macroeconomic growth, country's sources of income, economic structure, economic fluctuations

Introduction

The oil and gas sector of Azerbaijan has been considered the main core of the country's economy for many years. With the signing of the "Deal of the Century" in 1994, large investments in this field play a critical role in terms of construction and macroeconomic stability [1]. However, this dependence creates problems for the stability of the economy in volatile market conditions — for example, the sharp drop in oil prices that occurred in 2014-2015 led to the depreciation of the manat and the reduction of GDP [1].

This situation created the foundation for the formation of the "Azerbaijan-2020: Vision of the Future" concept in 2012, and later for the preparation of "Strategic Road Maps". These documents constitute a strategic framework in the direction of minimizing dependence on oil and directing the economy to various areas [1]. [2].

The formation of a multi-sector economy increases investment attractiveness and creates a solid foundation for sustainable growth. According to Gazprombank's economist Gunel Heydarshyn, diversification gives Azerbaijan the opportunity to become "the transport and logistics center of Eurasia"; it is predicted that the share of infrastructure projects in this area will increase to 27% in 2024 and 30% in the next five years [3].

Also, the state and international institutions have brought diversification to the fore in order to build a strong economic structure as a result of joint action. For example, the World Bank's "Country Economic Memorandum" report highlights the importance of sustainability of social infrastructure and economic reforms financed from oil and gas revenues, especially the strengthening of non-oil sectors [4].

At the same time, the government began to focus on non-oil sectors - industry, agriculture,

logistics and tourism development. For example, within the framework of "Strategic Roadmaps", Sumgayit Chemical Industrial Park and new transport-logistics projects have been initiated [1], [5].

The main goal is to direct the revenues from the oil and gas sector to high value-added, competitive and sustainable non-oil sectors to make the economy more sustainable [6]. In addition to positively contributing to investment attractiveness, this approach ensures macroeconomic stability and creates a more stable economic infrastructure for future generations.

Progress of Azerbaijan's Economic Diversification and Impact on Macroeconomic Stability

First of all let’s comprehend why economic diversification is important? Because it strengthens a country’s economy and reduces vulnerability to external shocks and I would like to clarify my attitudes to this matter with the description shown below.



Figure 1. The importance of Economic Diversification
Source: complied by author

Economies heavily reliant on one sector — like oil in Azerbaijan or tourism in some countries — are vulnerable to global price fluctuations. Diversification spreads risk across multiple sectors. Example: If oil prices drop, a diversified economy with strong agriculture, manufacturing, or services can maintain stability.

Diversified economies tend to grow more steadily over time because multiple sectors contribute to GDP, reducing the boom-and-bust cycles common in single-sector economies.

New sectors create varied employment opportunities. For example, investing in ICT or tourism can provide jobs for different skill levels, lowering overall unemployment.

A diversified economy stimulates innovation because multiple industries drive research, technology adoption, and entrepreneurship.

Economic shocks — like global recessions, commodity price drops, or geopolitical crises— impact some sectors more than others. Diversification provides a buffer

Government revenues from multiple sources (taxes, exports, services) are more stable than those from a single volatile sector.

When an economy grows in multiple sectors, it attracts foreign and domestic investment, leading to better infrastructure, education, and healthcare.

In short, economic diversification is crucial for stability, resilience, growth, and long-term prosperity. Countries like the UAE and Saudi Arabia are actively pursuing diversification to reduce dependence on oil and develop sectors like tourism, finance, and renewable energy.

If we pay attention, we will see that in recent years, the government of Azerbaijan has taken important steps in the direction of diversifying the economy. In 2023, the share of non-oil sector in GDP increased to 63% [7]. This growth is an indication that the economy's dependence on the energy sector has decreased and non-oil sectors are developing.

In 2023, the real GDP growth of Azerbaijan was 1.1%. As a result of the comparison, it is clear that this is significantly lower than the growth rate of 5-6% in previous years [8]. This decrease can be attributed to both the decrease in oil production and the failure to provide the expected growth in the non-oil sector.

The inflation rate in 2023 was 8.79%, which is lower than the 13.85% indicator of 2022 [9]. In 2024, inflation further decreased to 2.21% [10]. This indicator indicates that the economy is stabilizing and prices are under control.

In 2023, the unemployment rate was 5.64% [9]. This indicator remains stable compared to previous years. The low unemployment rate indicates that the labor market is healthy and that new jobs are being created in the non-oil sector of the economy.

At the end of 2023, foreign currency reserves of Azerbaijan amounted to 68.3 billion US dollars, which is equal to 97% of GDP [11]. This growth is important for fulfilling the country's external debt obligations and ensuring economic stability.

In 2023, Azerbaijan's public debt decreased to 27% of GDP, which is significantly lower than the 42% indicator of 2021 [12]. This decrease indicates that the financial situation of the state has improved and the economy is more stable.

Positive indicators obtained as a result of economic diversification reveal the effectiveness of policies aimed at ensuring the macroeconomic stability of Azerbaijan. However, for the sustainable development of the non-oil sector, the implementation of infrastructure projects and the attraction of foreign investments are important.

Table 1.

Azerbaijan 2020–2024 years (*diversification & macroeconomic stability indicators*)

Year	Inflation (%)	Non-oil GDP(azn mn)	Headline GDP (AZN mn)	Current Account Balance(USD bn)
2020	2.8 %	n/a	72,432.2	-0.32 (deficit)
2021	6.7%	n/a	92,857.7	+8.20 (surplus)
2022	13.9%	n/a	133,825.8	+23.48 (surplus)
2023	8.8%	69,482.8	n/a	+8.33 (surplus)
2024	2.2%	75,335.8	≈126,300	+4.67 (surplus)

Source: State Statistical Committee of Azerbaijan, World Bank.

The period 2020–2024 reflects both external shocks and domestic policy efforts shaping Azerbaijan's economy. The table highlights key trends in **inflation, GDP composition, and current account balances** that demonstrate gradual diversification alongside maintained macroeconomic stability.

In 2020, Azerbaijan's GDP declined to 72.4 billion AZN, heavily affected by the COVID-19 pandemic and the global oil price downturn. Non-oil GDP was approximately 46.8 billion AZN, representing 64.6% of the total economy. For the first time in many years, Azerbaijan recorded a current account deficit (-0.32 billion USD). Inflation remained moderate at 2.8%, reflecting

suppressed demand. This year underlined the vulnerability of Azerbaijan’s external position to hydrocarbon price volatility while demonstrating some resilience from the non-oil sectors, particularly agriculture.

The economy rebounded strongly in 2021, with GDP increasing to 92.9 billion AZN. Non-oil GDP rose to about 58.1 billion AZN, although the non-oil share declined slightly to 62.6%, showing that the recovery was primarily oil-driven. Inflation accelerated to 6.7% as domestic demand returned and global food and energy prices rose. The current account shifted back to a large surplus (+8.2 billion USD), supported by higher crude oil prices. While non-oil industries grew, the external position remained oil-dependent.

In 2022, GDP surged to a record 133.8 billion AZN, with non-oil GDP at 83.1 billion AZN. Despite this growth, the non-oil share (62.1%) stagnated, reflecting the dominance of hydrocarbons in driving growth. The current account surplus peaked at 23.5 billion USD, showing strong external buffers. However, inflation spiked to 13.9%, the highest level of the period, driven by global food and energy price shocks after the Russia–Ukraine conflict. This exposed the structural limits of diversification in cushioning external shocks.

By 2023, the economy normalized, with GDP at 111.6 billion AZN and non-oil GDP at 69.5 billion AZN, accounting for 62.3% of total GDP. The sharp reduction from 2022 reflected lower oil revenues as global prices eased. Inflation declined to 8.8%, showing monetary stabilization. The current account surplus narrowed to 8.3 billion USD, again underlining oil’s role in shaping external balances. Importantly, the expansion of non-oil industries — particularly manufacturing, ICT, and services — sustained growth despite lower hydrocarbon earnings.

In 2024, GDP stood at approximately 126.3 billion AZN, of which 75.3 billion AZN came from the non-oil economy. The non-oil share increased to nearly 69%, marking the highest diversification level in the observed period. Inflation dropped sharply to 2.2%, within the Central Bank’s target corridor (4% ±2), demonstrating restored price stability. The current account surplus narrowed further to 4.7 billion USD, yet remained positive, supported by both hydrocarbons and modest growth in non-oil exports. This year illustrated the progress of Azerbaijan’s diversification strategy, showing that non-oil sectors increasingly support macroeconomic stability.

Measuring Exports and Sectoral Concentration of the Economy with the Herfindahl-Hirschman Index (HHI)

Measuring exports and sectoral concentration of the economy using the Herfindahl-Hirschman Index (HHI) is important for this article, because it provides quantitative insight into economic diversification and stability.

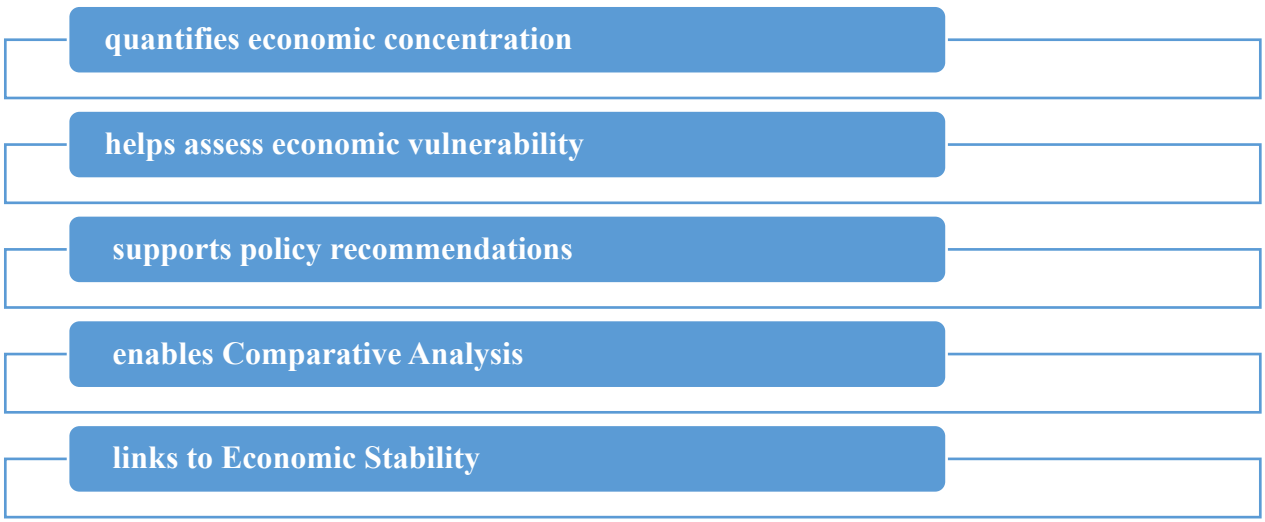


Figure 2. The importance of Herfindahl-Hirschman Index (HHI)

Source: complied by author

The Herfindahl-Hirschman Index (HHI) is an indicator that consists of the sum of the squares of the market shares of firms. HHI measures the concentration of the market and embodies the level of diversification of the economy. The value of HHI varies between 0 and 1; a high HHI value indicates high market concentration and a low HHI value indicates market diversification. The following formula is used to calculate the HHI:

$$HHI=\sum N(si)2$$

Here, si represents the share (in percentage) belonging to each sector.

The application of HHI in the economy of Azerbaijan is important to assess the level of economic diversification and sectoral concentration. For example, in 2021, the HHI value of Azerbaijan's economy was 0.23, and the HHI value of exports was 0.79 [13]. These indicators show that the diversification of the economy and exports is at a low level.

Azerbaijan's export structure remains dominated by hydrocarbons, though diversification efforts are visible in agriculture, chemicals, food processing, and ICT services. According to World Bank and WITS trade data, the export HHI for Azerbaijan was approximately 0.30 in 2022, reflecting a moderately concentrated structure.

2020–2021: Hydrocarbon exports accounted for over 85% of total exports, resulting in an HHI above 0.35, indicating high vulnerability to oil price shocks. The COVID-19 pandemic and oil price collapse led to export volatility, further demonstrating the risks of concentration.

2022: High oil and gas prices drove a surge in the current account surplus (USD 23.5 bn). This reinforced the weight of hydrocarbons in the export basket, keeping HHI around 0.30–0.33. Non-oil exports (agriculture, food processing) grew but remained small relative to energy exports.

2023–2024: As non-oil GDP expanded to 75.3 bn AZN (2024), non-oil exports also rose modestly (USD 3.36 bn in 2024). However, this was insufficient to lower HHI significantly, which remained near 0.30. In relative terms, export diversification lagged behind GDP diversification, underlining structural imbalances.

The persistently high HHI indicates that external balances and fiscal revenues remain highly sensitive to oil market fluctuations. While the domestic economy shows increasing non-oil contributions (non-oil GDP share grew from ~65% in 2020 to ~69% in 2024), the export sector is far less diversified. This divergence explains why macroeconomic stability (inflation, fiscal balance, current account) still depends on hydrocarbon cycles.

A reduction of the HHI toward 0.20–0.25 would indicate meaningful diversification, where non-oil industries such as ICT, tourism, agriculture, and manufacturing play a stronger role in exports. For Azerbaijan, achieving this requires export-oriented policies, deeper integration into global value chains, and support for SMEs in tradable sectors.

The relationship between HHI and economic diversification and macroeconomic stability includes the impact of the structure and diversification of the economy on economic stability. A high HHI value indicates high concentration and low diversification of the economy, which is considered dangerous for economic stability. Conversely, a low HHI value indicates that the economy is highly diversified and macroeconomic stability is ensured.

Conclusion

- High Herfindahl-Hirschman Index (HHI) values are noticeable in Azerbaijan's economy and exports. In 2021, the HHI value of the economy was 0.23, and the HHI value of exports was 0.79. These indicators were an indication of the low level of diversification of the economy and exports.
- High HHI values indicate high concentration and low diversification of the economy, which can be a serious alarm signal for economic stability. In contrast, a low HHI value reflects that the economy is highly diversified and macroeconomic stability is ensured.
- Cooperation between government and business is of great importance to expand the diversification of the economy. This cooperation stimulates the development of the non-oil sector and stimulates the diversification of the economy.

- Export diversification has a positive impact on the stability of the economy and increases it. For this purpose, it is recommended to establish Eximbanks to increase the export of non-oil products.
- In order to ensure the diversification of the economy, measures should be taken in the direction of structural reforms, development of the non-oil sector and export diversification. These measures will dynamize the provision of economic stability and the achievement of sustainable development.

This research examined the economic diversification and macroeconomic stability of Azerbaijan during 2020–2024. The analysis shows that the non-oil sector has steadily grown, contributing an increasing share of GDP, while inflation and external balances remained relatively stable. However, the export structure continues to be concentrated in hydrocarbons, as reflected by a moderately high Herfindahl-Hirschman Index (HHI), indicating that diversification in production has not yet fully translated into export diversification. Overall, Azerbaijan has made significant progress in broadening its economic base, yet further development of non-oil sectors and export-oriented industries remains essential for sustainable macroeconomic stability.

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Ayşən Rövşən qızı Vəlibəyli
OdlarYurdu Universitetinin “İqtisadiyyat və İqtisadi Münasibətlər”
kafedrasının müəllimi
Email-aishanvalibayli.edu@gmail.com

Azərbaycanın iqtisadi diversifikasiyası və makroiqtisadi sabitlik

Xülasə

Tədqiqatın məqsədi: Azərbaycanın neft sektorundan asılılığını azaltmaq üçün iqtisadi diversifikasiyanın makroiqtisadi sabitliyə təsirini modelləşdirməkdir**.**

İşin metodologiyası: HHI istifadə edilərək ixrac və iqtisadiyyatın sektor konsentrasiyası ölçülüb və korrelyasiya və reqressiya modelləri ilə HHI göstəricisi və GDP sabitliyi arasındakı əlaqə təhlil edilib.

Tədqiqatın tətbiqi əhəmiyyəti Azərbaycanın iqtisadi diversifikasiyası, qeyri-neft sektorunun sürətli inkişafı və ixrac portfelinin genişlənməsi vasitəsilə makroiqtisadi sabitliyi gücləndirməyə təkan vermək, dolayısıyla iqtisadi dalğalanmalara qarşı müqaviməti artırmaqdan ibarətdir.

Tədqiqatın nəticələri: Azərbaycanın iqtisadi diversifikasiyası nəticəsində qeyri-neft sektorunun inkişafı sabit makroiqtisadi artımı dəstəkləyir və ölkənin gəlir mənbələrini genişləndirərək daha davamlı, çoxşaxəli bir iqtisadi struktur formalaşdırır.

Tədqiqatın orijinallığı və elmi yeniliyi: HHI indikatorlarının real illik və sektoral tədqiqatlara tətbiqi bu araşdırmanı unikallaşdırır, eyni zamanda, real 2025 göstəriciləri ilə akademik analizlərin birləşdirilməsi yeni inteqrativ yanaşmaya zəmin yaradır.

Açar sözlər: iqtisadi diversifikasiya, qeyri-neft sektoru, makroiqtisadi artım, ölkənin gəlir mənbələri, iqtisadi struktur, iqtisadi dalğalanmalar.

Айшен Ровшен Велибейли
Университет Одлар Юрду, преподаватель кафедры
«Экономика и экономические отношения»
Емейл- aishanvalibayli.edu@gmail.com

Экономическая диверсификация и макроэкономическая стабильность Азербайджана

Резюме

Цель исследования – смоделировать влияние экономической диверсификации на макроэкономическую стабильность с целью снижения зависимости Азербайджана от нефтяного сектора.

Методология исследования измерялась с использованием HHI, экспорта и отраслевой концентрации экономики, а корреляционные и регрессионные модели использовались для анализа взаимосвязи между показателем HHI и стабильностью ВВП.

Практическая значимость исследования заключается в содействии укреплению макроэкономической стабильности посредством диверсификации экономики Азербайджана, быстрого развития ненефтяного сектора и расширения экспортного портфеля, тем самым повышая устойчивость к экономическим колебаниям.

Результаты исследования в результате диверсификации экономики Азербайджана, развития ненефтяного сектора поддерживают стабильный макроэкономический рост и формируют более устойчивую, диверсифицированную экономическую структуру за счет расширения источников доходов страны.

Оригинальность и научная новизна исследования, применение показателей HHI к реальным годовым и отраслевым исследованиям делают данное исследование уникальным, в то же время сочетание реальных показателей 2025 года с академическим анализом создает основу для создания нового интегративного подхода.

Ключевые слова: диверсификация экономики, ненефтяной сектор, макроэкономический рост, источники доходов страны, структура экономики, экономические колебания.