Analyzing GDP Growth Slowdown in 2023 in Azerbaijan: Key Factors and Policy Implications

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In 2023 Azerbaijan saw its real GDP growth slow down to 1.1% from two previous years' growth on the order of 5-6%. This could not be driven by external or global factors as regional post-Soviet countries like Georgia, Kazakhstan and Uzbekistan maintained high growth rates of more than 5%. We examine in detail the drivers behind the surprising GDP slowdown and derive insights on what specific factors were at play, and how the government initiatives and policy affected the outcome. We approached the problem by deaveraging growth into that of all GDP components, normalizing with appropriate deflation coefficients, and analyzing the impact of each component – exports and imports, government spending, and investments. We further analyzed drivers that affected each of the components, specifically the effect of the Ukraine-Russia war, investment decline in Production Sharing Agreements by foreign oil and gas companies and their effect on long-term production sustainability, as well as unusual import export activities. Our findings highlight the critical influence of production drop, oil prices, import patterns, "Russian factor", and investment shifts, particularly in the construction sector, on Azerbaijan's economic stability. Based on the analysis, we propose targeted policy recommendations to enhance economic resilience and reduce dependency on oil-driven growth.

Keywords: GDP, Azerbaijan, drivers of GDP growth

Introduction

The concept of measuring economic output gained prominence through the work of John Maynard Keynes, whose theories on aggregate demand and government intervention laid the foundation for modern macroeconomics [1]. Building on these ideas, economist Simon Kuznets developed Gross Domestic Product (GDP) as a systematic way to quantify a nation's economic activity [2]. GDP represents the total monetary value of all final goods and services produced within a country's borders over a specific period. As a comprehensive measure of economic performance, it serves as a key indicator of a nation's economic health and growth [3].

It is a single most widely used measure of economic activity of a nation, and as such closely followed by economists, politicians, investors, and some high school students. Relative growth of GDP year over year serves as a key indicator of a country's economic development and, to some extent, reflects the effectiveness of implemented economic policies. Theoretical models of economic growth, such as Solow's neoclassical growth model, emphasize the role of capital accumulation, labor force expansion, and technological progress in driving long-term GDP growth [4] Endogenous growth models, developed by economists like Paul Romer and Robert Lucas, further highlight the importance of innovation, human capital, and knowledge spillovers in sustaining economic expansion [5,6]. A variety of factors influence GDP growth rates, and understanding the exact mechanisms and relative contributions of these factors allows governments to implement timely and effective policies that foster economic stability and long-term prosperity

Azerbaijan presents a compelling case for GDP analysis due to its unique economic structure, heavily influenced by oil and gas exports. As a resource-rich nation, its growth trajectory has been shaped by fluctuations in global energy prices, economic diversification efforts, and geopolitical developments. Examining its GDP trends provides valuable insights into how external shocks and domestic policies interact to impact economic performance. Moreover, understanding the factors behind recent slowdowns can help policymakers design strategies to ensure sustainable and resilient growth in developing and growth market countries.

In this paper, we will be examining GDP of the Republic of Azerbaijan to identify factors contributing to the growth slowdown in 2023. The table below shows the data for GDP growth of Azerbaijan throughout the years from 2015 to 2023 [7]. The data is demonstrating a steady growth of the country's economy. Two years that stand out as the outliers are 2016, justified by the decline in global oil prices and the currency devaluation, and 2020, due to the supply shocks because of the global pandemic. The two years following the COVID-19 pandemic were exceptionally successful for Azerbaijan, demonstrating 5.6% and 4.7% growth in the total output of the economy, signaling a

Year	2023	2022	2021	2020	2019	2018	2017	2016	2015
Real GDP Growth, % YoY	1.1%	4.7%	5.6%	-4.2%	2.5%	1.8%	0.2%	-3.1%	1.1%

Table 1 Real GDP growth of Republic of Azerbaijan over the years

good level of productivity and stable macroeconomic environment. The economic growth of 1.1% in 2023 was very abrupt and surprising, given all the ongoing development in the country.

We hypothesize that the recent slowdown in Azerbaijan's GDP growth in 2023 is primarily due to:

1. External economic factors: Crude oil and gas prices, supply chain disruptions, sanctions due to Ukraine-Russia war

2. Internal structural challenges: oil production drop, imports increase due to large infrastructure investments.

By analyzing components of GDP, we can identify specific contributors to this decline and suggest targeted government policies to support renewed economic growth.

Background

Azerbaijan's economic trajectory has been shaped by its natural resource wealth, especially its oil and gas reserves. As one of the key drivers of the nation's economy, the oil industry has laid the foundation for substantial growth and development. However, reliance on oil has also introduced vulnerabilities, particularly with respect to global oil price fluctuations and long-term sustainability.

Since gaining independence in 1991, Azerbaijan has experienced a significant economic transformation, largely driven by its hydrocarbon resources. The oil sector has enabled rapid growth and infrastructure development, particularly following major agreements with international oil companies. In recent years, the government has aimed to diversify the economy and reduce dependency on oil revenues by investing in other sectors, such as technology, agriculture, and tourism. This diversification strategy has helped strengthen the country's economic foundation, but oil remains a dominant influence on Azerbaijan's economic landscape.

Several scholars have explored the dual nature of oil wealth in the national context. Dr. Khalilov[8] (2018) noted there is a long-term negative impact of the oil boom on the dynamics of economic growth in Azerbaijan. He points out that, although the oil boom allowed the government to maintain macroeconomic stability and a steady positive return on investment for the economy, in the long run, the economy becomes very vulnerable to the fluctuations of global oil prices. He argues that the possibility of achieving sustainable development, and a resilient economy is therefore limited. Similarly, Dr. Sarkhanov[9] (2022) examines the impact of oil prices on the Azerbaijani economy, emphasizing a very strong correlation between oil prices and the GDP of the Azerbaijani Republic. In addition, he argues that oil prices not only influence GDP, but also the levels of oil production in the country. This significantly lowers the growth of the economy due to the harsh reality of oil dependence. He notes that even though Azerbaijan does not have a significantly large production capacity compared to the OPEC countries, it is still an active player in stabilizing the global oil prices. Dr. Humbatova[10] (2023) assesses the extent of the utilization of the hydrocarbon resources of Azerbaijan and the impact of the "Deal of the Century." The deal was signed between Azerbaijan and the world's leading foreign oil companies that have the technological and investment-innovation capabilities of extracting natural resources. She also examines Azerbaijan's strategy of the effective use of oil money by the State Oil Fund and its role in ensuring macroeconomic stability. Specifically, Dr. Humbatova analyzes the impact of the transfers of the money from the State Oil Fund to the state budget on the growth of the GDP in the country. The author concludes that the implemented oil strategy will have a positive long-term impact on the dynamics of economic growth in the country.

To fully understand Azerbaijan's economic path, it is essential to place these findings within a broader comparative framework. Other resource-rich countries offer valuable lessons in managing resource dependency. For instance, Norway has demonstrated a successful model of sovereign wealth management and long-term economic planning, using oil revenues to support diversification and social welfare without overheating the economy[11] (see Mehlum et al., 2006). In contrast, countries such as Nigeria and Venezuela have struggled with the so-called "resource curse," where oil wealth fuels corruption, macroeconomic imbalances, and underinvestment in non-oil sectors[12] (see Sala-i-Martin Subramanian, 2003). Kazakhstan, another post-Soviet resource-based economy, presents a mixed picture: while it has made strides in infrastructure and investment, it continues to struggle with diversification and institutional reforms[13] (see Pomfret, 2012).

International institutions such as the IMF and World Bank have also emphasized the importance of structural reforms, inclusive growth, and institutional capacity in resource-dependent economies. The IMF World Economic Outlook[14] recently published their projections for Azerbaijan growth in 2024 and 2025, projecting growth for GDP for the country to be 2.8% and 2.3% respectively. The projection also noted that inflation was expected to be at 3.5% and 5.0% respectively, well below the inflation rate of 8.2% recorded for 2023, with projected current

account surpluses of 8.5 and 8.1%. However, these figures underscore the economy's continued reliance on external factors, particularly energy markets.

Overall, while Azerbaijan has taken initial steps to diversify its economy—investing in sectors like agriculture, tourism, and information technology—the transition remains incomplete. Comparative evidence suggests that successful diversification requires not only financial investment but also political will, robust institutions, and long-term planning—areas where Azerbaijan still faces significant hurdles.

Methodology Review

The paper is going to include both a narrative summary followed by quantitative analysis of the Azerbaijani economy, its components and all the factors that affect its future potential for growth. From the quantitative side, the analysis is going to include the statistical and mathematical proof of the relationship between certain variables, also known as correlation. Moreover, the confidence levels will be calculated in order to make sure that the correlation does not occur by chance. From the qualitative side, comprising the majority of the paper, the analysis will include logical reasoning and interpretation of the data and the given information about the economy. Moreover, it includes discussions regarding the future potential of the economy and a qualitative impact assessment with the purpose of identifying the best way to build a resilient economy in the future. The data about the economy and its components will be taken from the official website of the State Statistical Committee, and the data about the trading partners and the composition of exports is going to be taken from the OEC World.

Before we proceed further, we provide a quick summary of different methodologies for measuring GDP. There are three ways for a country to measure its GDP[3]:

- **Output approach:** the output approach measures the value of goods and services produced, added together to obtain the final value of output generated.
- **Income approach:** the income approach is the summation of all the incomes earned by the factors of production (land, labor, capital, entrepreneurship) in an economy.
- **Expenditure approach:** The expenditure approach measures the total amount of spending in an economy from the purchase of goods and services. It is calculated by adding up the spending in each of the four components of the economy: **GDP = C+I+G+(X-M)** where
  - **C =** Consumption (Spending by households).
  - **I =** Investment (Capital Spending by businesses and firms).
  - **G =** Government Spending (Spending by the government).
  - **(X-M) =** Exports - Imports (Net Exports).

The expenditure approach is used the most by economists to measure GDP. GDP is a very important indicator of the size of the economy and the amount of its production. It is used to assess the leadership and the effectiveness of the implemented policies in the economy. These policies can be broken down into different industries to analyze the performance of a nation more closely. Additionally, it allows comparisons to be made across different years, with different countries globally and in the region.

One more note to make is about the real versus nominal growth. Given that GDP is a measure of the total volume of output of an economy in monetary terms it is affected by the prices of goods and services produced. When talking about growth of an economy over time, the factor that is most relevant and useful for economics is how much growth was in output disregarding the price movements. For this the term "real GDP growth" is commonly used, which is basically growth normalized to any price movements over the same period, or as sometimes called "GDP growth at constant prices". Such normalizations take place using so-called deflators, which are basically indicators of movement of prices, and these might vary for different components of GDP. Throughout the paper whenever we talk about GDP growth rate, we mean the real GDP growth.

Finally, AZN is used to denote the local currency, Azerbaijani manat, which is pegged to USD at an exchange rate of 1.7 AZN to 1 USD.

Results

Breaking GDP into its components of expenditure approach reveals the biggest decline in GDP to be in the net exports, offset by a significant increase in investments (see Table: 02).

Please note that to correctly reflect the growth rates we used individual deflators for each component to arrive at 2023 GDP at 2022 prices as mentioned in the methodology section above.

As seen from the table above, three of the four components of GDP (consumption, investment, government spending) increased over the period in question, with investment showing the highest growth of 4.6 bln AZN or +28.7%. Net exports, on the contrary, significantly decreased (-13.4%). In particular, the value of exports declined by 3.0 bln AZN or 3.8%, while the value of imports increased by 2.9 bln AZN or 8.1%.

As seen, net exports decline played a crucial role in the slowdown of overall GDP growth in 2023, which is surprisingly driven as much by an increase in imports as by a drop-in export. Please note that contrary to the real drop, the nominal drop in exports is much higher – driven by the significant drop in the oil prices from 2022 to 2023.

Table 2 GDP Components (million AZN) in 2022 and 2023 with Real Growth

GDP Component	GDP Amount (million AZN)			Real Growth	
	2022 (2022 prices)	2023 (2023 prices)	2023 (2022 prices)	Absolute	%
Consumption (C)	58094.2	65452.9	60158.9	2064.7	+3.6%
Investment (I)	16081.7	22515.3	20694.2	4612.5	+28.7%
Government spending (G)	15597.3	17236.7	16338.1	740.8	+4.7%
Net Exports (X-M)	44199.5	17800.6	38256.1	-5943.4	-13.4%
Exports (X)	80366.0	60328.5	77344.2	-3021.8	-3.8%
Imports (M)	36166.5	42527.9	39088.1	2921.6	+8.1%
Total GDP	133593.7	122574.1	135447.3	1474.6	+1.1%

Summary of the key drivers for the increase or decline of these parameters affecting real GDP growth are as follows

- **Exports - modest decrease:** Oil and Gas is by far the largest export of Azerbaijan (>90%) and the volume decrease of Oil production in 2023 (driven by underinvestment of foreign oil companies) lead to decline of export in real values (-3,8%). Also, worthy to note that significant price decline in crude prices in 2023 results in much bigger decline of export in nominal terms (-25%). Re export of imported goods (see below) reduced the effect of the decline in oil production.

- **Imports - significant increase:** Analysis shows that since 2022 Azerbaijan has been steadily increasing imports of two goods – Oil & Gas (+54% in 2023) and motor vehicles (+51% in 2023. Both these flows are related to Russia. Oil is imported from Russia at favorable prices to be used at local refineries (and potentially re-exported), while cars are imported from the west and exported to Russia.

- **Investments - significant increase:** This we believe is related to the ongoing massive construction effort in the Karabakh region of Azerbaijan[15]. Construction sector contribution to GDP increased 13% in real terms and 18% in nominal terms. Another factor supporting this conclusion is that the three largest import increase items after the top two mentioned above are all related to the construction industry.

In the following section we analyze in detail each of these three components to derive the key drivers of their increase or decline.

Exports

It is very crucial to examine the trading partners of Azerbaijan, as well as the products being traded. ¿90% of the total export portfolio is concentrated in the oil and gas sector, which has been the main driver of economic growth of Azerbaijan since its independence and even before, making the economy vulnerable to the fluctuations of the oil prices (see Table: 03).

Table 3 Share of top 10 exported goods from Azerbaijan

Exported Goods	Share (%)
1. Oil & Gas	91.5%
2. Fruits	1.5%
3. Plastics	1.4%
4. Vegetables	0.6%
5. Aluminum	0.6%
6. Vehicles	0.5%
7. Precious metals	0.5%
8. Cotton	0.5%
9. Org. chemicals	0.3%
10. Machinery	0.3%
Other	2.4%

When the value of exports declines in a country, it is one of two possible reasons. First, the amount of products that have previously been exported have declined. Second, there is a decrease in the value of the products that are exported. In the case of Azerbaijan in 2023, both of these things happened to the oil and gas sector. In 2022, the global average Brent Crude oil price was $100.93. In 2023, the average price dropped to $82.49, approximately 18% decline in the global oil price (Statista).

The dynamics of economic growth of Azerbaijan is closely linked with the dynamics of global oil prices. Azerbaijani crude oil is “Azeri Light” due to the fact that it is light and sweet, requires less processing and is capable of producing a greater proportion of gasoline and diesel than other types of crude oil.

As it can be seen, the graph of Azerbaijan’s GDP and the graph of Azeri Light crude oil prices follow a very similar trend, indicating that there is a direct relationship between these two variables. Moreover, high r correlation coefficient, which can be derived by the formula above, statistically proves that these two variables have a strong connection between each other, that the country’s GDP is extremely dependent on its oil prices in the global markets. Here we used a simple linear regression to

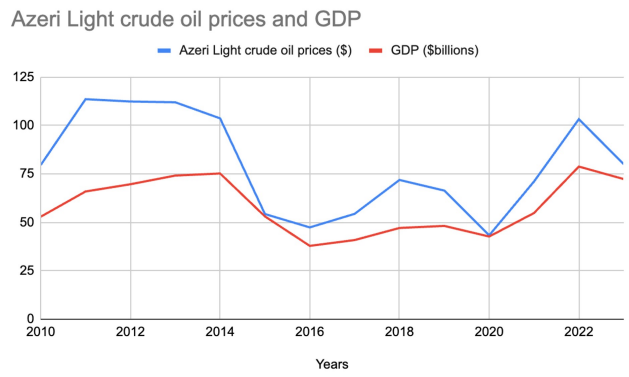


Fig. 1 Azeri Light crude prices and GDP of Azerbaijan 2010-2023

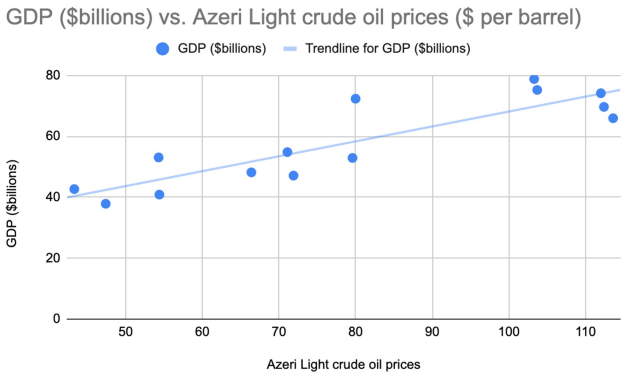


Fig. 2 Correlation between GDP of Azerbaijan and crude prices

illustrate the strong dependence of GDP on crude prices – this is expected as proceeds from oil exports constitute a large share of government revenue, which in turn manifests itself through government spending (G) and, hence, affecting the GDP.

$$r = \frac{n\sum xy - (\sum x)(\sum y)}{\sqrt{\left[n\sum x^2 - (\sum x)^2\right]\left[n\sum y^2 - (\sum y)^2\right]}} = 0.8775.$$

Next, we look at statistical significance of Oil Price as a predictor of GDP of Azerbaijan.

t - statistic - measures how strong the relationship is compared to what we would expect if there was no real connection between the variables. It takes into account the size of the correlation and the amount of data points we have. By comparing it to the critical t value (t-critical), which shows the minimum value that determines that the relationship is statistically significant, we can identify whether the Null Hypothesis is accepted or rejected. Null Hypothesis is that the correlation is statistically insignificant.

$$t = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}} = \frac{0.88\sqrt{14-2}}{\sqrt{1-0.88^2}} = 6.42.$$

The degree of freedom for this particular dataset is 14-2 = 12 - shows the maximum number of independent values that can vary in a particular dataset.

For a two-tailed test of a significance level of 0.05 and the degree of freedom of 12, the critical t value is 2.18. As 6.42 is higher than 2.18, the Null Hypothesis is rejected. Moreover, according to the t distribution, the p value is 0.0000331, which is much smaller than 0.05, indicating that the correlation between the two variables is statistically significant.

Aside from a decline in oil prices, the oil production in Azerbaijan decreased significantly, resulting in less oil exported [16]. Although Azerbaijan has no control over the global oil price, they have some certain control over domestic oil production.

Fig. 3 Oil Production and Export of Azerbaijan in 2022 and 2023

Azerbaijan is not the main producer and distributor of its oil and gas resources. Instead, this work is done by the foreign oil companies that have the technological capabilities to do so. Generally, a country with resources and the companies with technological capabilities to extract those resources sign a Production Sharing Agreement (PSA) on how the risks and the profit are going to be shared between the parties of the agreement [17,18]. When signing the PSA, the government awards the foreign oil company (FOC) the rights to explore in a specific area and allows it to produce discovered resources. So, when the FOC makes its initial capital investments with the purpose of discovering the resources, it gets 100% of all oil sales, until the initial investment is fully recovered, which is known as the concept of cost oil in the PSA. However, after the investments are recovered, the agreement reaches a stage of profit oil, which is shared between the FOC and the host government, according to the specific terms of profit petroleum sharing in the PSA (International Institute for Environment and Development). The PSA [19] in Azerbaijan was signed for the production and development of hydrocarbon resources in the Azeri-Chirag-Gunashli field (ACG), which accounts for approximately 90% of Azerbaijan's oil production.

Sharing the profit is determined by the R factor, which is the ratio of cumulative revenues to cumulative costs. As the R-factor increases, the government starts receiving a bigger production share, and the investors are left with a minority share.

Profit Petroleum Sharing Table

R Factor Band	SOCAR Share (%)	Contractor Share (%)
$0.00 < R < 1.50$	55.0	45.0
$1.50 \leq R < 2.00$	60.0	40.0
$2.00 \leq R < 3.00$	70.0	30.0
$3.00 \leq R < 4.00$	80.0	20.0
$R \geq 4.00$	90.0	10.0

Fig. 4 Excerpt from PSA between BP and Azerbaijan on Profit Petroleum Sharing

$$R_{\text{factor}} = \frac{\text{Capital Costs Recovered} + \text{Contractors Profit} - \text{Income T}}{\text{Cumulative Capital Costs}}$$

Sharing of the profit can also be determined by the Internal Rate of Return (IRR), which indicates the profitability of the project. It is calculated using the Net Present Value (NPV) that is equal to 0, in order to identify the rate of return on investments. Similar to the R-factor, as the IRR increases, the government's share in the production field increases.

$$\text{NPV} = C_0 + \sum_{t=1}^{N} \frac{C_t}{(1+r)^t} = 0$$

where:

- C_0 is the Initial Investment,
- C_t represents the Cash Flow at time t,
- t denotes the time period,
- N is the Total Duration of the Project,
- r is the Rate of Return on the Investment.

As the profitability increases, the government starts receiving a bigger proportion of the total profit and the FOC starts receiving less. In 2008, when the initial capital investments of the main FOC were recovered, the government of Azerbaijan had 55% share of the production field, 45% remaining share for FOC (International Institute for Environment and Development). In 2010, the peak point of oil production throughout the entire history of the oil industry in Azerbaijan was reached, being an average of approximately 800,000 barrels per day (BP Azerbaijan) in the ACG oil field. However, after the year 2010, the oil production in the country has been falling at a high pace (BP Azerbaijan), causing the growth of the economy to slow down significantly.

Given that BP, as the main FOC in the country and the operator in the field, has recovered all capital expenditures in the year 2008 and is now disincentivized to invest more and maintain the high levels of production (as the contract reaches the stage of profit oil), what is the probability that the very rapid decline in oil production after the year 2010 did not occur by an accident and is actually somehow determined by the capital investments made into the field. It is important to note that the phase 3 (Deepwater Gunashli field - last phase) of the ACG project was launched in the year 2008, after which the FOC became disincentivized to continue investing more.

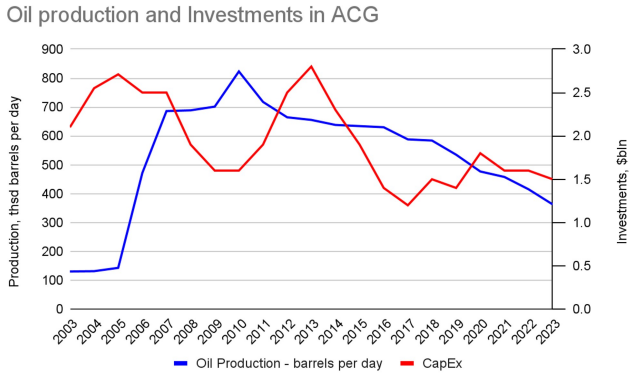


Fig. 5 Oil production and Investments in ACG by years. Source: BP Azerbaijan annual results publishing

Given that oil production is falling at a high pace, there are two possible reasons for that. First, offshore fields in the Caspian Sea run out of oil due to certain geological reasons. Second, there is a lack of sufficient capital investments needed with the purpose of maintaining high levels of production. It is also possible that both of these options apply, that the fields are running out of oil and there are not enough investments to maximize the recovery. It is obviously impossible to be able to confidently state whether any of these options are fully valid in explaining the significant declines in the production of oil. Nevertheless, there are certain assumptions that can be made according to the data and research. My initial hypothesis leans towards the third option, where the first two options apply.

It is extremely difficult to figure out if the offshore oil fields are actually running out of oil reserves due to the fact that it requires certain geological investigations to be conducted to actually get an accurate answer and justification. Seismic surveying is a key tool in geological exploration, used to determine the accurate drilling location. The sound waves are sent to be reflected off by rock layers, so that the characteristics of the reflected waves can be measured and the probability of oil fields located in a particular location can be identified.

However, when it comes to the sufficient capital investments, there is publicly accessible data on the internet regarding the investments made by FOCs into the production and the levels of

production themselves. When we look at investments, we mainly look at Capital Expenditures (CapEx) as they are the company's major long-term expenses. One thing that is important to point out is that CapEx can be divided into two categories:

- Investments made for new construction projects.
- Investments made into existing production platforms to maintain the levels of production - maintenance costs.

Investments made into existing oil production platforms are extremely important for the reason of the oil and gas industry being very heavy and requiring constant maintenance to yield constant positive results. One challenge that exists within this is CapEx not being divided into these two categories, making it a little bit more difficult for us to identify whether there was constant maintenance or not. However, we can logically try to understand it by following the sequences of events related to the development of the ACG field in Azerbaijan, in particular, the construction of the new oil production platforms that are going to be reflected in the amount of CapEx in certain years.

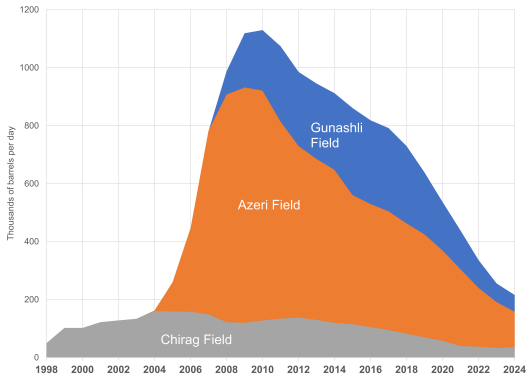


Fig. 6 Azerbaijan Oil Production profiles. Source: Wikipedia

ACG field development

- Chirag - Early Oil Project (EOP) - started production in 1997
- Azeri Project Phase 1 - Central Azeri - started production in early 2005
- Azeri Project Phase 2 - West Azeri - started production in late 2005
- Azeri Project Phase 3 - East Azeri - started production in late 2006
- Deepwater Gunashli - started production in the middle of 2008
- Chirag Oil Project - West Chirag - started production in early 2014

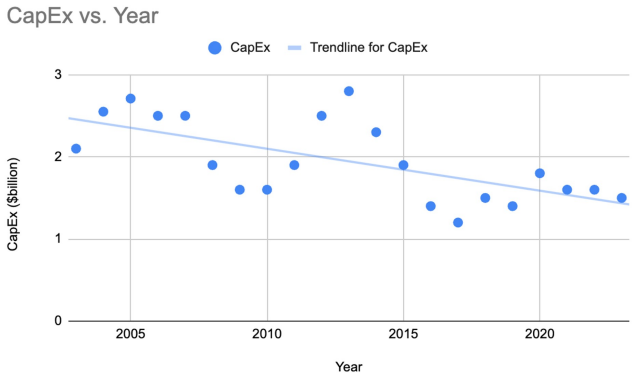


Fig. 7 Azerbaijan Capital Expenditures from 2000 through 2024

- Azeri-Central-East (ACE) - started production in 2024

There were 7 major projects in the ACG field, starting from 1997 with the Early Oil Project (EOP), and ending in 2024 with Azeri-Central-East (ACE) as a new stage of development of ACG due to the extension of the PSA till 2049. The sequence of the development stages of ACG is extremely important due to the fact that CapEx is reflected by all those development projects as there are massive investments needed into the construction of those projects. As seen on the graph above, there are a lot of fluctuations in the amount of money invested in a particular year ($billion), reflecting the launch of those large construction projects. In the years 2001 and 2002, the Azeri project (Phase 2 of the ACG development) was approved for its construction. As a result of this, CapEx has been significantly increasing until the years 2005 and 2006, where the construction of these projects ended and the production began. The same trend applies in the years 2008, 2014 and 2024. Important thing to note is that the increase in the investments in a particular year does not always affect the levels of production of that year right away. Therefore, it is hard to measure the correlation between the CapEx and the amount of oil produced for the reason of oil production not always being dependent on in-year CapEx. Despite the frequent fluctuations of the investments, the overall trend appears to be declining, which can be interpreted as an indication of lower investments made to grow or maintain the production. Moreover, as there are more production platforms operating in the field, there should be more maintenance CapEx to maintain the infrastructure. The CapEx figures in the graph refer to total capital expenditure including maintenance CapEx and growth CapEx. In general, maintenance capex is roughly some fixed percentage of installed infrastructure (i.e. cumulative capex) and is stable over the years[20]. Therefore, the fluctuations in growth CapEx in percentage terms are even more pronounced than in total CapEx seen on the graph.

As mentioned earlier, this can be explained through the lack of incentives for the FOCs to continue investing more into the production as they will receive a lower proportion of the to-

tal profit, compared to the host government. This can be seen in Figure 4, where contractor share dropped from 45% when production started to 10% today[19] (with R-Factor already surpassing the threshold of 4.0). On the other hand, it is expected for the oil production to fall as reserves deplete, but still investments are needed to slow down the rate of production decline.At the same time, given that oil exports is a significant source of revenue for Azerbaijan, the production is maximized in a year regardless of the global demand for oil, or changes in global energy markets[21,22]. The pace of production decline is hugely impacted by the efforts made to maximize the recovery from the field. We conclude that the energy sector underinvestment for the past decade is one of the core causes for the slowdown of the economy. Another thing that was significant in 2023, resulting in the economic growth of only 1.1%, is the drop in the price of oil in the global markets, which significantly devalued the Azerbaijani exports of crude petroleum. Further negotiations must be made between the Azerbaijani government and the FOCs on ensuring that necessary long-term investments are made for the next few decades until the expiration of the PSA in 2049.

Even though the Azeri-Chirag-Gunashli (ACG) oil field is the largest storage of oil reserves in Azerbaijan, there are some other oil fields that also have a big contribution to the country's total oil production and export. In fact, the oil production from the Non-ACG fields has been increasing and in 2023, the proportion of ACG oil production was about 58.9%, meaning that almost half of the oil in 2023 was produced from the other oil fields.

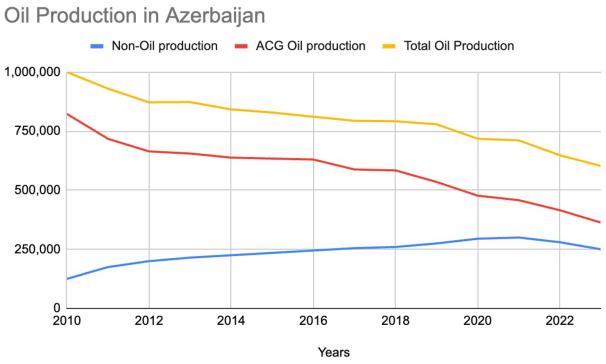


Fig. 8 Oil production in Azerbaijan over the years

As it can be seen from the graphs above, the oil production from the Non-ACG fields has been growing until the year 2021, where it reached its production peak of 300,000 barrels. In the following years, the production started to decrease, which shatters the hope for any further development and progress in oil production. Overall, it can be concluded that the oil industry in Azerbaijan has passed its boom period and has a very limited ability to yield any positive results in the future. The allocated investments into the production serve the purpose of maximizing the recovery from the oil fields and get the most out of what is left.

Imports

Apart from a decrease in the value of exports, the increase in imports has a significant contribution to the slowdown of the economy. Graph below shows imports of the top two categories in USD over 2019-2023. Vehicles import shows a growth of 51% since 2022 and 2.5x increase since 2020 values; Oil&Gas and their products import shows 54% increase since 2022 and 7x increase since 2020 values.

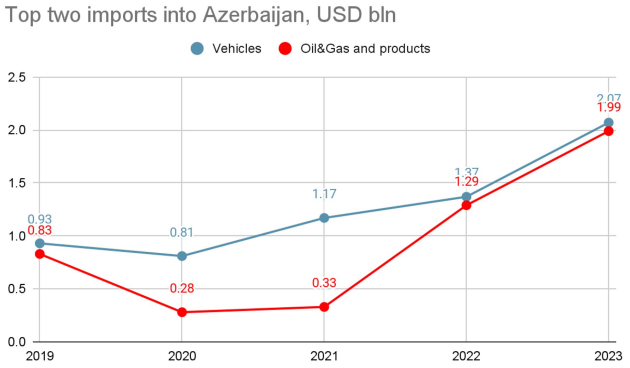


Fig. 9 Key Import categories into Azerbaijan over 2019-2023

It is clear these growth numbers do not reflect an "organic" growth, but rather driven by a specific event - supply chain disruptions and subsequent sanctions on Russia, caused by the geopolitical tensions of Russia-Ukraine war. Due to the imposed sanctions on Russia and the ethical considerations, almost all multinational companies in the automotive industry have decided to exit the Russian market. However, the cars can be delivered to Russia through other countries that are willing to buy them and supply them to Russia. Azerbaijan is apparently one of those countries that positioned themselves on the supply chain for these cars. Even though the import of cars to Azerbaijan has always been increasing, for the past two years the import has increased exponentially.

This analysis of the increased car imports to Azerbaijan and subsequent re-export to Russia has got attention in the press on the example of car imports from the UK[11].

Since the start of the Russia-Ukraine war in the beginning of 2022 the UK car exports to Azerbaijan have increased by approximately 2264%. In January 2024, the total value of the exported cars was $43 million and the country became the 12th biggest foreign market for British cars. It can be seen that before the start of the war, the exports of cars from the UK to Azerbaijan had been around 0. Such a sudden and very rapid increase in the imports of cars brings a lot of questions about whether those cars were later sent to Russia with the purpose of overcoming the sanctions. Such a sudden increase can be justified by the

fact that Azerbaijan became a part of the supply chain for some certain products that cannot be delivered to Russia directly.

According to the official data from the State Statistical Committee, the export of non-railway vehicles from Azerbaijan to other countries has significantly increased throughout the two years 2021-2023. The value of exports increased 4.5x from $42 mln to $180 mln from 2022 to 2023. Moreover, the value of exports to Russia has also grown by $270 million further supporting this explanation. In the case of increase of imports of Oil&Gas and its products the logic is very similar but in the opposite direction. Namely, import of crude oil to be used in Azerbaijan for local needs (e.g. at the local refinery), and subsequent increase in the export of Azeri light crude that would otherwise go to the local refinery. In fact, the increase over 2021-2023 in oil imports of $1.6 bln (assuming the price of $50-60 per barrel of Russian crude) is equivalent to 3-4 mln tons of crude, which is in line with the capacity of the local oil refinery. This further explains why despite a significant drop in oil production in Azerbaijan during the same period as discussed earlier, export volumes did not decrease as much – decrease in production was partially offset by diverting volumes that would otherwise go to the refinery to export.

Investments

In 2021, Azerbaijan embarked on a major reconstruction effort in the liberated territories of Karabakh and East Zangazur regions after a 30-year military occupation. The scale and speed of the reconstruction effort is quite impressive. In a short amount of time 2 airports were built from scratch, 1 reconstructed, and 3 more under construction, hundreds of km of roads and tunnels were built in the mountainous region, massive repopulation effort with lots of residential and commercial buildings being built – list can be continued. To finance all these efforts, the government has pledged multi-billion-dollar investments every year since 2021.

The significant increase in investments in 2023 we believe is driven by this continued reconstruction effort. To understand this factor better let's look at the capital investment distribution by the regions of Azerbaijan. East Zangazur and Karabakh regions got 4.0bln and 2.3bln AZN investments, respectively - the two highest in Azerbaijan.

Table below shows that 63% of Azerbaijan's capital investment increase from 2022 to 2023 was coming from liberated regions of Karabakh and East Zangazur, supporting our hypothesis.

Furthermore, in the import section we looked at the top two items in terms of import – oil and gas products and motor vehicles – but the next three largest items are all related to the construction industry (Mechanical Machinery, Electric Machinery, and Iron & steel). This suggests that though investment increase in itself is a positive factor for GDP growth, it seems that a large portion of it is done using imported goods and foreign contractors, and hence resulting in value-add of this economic activity going outside of Azerbaijan rather than contributing positively to local GDP.

Discussion

In this paper we looked at several factors affecting GDP growth of Azerbaijan and particularly what were the core reasons behind a significant growth slowdown in 2023 – 1.1% real growth versus 4.7% and 5.6% in two prior years.

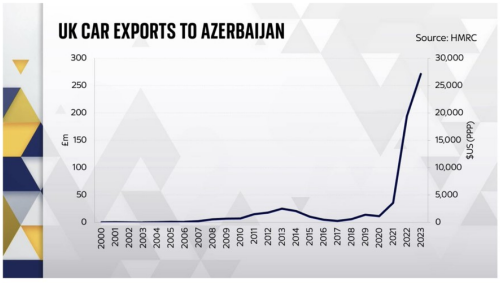
Through thorough analysis of GDP components, we identified key factors contributing to this slowdown to be as follows:

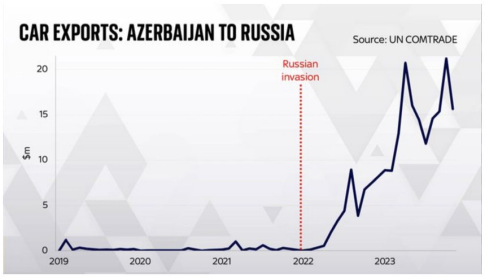
- Drop in production of oil – major export item – due to underinvestment in the largest oil field in prior years by major foreign oil companies.
- Drop in oil prices affecting consumption and government expenditure.
- Large investment by the government into reconstruction of liberated territories done through foreign contractors and imported goods.

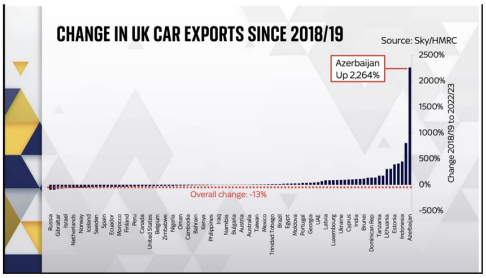
GDP slowdown has been slightly compensated by the so-called "Russian factor" wherein goods are imported from the West and re-exported to Russia, or cheaper commodities are imported from Russia to benefit local industries.

Major question though is what could be done going forward by the government both in the short-term and in the long-term. The answer is simple, but also difficult and time-consuming to implement.

- In the long-term, building a strong manufacturing sector locally and hence diversifying away from the all-dominant oil and gas sector is the ultimate answer. While this will take years to build, it is vital to double down on this from the government's side. Given limited resources, the government should prioritize investments into manufacturing and business building and less on infrastructure. This in turn requires the government to act like an "investor" and measure returns on the portfolio of government investments.
- In the short-term, we strongly believe that Azerbaijan should support small and medium enterprises and entrepreneurship, especially in the regions. Taxation and governmental oversight should be minimized to help SMEs flourish be it in small manufacturing, agriculture or trade. Loss of tax income from this should be more than compensated by the growth that comes from production output increase and reduction of unemployment.







Year	2023	2022	2021
Export from Azerbaijan to Russia ($bln)	1,196	0,975	0,920
Export of vehicles from Azerbaijan ($bln)	0,180	0,042	0,005

Fig. 10 Car exports and imports between UK, Azerbaijan, and Russia [7,23,24]

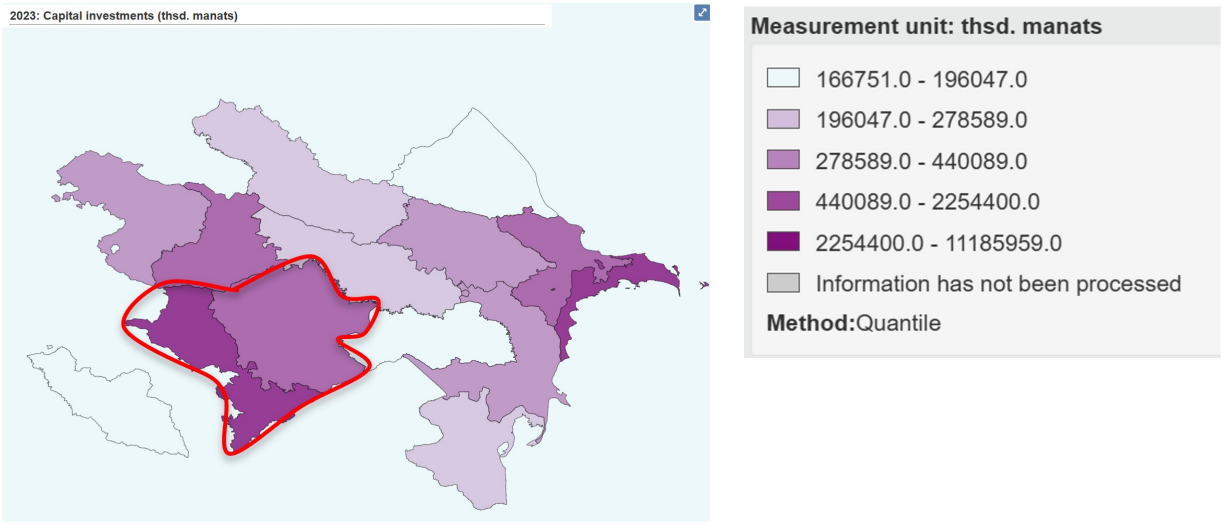


Fig. 11 Distribution of capital investments in 2023 by regions of Azerbaijan. Karabakh region getting the highest share of investment [1]

Table 4 Capital investments in Azerbaijan and liberated territories over 2022-2023

Capital Investments, (AZN bln)	2022	2023	2022-2023 growth	Growth as share of total growth
All of Azerbaijan	17,878	21,311	3,433	100%
Liberated Territories (Karabakh and East Zangazur regions)	4,106	6,265	2,159	63%

Limitations of this paper include that the underlying data used is from official sources such as Azerbaijan's State Statistical Committee and international organizations, which may not fully capture unofficial economic inflows and outflows. However, analysis of peer-reviewed literature and authoritative international reports shows that the GDP slowdown as well as a strong

Oil dependency is confirmed by these sources as well[25–27] (for example, Bertelsmann Stiftung's BTI country report, EBRD Transition Report, and study by Aliyev et al available for Azerbaijan looking at both GDP and GDP Components).

Additionally, the study does not account for certain variables, such as inflation-adjusted consumption patterns and consumer behavior, which could provide further insights into the drivers of GDP growth. These limitations suggest that the results should be interpreted with caution and complemented with further research incorporating unofficial data and broader economic factors.

The topic of economic growth has been studied in detail over the years by economists and impacts of different governmental policies across various countries has been assessed through vast empirical data. At the same time, each country's economy has its own peculiarities, specifics and context that requires detailed investigation before coming to any conclusions or recommendations. In this paper we analyzed Azerbaijan's economic growth in detail considering specific local context and arrived at what we believe are valuable insights.

Methods

A quantitative approach was employed to analyze the drivers of GDP growth in Azerbaijan, focusing on quantitative data and contextual factors influencing economic performance based on a narrative review and summary of the Azerbaijan economy, followed by an econometric based analysis. The full analysis consisted of a narrative review of Azerbaijan, followed by an econometric analysis of three main components:

1. Quantitative Analysis of GDP Components: Key macroeconomic indicators were examined, including net exports, investment levels, and government spending, using data from Azerbaijan's State Statistical Committee, the World Bank, and the IMF. Statistical techniques such as regression analysis and time series decomposition were applied to identify trends and the relative contributions of these components to GDP growth.

2. Assessment of Oil Sector Dynamics: To evaluate the role of the oil sector, we analyzed historical and current oil price data alongside Azerbaijan's Production Sharing Agreements (PSAs) with foreign oil companies. Particular attention was given to the sustainability of oil production and its long-term effects on GDP.

3. Sector-Specific Analysis: We conducted a targeted analysis of investment trends in key sectors, with an emphasis on construction, which showed notable shifts in 2023. This included studying import patterns and their impact on domestic production and economic stability.

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