RESEARCH DOCUMENT ON STRUCTURAL PROBLEMS OF THE AZERBAIJANI INDUSTRY: CAUSES AND SOLUTIONS

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Summary

The economic situation of each country is largely determined by the level of development of its industry because the successful solution of strategic tasks such as diversification of the economy and continuous improvement of living standards depends primarily on the competitiveness of the industrial complex. This study identifies the structural problems of the country's industry based on the analysis of the sectoral, areal, regional, technological, and export structures of the Azerbaijani industry.

The study found that despite the adoption and implementation of a number of state programs and strategies to diversify the economy and develop the non-oil industry over the past 10 years, as well as significant steps to improve the business environment in the country, the problems in the country's industrial structure remain serious.

Furthermore, the study found that currently, more than 70% of the country's industrial production, as well as more than 85% of the new value created in the industry, and 90% of the country's total exports fell to the share of oil and gas production and oil products. The general picture is as follows: up to 90% of industrial production takes place in Baku city and the Absheron economic region; the value created in the processing industry is less than 10% of the new value created in the industry during the year; in the fields of processing industry, mainly products of low and medium low-tech product groups are produced, etc.

As a result of the study, we can say that the country's processing industry is still not attractive for foreign investors, and local investors are not very interested in the processing industry.

At the end of the study, proposals and recommendations were developed to improve the government's industrial and investment policy for improving the structure of the country's industry.

Introduction

The study of the structure of the industry allows us to determine the degree of compliance of the country's industry with the requirements of the national economy, its opportunities for effective integration into the world economy, its level of competitiveness in relation to foreign industries, its level of compliance with modern international challenges; to discover the proportions of areas that ensure scientific and technological progress and social development, the trends in specialization in the industry, the share of the fund, labor, investment, science, and energy areas in the areal structure of the industry, the dynamics of development of the areas, the role of individual areas related to the impact of changes in the areal structure of the industry on its economic efficiency, the comparative values of a workplace created in the areas for any given year; to predict the development of the industry; and to access to information necessary for the development of the government's economic policy.

The optimality of the areal structure of the industry is determined by the degree to which it (the industry) meets the requirements. In today's global competitive environment, the areal structure of the country's industry should be at a level that can ensure the development of the country's economy, consisting of areas that are resistant to international competition. The country's industry should not depend on one or two areas, it should be as diversified as possible. The diversification of industry ensures its sustainable development, as well as helps to prevent the deepening of the recession in times of global economic crises. First of all, the areal structure of the industry should be such that it can meet the needs of itself and the country with its products as much as possible within the available resource opportunities and target the export of more products. The more competitive products the areas of the country's industry export, the more likely it can serve to increase the national wealth by having a positive impact on the country's balance of payments. Finally, the areal structure of the industry must be in line with the development trends of the modern world and be able to meet global challenges.

This study examines the structural problems of the Azerbaijani industry. The study first assesses the role of industry in the country's economy. Then, on the basis of comparative statistics and dynamic analysis, the areal, sectoral, regional, export, and technological structures of the country's industry were studied and the existing problems were identified. Then, by studying the factors influencing the formation of the structure of the industry, the factors influencing the formation of the existing structure of the Azerbaijani industry were identified. At the same time, the measures taken by the government to diversify the economy and exports, as well as the development of the non-oil sector in the country were presented, and attempts were made to identify gaps in the government's investment and industrial policy. In the end, proposals and recommendations were made to improve the structure of the industry, to stimulate local and foreign investment for the development of non-oil industries in the country.

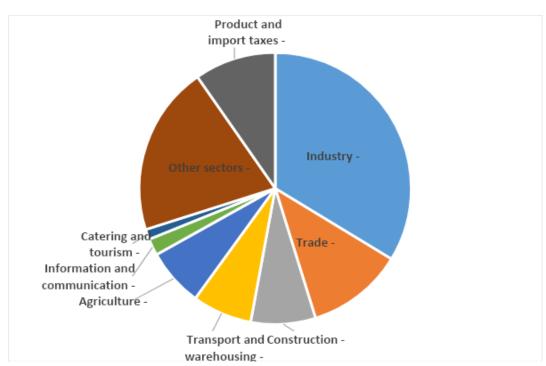
The research was developed by using the desk research method.

1. The structure of Azerbaijan's industry: current situation and problems

The industry is one of the main sources of employment and income in most economies of the world. The economic situation of any country is largely determined by the level of development of its industry because the successful solution of strategic tasks such as diversification of the economy and continuous improvement of living standards depends primarily on the competitiveness of the industrial complex.¹

According to the State Statistical Committee (SSC), in 2020, 33.7% of the newly created value in the country was formed in industry, which is the largest share compared to other sectors of the economy. In 2020, 11.5% of GDP production fell to trade and repair of vehicles, 7.7% - construction, 7.1% - transport and warehousing, 6.9% - agriculture, forestry, and fishing, 2.0% - information and communication, 1.2% - tourist accommodation and catering, 20.2% - other sectors. Net taxes on products and imports accounted for 9.7% of GDP (*Figure 1*).

Figure 1. Structure of GDP production in Azerbaijan in 2020, share in total, in percent (Source: SSC)

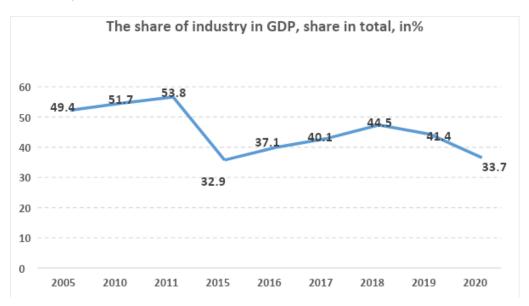


As can be seen from Figure 1, the industry is one of the leading sectors of the country's economy; however, our study based on the SSC database shows that the share of industry in annual GDP production has been volatile, i.e. changed dramatically over the last 15 years (2005-2020). Such that the level of this indicator increased from 49.4% in 2005 to 53.8% in 2011, fell to 32.9% in 2015, then increased by 2018 and rose to 44.5% in 2018, and declined again in the last 2 years. (*Figure 2*).

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¹ Industrial Development Report - 2013. UNIDO, https://www.unido.org/sites/default/files/2014-04/IDR_2013_OVERVIEW_RUSSIAN_EBOOK_0.pdf

Figure 2. Dynamics of the share of industry in annual GDP production, share in total, in percent (Source: SSC)

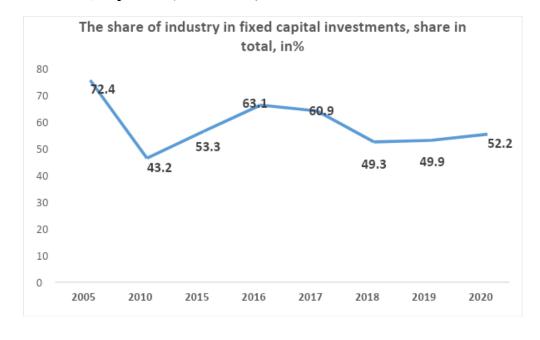


As can be seen from Figure 2, the industry has always played a leading role in the country's newly created value over the past 15 years and has always had the highest share in the country's economy. However, this share has changed dramatically over the years, which reflects the high sensitivity of the country's industrial production to external shocks.

The industry also has the highest share in the country's net profit for the year: the level of this indicator was 66.8% in 2011, 41.5% in 2015, 57.6% in 2018, and 54.9% in 2019.²

Most of the fixed capital investments in the country's economy were also directed to industrial production: in 2005-2020, the share of industry in fixed capital investments was often over 50% (*Figure 3*).

Figure 3. The share of industry in fixed capital investments in the country's economy in 2005-2020, share in total, in percent (Source: SSC)



² SSC, https://www.stat.gov.az/source/industry/

The above information reflects the leading role of industry in the country's economy. However, the industry does not play a significant role in providing employment in the country.

According to the SSC, only 7.0-7.5% of the employed population in the country fell to the industry in 2005-2020.³

As can be seen, the share of industry in the employment of the population, which accounts for over 40-50% of GDP production and fixed capital investments in most cases, has always been around 7%.

The data of the SSC show that in the period of 2005-2020, there is a sharp rise and fall (volatility) in the dynamics of industrial production over the years. Such that at current prices in the relevant years, the annual volume of industrial production in the country increased from 9.3 billion AZN in 2005 to 35 billion AZN in 2011, then gradually decreased to 32.1 billion AZN by 2014, sharply declined in 2015 and fell to 26.4 billion AZN, increased in subsequent years and rose to 47.7 billion AZN in 2018, and finally drastically declined again in 2020 (*Figure 4*).

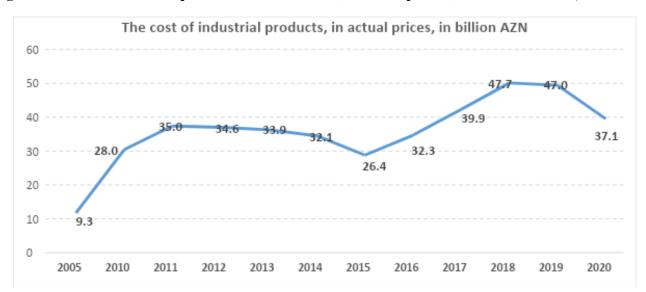


Figure 4. Cost of industrial products in 2005-2020, in actual prices, in billion manats (Source: SSC)

It is important to study the structure of the country's industry in order to understand the reasons for the discrepancy between the dynamics of industrial production and the share of industry in the newly created value of the country's economy, as well as the share of industry in GDP production and employment.

The concept of structure, as the most important feature of any system, reflects the order of organization and interrelationships of its elements. The concept of "structure" reflects the set of continuous interactions that ensure the integrity of the system in a changing internal and external environment, the stability of its main features.⁴

The word "structure" in Latin means "a fitting together", "adjustment", "building", etc.⁵

The quantitative ratio of the individual components of the industry and the relationship between them is called the structure of the industry. When studying the structure of the industry, the following types of structures are distinguished:

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³ SSC, Labor market statistics, https://www.stat.gov.az/source/labour/

⁴ https://marxists.architexturez.net/reference/archive/spirkin/works/dialectical-materialism/ch02-s07.html

⁵ https://www.azleks.az/az/online-dictionary/struktur

- Sectoral structure of the industry;
- Areal structure of the industry,
- Technological structure of the industry,
- Territorial (regional) structure of the industry,
- Institutional structure of the industry, etc.

When examining the structure of the industry, the volume of industrial production (product) in terms of value, the number of employees in the industry, the amount of fixed capital investment, the amount of newly created value, the amount of profit (net income), and a number of other indicators are used.

The structure of the industry is studied in statistics and dynamics. During the statistical study, the situation of the country's industrial structure at a specific time (for example, at the end of the reporting year) is determined by the above indicators. For example, in order to determine the areal structure of industrial production in the country in 2020, it is necessary to calculate the share of each industry in total industrial production in that year. Alternatively, when studying the territorial structure of industrial production, the volume of industrial output produced in each region of the country in the reporting year is compared with the total volume of industrial output produced in the country, and the share and interrelationships of each region are determined.

Comparative statistics are also used in research and analysis. In this case, the situation of the industry at two different times (for example, at the beginning and end of the reporting year or in 2010 and 2020) is compared and differences or changes in the structure are identified.

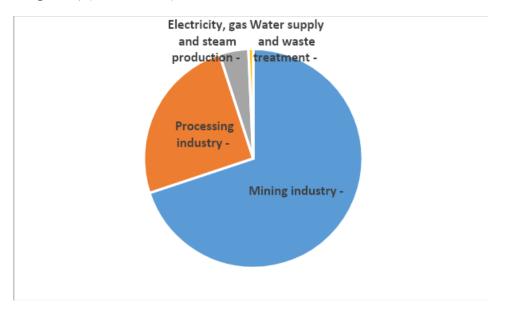
When studying the structure of the industry in dynamics, changes in the structure of the industry over a long period of time (5, 10, 20, 50, or 100 years, etc.) are discovered, their causes and influencing factors are identified.

The SSC database shows 4 sectors within the country's industry:

- 1. Mining industry (crude oil, natural gas, mineral ores, and other mining production);
- 2. Processing industry (consists of a large number of production areas by type of economic activity;
- 3. Production, distribution, and supply of electricity, gas, and steam;
- 4. Water supply, waste treatment and processing.

The sectoral structure of industrial production in 2019 is described in the following diagram (*Figure 5*).

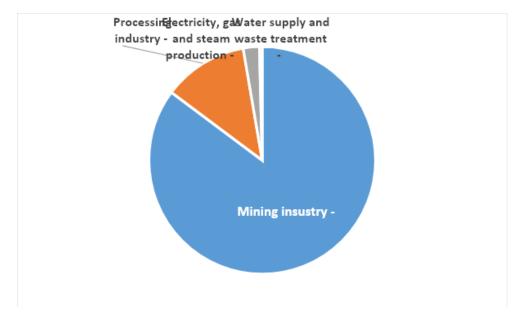
Figure 5. Sectoral structure of industrial production in Azerbaijan in 2019, share in total, in percent (in current prices) (Source: SSC)



It is clear from Figure 5 that the mining industry accounts for up to 70% of the country's total industrial output. Here, too, the production of crude oil and natural gas dominates: oil and gas account for up to 65% of total industrial output. The processing industry accounts for only 25% of total industrial production, which reflects the weak development of the processing industry in the country.

As a result, in 2019, more than 85% of the new value created in the country's industry fell to the mining industry, including more than 82% to oil and gas production. During the year, only 12% of the new value created in the industry occurred in the processing industry (*Figure 6*).

Figure 6. Sectoral structure of GDP created in Azerbaijan's industry in 2019, share in total, in percent (in current prices) (Source: SSC)



According to the SSC, in 2019, 91% of Azerbaijan's exports fell to crude oil, natural gas, and oil products.⁶

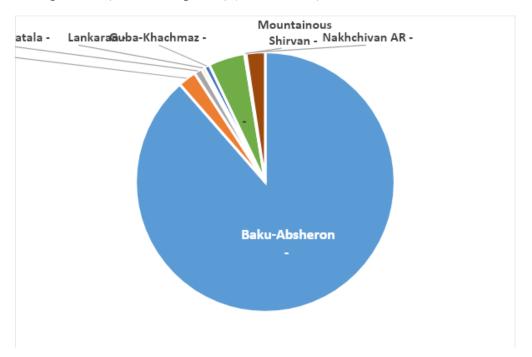
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⁶ SSC, Foreign trade statistics, https://www.stat.gov.az/source/trade/

These data reveal the main reason for the volatility shown in Figures 3 (share of industry in GDP) and 4 (industrial production dynamics) above: the dynamics of industrial production in the country and the value created in the industry vary depending on the volume of production, export of crude oil, and natural gas and oil prices on the world market. In the years of increasing crude oil production and exports and high oil prices (2005-2011) in Azerbaijan, there was an increase in industrial production and newly created value. A sharp decline in oil prices in 2014-2015 resulted in a decline in industrial production, followed by the devaluation of the manat and the rise in oil prices, which led to an increase in industrial production. Finally, a sharp decline in oil prices and a decline in oil production in 2020 have resulted in a sharp decline in total industrial production.

The dominant position of the oil and gas industry also has a direct impact on the regional structure of industrial production. The fact that oil and gas production fields of the country are mainly located in the Absheron archipelago and the shelf of the Caspian Sea⁷ is the reason for the fact that up to 90% of industrial production falls on Baku city and the Absheron economic region. Figure 7 presents the structure of industrial production in 2019 by economic regions of the country. As can be seen from the figure, 89.6% of total industrial production in 2019 was in Baku and the Absheron economic region.

Figure 7. The structure of industrial production in Azerbaijan by economic regions in 2019, share in total, in percent (in current prices) (Source: SSC)



In 2019, 4.6% of the country's total industrial output fell to Aran, 2.3% to Ganja, 1.0% to Shaki-Zagatala, 0.7% to Guba-Khachmaz, 0.4% to Lankaran, and 0.2% to Mountainous Shirvan economic regions. The industrial output produced in the Nakhchivan Autonomous Republic was only 2.4% of the country's total industrial output.

The areal structure of industrial production also allows us to see what areas of and how the processing industry is developing in the country.

It is clear from the data in Table 1, which reflects the areal structure of industrial production in the country in 2017-2019, that about 25% of the total industrial output was created in the processing industry.

⁷ SOCAR's annual report, 2019 https://socar.az/socar/az/economics-and-statistics/economics-and-statistics/socar-reports

However, the processing industry also includes the processing of petroleum products, and the table shows that about 6% of the total industrial production in the country is the production of petroleum products.

We noted above that in recent years, up to 65% of total industrial production fell to crude oil and natural gas. When the share of oil products is added here, it turns out that more than 70% of the country's industrial production takes place in the oil and gas industry.

It can be seen from the data in Table 1 that among the processing industries (excluding the production of petroleum products), there are a few industries with an annual production of 1% or more of total industrial production. These include:

- Food production (slightly more than 7%),
- Production of construction materials (1.6%),
- Chemical industry (1.3%),
- Metallurgical industry (1.2%),
- *Installation and repair of machinery and equipment (1.1%).*

These areas belong to the groups of low and medium low-tech products. In general, it is clear from the table that the processing industry in our country is extremely poorly developed, such as the production⁸ of high and medium high-tech products (electronics, computers, digital equipment, pharmaceuticals, medical equipment, chemicals, etc.).

Table 1. Areal structure of industrial production, share in total, based on the actual prices of the relevant years, in percent (Source: SSC)

| | 201 7 | 2018 | 201 9 |
|---|----------|------|----------|
| THE WHOLE INDUSTRY | 100 | 100 | 100 |
| Mining industry | 70.3 | 73.3 | 69.9 |
| Processing industry | 24.4 | 22.0 | 25.1 |
| Food production | 7.4 | 6.4 | 7.6 |
| Beverage production | 0.7 | 0.6 | 0.9 |
| Manufacture of tobacco products | 0.1 | 0.1 | 0.5 |
| Textile industry | 0.4 | 0.5 | 0.6 |
| Manufacture of clothing | 0.3 | 0.2 | 0.2 |
| Manufacture of leather and leather products, footwear | 0.05 | 0.1 | 0.0 |
| Wood processing and production of wood products | 0.1 | 0.1 | 0.1 |

⁸ http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:High-tech classification of manufacturing industries

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| Manufacture of paper and cardboard | 0.2 | 0.2 | 0.2 |
|---|------|-----|-----|
| Printing activities | 0.2 | 0.2 | 0.2 |
| Production of oil products | 6.4 | 5.9 | 6.2 |
| Chemical industry | 1.3 | 1.1 | 1.3 |
| Manufacture of pharmaceutical products | 0.0 | 0.0 | 0.0 |
| Manufacture of rubber and plastic products | 0.8 | 0.7 | 0.8 |
| Production of construction materials | 1.7 | 1.5 | 1.6 |
| Metallurgical industry | 1.2 | 1.3 | 1.2 |
| Manufacture of finished metal products other than machinery and equipment | 0.8 | 0.5 | 0.5 |
| Manufacture of computers and other electronic equipment | 0.2 | 0.2 | 0.2 |
| Manufacture of electrical equipment | 0.4 | 0.4 | 0.5 |
| Manufacture of machinery and equipment | 0.5 | 0.4 | 0.5 |
| Manufacture of cars and trailers | 0.2 | 0.2 | 0.2 |
| Manufacture of other transport vehicles | 0.03 | 0.0 | 0.0 |
| Manufacture of furniture | 0.2 | 0.2 | 0.3 |
| Manufacture of jewelry, musical instruments, sports and medical equipment | 0.1 | 0.1 | 0.2 |
| Installation and repair of machinery and equipment | 1.1 | 0.9 | 1.1 |
| Production and distribution of electricity, gas, and steam | 4.6 | 4.1 | 4.3 |
| Water supply, waste treatment and processing | 0.7 | 0.7 | 0.7 |

Our analysis also shows that the following structural problems are very clearly observed in the structure of the Azerbaijani industry:

- About 70% of industrial production falls to the mining industry, including 65% to oil and gas production;
- Slightly more than 70% of industrial production and more than 85% of the new value created in the industry fall to oil and gas production and production of oil products;
- Crude oil, natural gas, and oil products account for 90% of the country's total exports;
- The level of development of processing industries in the country is still very low: if the production of petroleum products is not taken into account, the value created in the processing industry is less than 10% of the new value created in the industry during the year;
- The processing industry mainly produces low and medium low-tech products;

• Up to 90% of industrial production takes place in Baku city and the Absheron economic region.

2. Factors influencing the formation of the structure of the country's industry

The structure of the industry is dynamic and changeable. There are many factors influencing the formation and change of the structure of the industry in each country. The identification and study of these factors are of particular importance for the organization of the policy to improve the structure of the industry. Such factors include:

• Availability, resources (potential), and geographical location of natural resources:

Azerbaijan's rich oil and gas reserves have always played a leading role in the development of the country's industry. Speaking about the history of the formation and development of industry in Azerbaijan, we also showed that the formation of industrial relations in Azerbaijan began exclusively with oil production. Even after the restoration of our country's political independence, the oil and gas industry was the basis for bringing currency to the country and economic and social development. At present, the oil and gas industry has a high share in the industry of our country. Our country has rich natural resources, mineral ores and non-ores, on the basis of which various industries are being formed. The abundance of one or more types of natural resources in the country can lead to a one-sided development of industry and the economy as a whole, dependence on raw materials;

• "Dependence on the past" (or "heritage of history"):

The fact that Azerbaijan was a part of the USSR in 1920-1991, the fact that it passed through the strict administrative management system of the Soviet economy, and the prohibition of entrepreneurship and competition have created serious problems in creating a national industry based on market relations in the country since independence. Moreover, the industry formed in Azerbaijan during the former USSR was mainly built in accordance with the economic interests of the great empire and could not meet the interests of independent Azerbaijan and the requirements of the national economy. After the collapse of the USSR, as a result of the severance of economic ties between both the republics and the former socialist countries, most of the existing industrial enterprises in our country could not continue to operate for various objective and subjective reasons. The lack of a modern business and entrepreneurial culture, as well as private property and investor skills, has led to delays in the emergence of entrepreneurship and competitive industry in the country;

• Level of development of society (socio-economic, cultural, and demographic factors):

Living standards, income levels, traditions, national and spiritual values, religious characteristics, number, age and social structures, education levels of the population and other factors affect the size and structure of markets by determining their tastes, purchasing power, demand structure. Changes in the structure of demand for industrial products lead to the emergence of new industries and the collapse of some industries;

• Economic and investment policy of the state, as well as the effects of state regulation:

The experience of both developed industrial countries and late industrialized countries proves that the correct industrial policy of the state plays an important role in ensuring economic development, especially industrial development, in the country in times of crisis. The state provides a competitive market environment by preventing monopolies. By creating a system of special incentives, the state achieves changes in inter-sectoral capital flows in favor of areas that it deems necessary in terms of long-term development, which leads to changes in the areal structure of the industry. The state,

directly and indirectly, participates in the establishment of industrial enterprises and industries in the regions to ensure regional development, etc.;

• Trade rules and foreign trade relations:

The level of integration of the country's economy and industry into the world economy also has a direct impact on the areal structure of the industry. According to the theory of comparative advantage, each country can bring more competitive products to the world market by specializing more effectively in the industries in which it has comparative advantages. The production of competitive products by the country's industrial enterprises allows exporting some of the products to the world market, which strengthens the position of the relevant industries. On the other hand, if enterprises fail to produce competitive products, they will lose their position in local markets, which may result in the disappearance of relevant industries. At the same time, membership in international trade organizations, such as the World Trade Organization, or regional economic cooperation organizations can provide favorable conditions for the sale of local products in the world and regional markets;

• Infrastructure (production and market) factors:

The level and condition of production infrastructure - electricity, gas, water, transport, information and communication systems - across the country has a significant impact on the emergence of industries by affecting the level of costs of industrial enterprises. In addition, the level of organization and distribution of banking and other business services, especially in the regions, also plays a crucial role in decision-making on the organization of enterprises;

• Scientific and technical factors:

The development of science and technology in the country and the world, new inventions and discoveries, product and process innovations always lead to the emergence of new industries by creating new products, new technologies, new processes;

• Processes in world industry:

The world industry is changing rapidly. Digital technologies already provide mass automation and robotization of industrial production. The 4th industrial revolution is taking place in the world. The structure of the country's industry is also formed under the influence of such processes in the world on the country's industry.

The coexistence of these factors and their simultaneous implementation, rather than in turn, has a significant impact on improving or changing the areal structure of the industry. The increase in the influence of any of them directly depends on the economic policy pursued in the country over a period of time.

It is not appropriate to analyze the effects of each of the factors listed in the study separately. However, the changes in the structure of industrial production in the country over the past 30 years since 1991, when Azerbaijan regained its political independence, can be seen from the data in Table 2. It clearly shows how the indicators of a number of processing industries, which had a high share in the country's industrial production in 1990, have changed in recent years.

It is clear from the table that on the eve of the restoration of our political independence, 90% of total industrial output fell to the processing industry (25% - food production), not the mining industry, in Azerbaijan. However, as noted above, after the collapse of the USSR, the majority of enterprises of the

processing industry in the country, especially petroleum machine-building enterprises, food, textile, and clothing enterprises, have not been able to continue their activities.

Table 2. Changes in the areal structure of industrial production in Azerbaijan during 1990-2019, share in total, based on the actual prices of the relevant years, in percent (Source: SSC)

| | | | | | T | | T | · · | | | |
|--|------|------|------|------|------|------|------|------|------|------|------|
| | 199 | 199 | 200 | 200 | 201 | 201 | 201 | 201 | 201 | 201 | 201 |
| | 0 | 5 | 0 | 5 | 0 | 1 | 5 | 6 | 7 | 8 | 9 |
| THE WHOLE INDUSTRY | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Mining industry | 5.3 | 19.6 | 53.4 | 67.0 | 78.9 | 80.5 | 62.1 | 65.6 | 70.3 | 73.3 | 69.9 |
| Crude oil and natural gas | | | | | | | | | | | |
| production | 4.8 | 19.4 | 46.7 | 63.8 | 76.4 | 78.0 | 55.8 | 58.4 | 61.1 | 65.9 | 62.3 |
| Processing industry | 90.1 | 59.4 | 31.3 | 25.9 | 15.9 | 14.3 | 29.9 | 27.6 | 24.4 | 22.0 | 25.1 |
| Food production | 24.6 | 9.7 | 1.9 | 2.4 | 1.5 | 1.5 | 8.8 | 9.1 | 7.4 | 6.4 | 7.6 |
| Textile industry | 14 | 8.4 | 0.8 | 0.4 | 0.1 | 0.2 | 0.1 | 0.3 | 0.4 | 0.5 | 0.6 |
| Manufacture of clothing | 3.8 | 0.7 | 0.3 | 0.2 | 0.1 | 0.1 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 |
| Production of oil | | | | | | | | | | | |
| products | 6.9 | 26.8 | 18.5 | 9.9 | 8.2 | 7.4 | 9.4 | 7.7 | 6.4 | 5.9 | 6.2 |
| Chemical industry | 5.3 | 3.0 | 3.3 | 2.4 | 0.45 | 0.6 | 1.3 | 1.1 | 1.3 | 1.1 | 1.3 |
| Production of | | | | | | | | | | | |
| construction materials | 3.2 | 1.6 | 0.8 | 1.6 | 1.7 | 0.8 | 1.7 | 1.4 | 1.7 | 1.5 | 1.6 |
| Metallurgical industry | 3.7 | 1.2 | 0.1 | 2.0 | 0.5 | 0.6 | 0.8 | 0.9 | 1.2 | 1.3 | 1.2 |
| Manufacture of | | | | | | | | | | | |
| machinery and equipment | 9.0 | 2.2 | 1.0 | 0.4 | 0.6 | 0.5 | 0.8 | 0.5 | 0.5 | 0.4 | 0.5 |
| Production and distribution | | | | | | | | | | | |
| of electricity, gas, and steam | 4.1 | 19.2 | 13.6 | 5.7 | 4.6 | 4.7 | 7.1 | 6.0 | 4.6 | 4.1 | 4.3 |
| Water supply, waste treatment and processing | 0.5 | 1.8 | 1.7 | 1.0 | 0.6 | 0.5 | 0.9 | 0.8 | 0.7 | 0.7 | 0.7 |

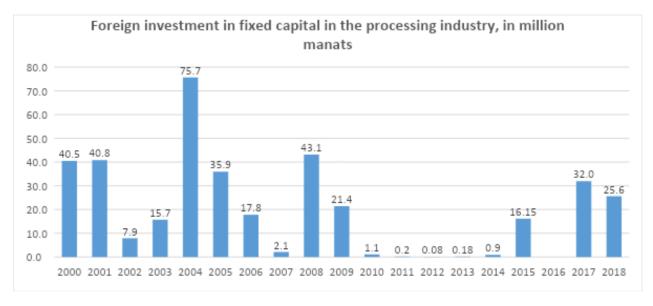
After Azerbaijan regained its political independence, the country's limited economic and financial resources, economic crisis, and war made it impossible for foreign direct investment to flow into the country. At that time, the only attractive resource for foreign investors in the country could be oil and gas reserves. Based on this, the government preferred the policy of attracting foreign investment in the oil and gas sector, and in a short time, the country signed about 30 international oil and gas agreements. As a result of these agreements, investment in both the oil and gas sector has increased, and the level of oil and gas production and exports has increased rapidly in the country since 2005. The increase in oil production and exports allowed the country to receive large oil revenues, and oil revenues played a decisive role in the formation of the country's revenues, as well as state budget revenues. The government has directed a

significant portion of oil revenues to economic development through public investment, especially in the reconstruction of production, utility, and social infrastructure. As a result of the impact of these policies, especially investment policy, on the structure of the country's industry, changes in the structure of the country's industry occurred in the dynamics shown in Table 2. According to our calculations based on the relevant statistics of the SSC, of the more than 210 billion AZN invested in the country's economy between 1995 and 2019, about 85 billion AZN (40.5%) was directed to the oil and gas industry, and the remaining 125 billion AZN to all other sectors of the economy.

According to the SSC, only 98.2 billion AZN was invested in fixed capital in the country's industry in 2005-2019, of which 55.9 billion AZN (60%) was from foreign investment and the remaining 42.2 billion AZN was from domestic sources. During this period, 51.6 billion AZN (or 92.3%) of foreign direct investment in the industry was directed to the oil and gas industry. During this period, the amount of fixed capital investments in the processing industry from all sources amounted to only 10.5 billion AZN, which is 10.7% of total investments in the industry in the same period. 9.5 billion AZN (or 90.5%) of investments in the processing industry was from domestic investments. During 2005-2019, the amount of foreign investment in fixed capital in the country's processing industry amounted to 994.3 million AZN, which was 1.8% of foreign investment in the industry in the same period. It is important to note that 798 million AZN (or 80%) of this investment took place in 2019 - 778 million AZN was spent on the manufacture of rubber and plastic products. This means that the amount of foreign direct investment in the country's processing industry in 2005-2018 amounted to 196.3 million AZN.

According to the SSC, the total amount of foreign investment in the country's processing industry over the 20 years from 2000 to 2019 amounted to 1.18 billion AZN. As already mentioned, 798 million AZN was invested in 2019. Excluding this, the amount of foreign investment in the processing industry in 2000-2018 amounted to 377.1 million AZN. The distribution of these funds by years is presented in the following figure (*Figure 8*).

Figure 8. Amount of foreign direct investment in fixed capital in the processing industry of the country in 2000-2018, in million AZN (Source: SSC)



⁹ SSC, Construction statistics, https://www.stat.gov.az/source/construction/

¹⁰ SSC, Fixed capital investments in industry, https://www.stat.gov.az/source/industry/

It is clear from the notes above and the data in Figure 8 that the processing industry of our country is not attractive for foreign investors. However, although little investment was made in these areas until 2009, foreign investors showed no interest in the sector between 2010 and 2016.

According to the SSC, the total amount of domestic investment in fixed capital in the processing industry in 2005-2019 amounted to 9.5 billion AZN. Of this, 1.1 billion AZN (or 11.6%) was spent on food production, 1.05 billion AZN (11.1%) on the production of oil products, 952.0 million AZN (10%) on the production of construction materials, 911.5 million AZN (9.6%) on the manufacture of rubber and plastic products, 552.4 million AZN (5.8%) on the chemical industry, 368.6 million AZN on the manufacture of other transport vehicles, 330.9 million AZN on the manufacture of furniture, 241.9 million AZN on the installation and repair of machinery and equipment, 227.9 million AZN on the manufacture of tobacco products, 124.5 AZN on the manufacture of clothing, 88.3 million AZN on the textile industry, 10.4 million AZN on the manufacture of computers and other electronic equipment. As can be seen, high and medium high-tech product groups have a small share in domestic investment in the processing industry.

¹¹ Ibid

3. Measures taken so far to solve the structural problems of the industry and the results achieved

By forming the optimal level of areal structure of each country's industry, it is possible to accelerate the solution of economic and social problems, such as ensuring the efficient operation of the economy, increasing the economic efficiency of public production, and improving the welfare of the population. The areal structure of the industry and its improvement determine the structure of the country's economy as a whole, and as it improves, it ensures the progress of the latter.

Improving the structure of Azerbaijan's industry, diversifying the country's economy and exports, and developing the non-oil industry have been among the main priorities of the government's economic policy since 2010, and a number of policy documents (state programs and strategies) have been adopted and implemented.

The Development Concept "Azerbaijan 2020: Look into the Future" approved by the Decree of the President of the Republic of Azerbaijan on December 29, 2012, stated that the main task at this stage was to accelerate the diversification of the economy, to maintain the high pace of development of the non-oil sector in the coming years, regardless of the level of oil revenues, and to expand its export potential. At that time, the improvement and development of the structure of the industry in terms of diversification of the country's economy, strengthening its competitiveness, and increasing export potential were declared as the main priorities of economic policy in the country. In the same concept, the development of an export-oriented industrial model in Azerbaijan was identified as a key direction.

In terms of increasing competitiveness and improving the structure of the economy, the development of the industry is one of the main priorities of economic policy in the country in modern times. For this purpose, the State Program on Industrial Development in the Republic of Azerbaijan for 2015-2020 was approved by the Order of the President of the Republic of Azerbaijan dated December 26, 2014.

The following goals were set in that State Program:

- 1. Modernization of the industry and improvement of the structure of the industry;
- 2. *Increasing the export potential of the non-oil industry;*
- 3. Expansion of competitive industrial production that uses energy efficiently and creates high added value;
- 4. Expansion of scientific and innovative production;
- 5. Training of qualified personnel for new production areas.

By the Decree of the President of the Republic of Azerbaijan dated December 6, 2016, on approval of strategic roadmaps for the national economy and key sectors of the economy, 11 strategic roadmaps were approved in order to define the country's perspective development goals and directions and ensure their implementation. Among them, measures that may affect the structure of the country's industry are found in the following documents:

- 1. Strategic Roadmap for the national economic prospects of the Republic of Azerbaijan;
- 2. Strategic Roadmap for the development of the oil and gas industry (including chemical products) of the Republic of Azerbaijan;

- 3. Strategic Roadmap for the production and processing of agricultural products in the Republic of Azerbaijan;
- 4. Strategic Roadmap for the production of consumer goods at the level of small and medium enterprises in the Republic of Azerbaijan;
- 5. Strategic Roadmap for the development of heavy industry and machine building in the Republic of Azerbaijan;
- 6. Strategic Roadmap for the development of the specialized tourism industry in the Republic of Azerbaijan;
- 7. Strategic Roadmap for the development of logistics and trade in the Republic of Azerbaijan;

In recent years, a number of steps have been taken to improve the business environment in the country. As part of the reforms implemented for the development of entrepreneurship, as a result of comprehensive measures to regulate the system of licenses and permits and simplify administrative procedures, the number of licensed activities was reduced from 59 to 37, the number of permits from 330 to 86, newly issued and valid term licenses were established indefinitely, the amount of state fee for issuing licenses was reduced by about 2 times, by regions by 4 times, the term of issuing licenses was reduced from 15 to 10 working days, and procedures were simplified.¹²

In order to ensure the development of the processing industry, industrial and technology parks and industrial districts have been established in Baku, Sumgayit, and other parts of the country in recent years. In order to develop industrial production in the regions, Mingachevir Industrial Park, Neftchala Industrial District (where 9 enterprises and 1 small business workshop operate), and Masalli Industrial District (where 10 enterprises operate) were established by the Order of the President of the Republic of Azerbaijan No. 1077 dated February 26, 2015. Work is underway to establish Hajigabul Industrial District and Sabirabad Industrial District. For the development of the carpet business in the country, carpet production factories of Azerkhalcha OJSC have been established in 20 districts of the republic.

Azerbaijan Investment Company OJSC, Entrepreneurship Development Fund of the Republic of Azerbaijan, Agrarian Credit and Development Agency under the Ministry of Agriculture of the Republic of Azerbaijan, Agroleasing OJSC, AZPROMO, and other institutional mechanisms support the private sector in the regions. However, despite the abundance of programs and strategies adopted and implemented by the government, the steps taken in recent years to improve the business environment in the country, as well as the fact that a number of diversification institutions are already operating in the country, no significant progress has been made in improving the structure of the country's industry and further developing the non-oil industry in the country. The ongoing and accelerating processes in the world industry, digitalization and Industry 4.0 processes make it necessary to strengthen and increase the efficiency of activities to improve the structure of the industry in the country.

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¹² http://www.e-ganun.az/framework/41320

4. Directions, ways, and mechanisms of improving the structure of the industry

As shown in the economic literature, important structural sources of economic growth are factors of production (especially natural resources), investment, and innovation. At present, the level of development of innovation infrastructure, education, and, in general, human capital in the country makes it impossible to move to an innovation-based development model in the short term. Therefore, at this stage, the main source of economic growth in Azerbaijan can be the investment of local and foreign investors. Such investments can be directed to the creation of non-oil sectors in the country, especially the production of end-use industrial products in the country.

It is known that industrial policy means a system of expedient and comprehensive measures aimed at the distribution and redistribution of the resource potential of the country between and within the sectors of the economy in order to create, develop, and qualitatively renew the base of economic growth in the country, to form a competitive structure of the country's economy that is effectively integrated into the world economy

Industrial policy is a set of government measures aimed at expediently changing the structure of the economy by providing more favorable conditions for the development of certain (priority) areas and/or activities. Such a policy is a formal strategic attempt by the government to stimulate the growth and development of the processing industry or its individual sectors, as well as other sectors of the economy.

J. A. Robinson explains industrial policy as follows: "The government expediently seeks to advance (improve) industry."

As it is known from economic literature and world experience, there are two models of the development of industrial production in the country: the import substitution industrialization model and the export-oriented industrialization model. World experience also shows that after the second half of the twentieth century, many countries in the world that have lagged behind in terms of industrial development have adopted import substitution strategies. Some of them succeeded and some of them failed. In recent years, the study of both individual economists and a number of international organizations emphasizes that countries that prefer the development of export-oriented industry have achieved greater success. Of course, the application of both models has a number of unique features, and their application goes through the creation of many factors and the necessary conditions in one or another country.

The import substitution model reflects the strategy of meeting the needs of the domestic market based on the development of national production. This model envisages the introduction of protectionist policies and the stabilization of the national currency. This model allows to improve the structure of the balance of payments, to meet domestic demand and employment. China and North Korea preferred this model in the 1980s.

In the model of export-oriented industrial policy, measures to comprehensively stimulate the production of export-oriented products prevail. Development and support of export-oriented competitive areas is a key area of industrial policy. The advantage of this model is that through the development of strong competitive industries, on the one hand, the country integrates into the world economy and gains access to world markets and technologies, on the other hand, conditions are created for the development of other areas due to the multiplier effect. Japan, South Korea, Chile, Malaysia, Singapore, Thailand, etc. are among the countries that successfully implemented the model of export-oriented industrial policy. Although Venezuela and Mexico applied this model, they did not succeed.

It is no coincidence that in 1961, the Japanese economist Kaname Akamatsu's Flying Geese paradigm emerged. This paradigm arose from the success of the export-oriented industrial model in the example of Japan. K. Akamatsu advised the late industrialized countries of Southeast Asia to use the Japanese experience.¹³

However, research on the results of the application of these models is expanding in individual countries. According to results obtained by a group of economists who conducted a comparative analysis of the policies pursued by 43 countries, which began reforms aimed at economic development in the 1980s, until the 2000s, they distinguished two groups of countries: countries that have achieved sustainable economic growth (Singapore, Malaysia, Korea, China, Thailand, Taiwan, Indonesia, Vietnam, Egypt, Tunisia, etc.) and countries that have not been able to achieve sustainable economic growth (mainly Latin American countries, etc.).

According to the results of the analysis of large volumes of data, they concluded that the following factors play a decisive role in whether countries can achieve sustainable economic growth:

- All countries that have achieved sustainable economic growth have made great strides, mainly in the export of industrial products;
- Prevention of artificial strengthening of the national currency exchange rate;
- The scale of the public administration sector;
- *Liberalization of foreign trade;*
- Access to economic opportunities (for example, level of education, access to finance, etc.);
- Improving institutions

The advanced experience of the leading countries in the field of economic regulation should be applied in our country, taking into account the requirements of the time and adapting to local conditions. The experience of East and Southeast Asian countries, which have made great strides in economic development over the past 20-30 years and have risen to the level of developed industrial countries, shows that the proper use of regulatory mechanisms is at the root of their success. A group of US economists (Amsden A., Intriligator M., McIntyre M., and Taylor L.) who studied the experience of late industrialized countries such as Japan, South Korea, Malaysia, Taiwan, and China concluded that *especially in the transition period, the state must play an active role in the reconstruction and strengthening of the industry*. They call on countries to be careful when implementing economic reforms and not to rush to leave everything to the market. According to them, liberalization and privatization reforms can often lead to further weakening rather than strengthening of newly established national economies when they are carried out under conditions where there is no real market competition, strict observance of the law is not achieved, and domestic production is not sufficiently strengthened. They urge the government to be careful when using the experience of other countries, to refrain from applying such practices mechanically, and to apply them by taking into account local conditions, national customs and traditions. ¹⁴

¹³ Akamatsu, Kaname (1961): A Theory of Unbalanced Growth in the World Economy. In: Weltwirtschaftliches Archive, Hamburg, no.86

¹⁴ Амсден А. и др. Политическая экономия развития о стратегии эффективного перехода // Вестник Московского Университета. Серия Экономика. 1996, № 1. стр.32- 47 (Amsden A. and Others. Development of Political Economy on Effective Transition Sstrategy // Bulletin of Moscow University. Economy Series. 1996, No. 1. pp. 32-47)

The formation and implementation of an effective investment policy of the government, first of all, requires the correct identification of all the obstacles (market and non-market) to investment activity, the right choice of political tools and means to eliminate each of them, the proper implementation of the developed policy. It should also be borne in mind that the same policy instruments and tools may have different results in different countries and in different sectors of the economy and that the effects of the policy instruments and tools applied may change over time and as the situation changes.

D. Rodrick, a professor at Harvard University, who constantly reviews the reforms implemented by governments in different countries around the world, emphasizes the importance of not confusing the tools and measures used to implement policies with institutions. He says changing tariffs and tax regimes is a simpler aspect of the issue. A more important aspect of this is how public behavior patterns, especially the government's approach to the private sector, are changing. What is important in the reforms is not the new quantitative restrictions and the level of tariffs, but the new rules and expectations that the reforms will create in terms of how decisions are made and how they are implemented. Such reforms also provide a new philosophical approach to development policy. Therefore, such reforms are becoming large-scale institutional reforms.¹⁵

D. Rodrick writes: "Institutional reforms must change not only the parameters of policy but also the behavioral stereotypes that have existed so far and hindered development."

Household behavior and investment decisions change in such a way that it is difficult to track and regulate them without knowledge of the "deeper parameters" of the economy.¹⁶

Industrial diversification, along with a number of traditional industries, requires the establishment of new non-traditional industries:

- First of all, it is necessary to expand the production of competitive heavy industry based on local raw materials;
- Azerbaijan has ample opportunities for the creation of new production facilities in other areas of the processing industry;
- During the implementation of the program, the launch of new production facilities with the application of high technologies is also among the priorities. Since high-tech production requires a large amount of research and development activities, it is advisable to limit the priorities in this area to several specific areas.

One of the main goals of industrial policy is to implement measures aimed at increasing the competitiveness of the industry. These measures should be supported by additional measures in accordance with the characteristics of different sectors as a result of field research. In order to increase the competitiveness of the industry:

- Agility should be increased in the regulation of energy tariffs;
- Agile tariff policy should be accompanied by favorable tax and customs regimes and agile exchange rate policy;

¹⁵ Д. Родрик. Реформа торговой политики как институциональная реформа. (D. Rodrik. Trade Policy Reform as Institutional Reform) http://siteresources.worldbank.org/INTRANETTRADE/Resources/Pubs/Handbook_rs_Rodrik_ch1.pdf
¹⁶ D. Rodrik, Ibid

- Opportunities should be expanded to attract investment in the industry;
- The use of preferential state loans and leasing opportunities should be increased;
- A mechanism to encourage investment in the non-oil industry should be established;
- A mechanism should be established to link infrastructure projects funded by the state with private sector investment;
- Expanding the application of public-private partnership models should be kept in focus.

Results and recommendations

Our study shows that the following structural problems are very clearly observed in the structure of Azerbaijani industry:

- About 70% of industrial production falls to the mining industry, including 65% to oil and gas production;
- Slightly more than 70% of industrial production and more than 85% of the new value created in the industry fall to oil and gas production and production of oil products;
- Crude oil, natural gas, and oil products account for 90% of the country's total exports;
- The level of development of processing industries in the country is still very low: if the production of petroleum products is not taken into account, the value created in the processing industry is less than 10% of the new value created in the industry during the year;
- *The processing industry mainly produces low and medium low-tech products;*
- *Up to 90% of industrial production takes place in Baku city and the Absheron economic region.*

As a result of the analysis, we conclude that the country's processing industry has not been a priority in the government's investment policy or in foreign investment in the country. Such that only 11% (10.5 billion AZN) of the 98.2 billion AZN of the fixed capital investment in the country's industry in 2005-2019 fell to the processing industry. During that period, more than 90% of 55.9 billion AZN of foreign investment in the country's industry was directed to the oil and gas industry, and less than 1.0 billion AZN (1.8%) to the processing industry. Furthermore, high and medium high-tech product groups have a small share in domestic investment in the processing industry.

Based on the study, we can say that serious reforms are needed to improve the investment climate in the country in order to improve the structure of the country's industry and increase the attractiveness of the processing industry for local and foreign investors. These reforms should address not only the expansion of tax incentives and subsidies but also the following issues that are more sensitive to investors in the first place.

- A unified government investment policy should be developed to increase investment activity and stimulate investment in the country. It should systematically and consistently reflect all the reasons that hinder the activity of potential investors and specific policy tools and measures to eliminate them;
- The institutional reforms to be implemented in the country and the behaviors they are aimed at should be presented in detail to the public and potential investors, indicating the implementation deadlines;
- In order to improve the investment climate, mechanisms must be provided to ensure the protection of property rights, not formally, but realistically, and the elimination of official entrepreneurship must be ensured;
- Establishing an independent and fair judiciary is the number one issue of institutional reform

because resolving many of the barriers to business development and investment activity depends primarily on ensuring the fairness of the judiciary;

- Government's decision-making mechanisms regarding business should be changed, drafts of such decisions should be submitted for public discussion in advance, the positions of various stakeholders should be studied, the grounds for these steps and the results of the assessment of their impact on business should be made public;
- Government's practice of making secret decisions that affect business costs and revenues should be abandoned. There should be a government program for such changes, which should set out the timing and justification for the expected changes. In order for a business to plan its jobs properly, the public and business must be informed of such planned changes at least 6 months in advance;
- Government policies on macroeconomic stabilization, fiscal, monetary, and investment incentives must be effectively coordinated;
- New laws should be adopted, such as the Competition Code, as well as the Law on Investment Activity and the Law on Protection of Foreign Investments.
- A system of comprehensive measures to attract foreign direct investment in the country's non-oil sector, especially in the export-oriented processing industry, should be developed and implemented;
- In order to establish the activities of several world-renowned companies in our country for the production of certain products, individual negotiations should be conducted with them and conditions should be created for their activities.

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| Structural Problems of the Azerbaijani Industry: Causes and Solutions |
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