

INNOVATIONS AND STRUCTURAL PROBLEMS OF INDUSTRY: COMPARATIVE ANALYSIS OF AZERBAIJAN'S INDICATORS WITH TURKISH REPUBLICS

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INTRODUCTION

Innovations in industry directly affect the structure of the economy, sometimes creating problems. Today, structural problems are the main factor limiting economic growth and development. These are problems created by existing non-competitive industries and markets, since the decline in economic growth potential also has a negative impact on the sectoral structure of growth. Real structural transformations will contribute to increased productivity, efficiency and sustainability, and increased incomes of the population. It is advisable to increase the qualitative component of economic growth with the introduction of radical innovations in industry.

OBJECTIVE AND TASKS

The purpose of study is innovations whose influence to structural problems of industry and national economy of Azerbaijan. This investigation consists from 3 main objectives:

- 1) analysis of economy potential of Turkish republic;
- 2) analysis of innovations in Azerbaijan industry and
- 3) SWOT analysis of investments from Turkish republics to liberated lands of Azerbaijan.

MATERIALS AND METHODS

In this article have used the statistical date grouping, used to comparative analysis, SWOT expert analysis.

RESULTS

Turkey has characterized the balanced structure of economy in 2020: industry has got 25.6% of national economy, recycling - 21.5%, services – 32.7%, transport – 12,0% trade – 16.3% and building- 5.9%. Former Soviet Union republics haven't got balanced structure: industry in Kazakhstan has got share about 32/0% in 2022, Kyrgyzstan – 18.9%, Uzbekistan – 26.7%, Turkmenistan – 36.8% (Table 1.).

As can be seen from table 1, the largest share belongs to industry in Azerbaijan economy structure in 2022 is equal to 55.2%. To increase the sustainability of the economy, it is advisable to increase the share of processing in the industrial structure in order to reduce the share of production [14-16]. To this end, many events are being carried out in Azerbaijan, concepts and programs are being adopted, the implementation of which should yield positive results in the near future.

Table 1 – Sectors of the economy, % in the national economy of Turkish republics

	Industry	Recycling	Services	Transport	Trade	Building
Turkey						
2015	22.4	18.9	32.4	12.0	16.2	9.2
2020	25.6	21.5	32.7	12.0	16.3	5.9
Azerbaijan						
2015	36.2	5.5	21.6	8.7	13.5	13.1
2022	55.2	5.4	15.8	8.0	10.6	5.2
Kazakhstan						
2015	26.2	10.8	31.6	11.8	19.1	6.3
2022	32.0	14.5	29.1	8.8	18.8	5.7
Kyrgyzstan						
2015	18.3	15.4	25.6	8.9	22.6	9.2
2022	18.9	14.1	30.5	6.9	21.6	8.4
Turkmenistan						
2015	45.9	43.2	24.9	6.4	4.2	9.2
2022	36.8	34.7	31.4	8.0	5.2	7.4
Uzbekistan						
2015	18.9	26.4	13.9	9.4	7.9	5.6
2022	26.7	27.5	20.5	7.0	7.0	6.7

* dates of 2020. Source: [10]

In the structure of the economy in Turkish countries, there is a tendency for industrial growth (processing), complication of the existing structure of economy, increased attention to transport on an innovative basis, creating the basis for sustainability and stability in the conditions of depletion of natural resources and deterioration of the ecological state.

The main problem of industrial growth in Azerbaijan are:

- inefficient sectoral and technological structure of industry (high-tech production - 2-3% of output, although in developed countries it is 15-17%);
- low labor productivity; low level of competitiveness of domestic products in global and domestic markets;
- high material intensity, energy intensity, import dependence, low level of use of public investment, low level of coordination, modern equipment is purchased for the production of non-innovative products.

The importance of competitiveness, productivity and efficiency is increasing. The spasmodic and uneven nature of technological development is justified by the growth or slowdown of the pace of technological progress (table 2).

Table 2 - Fixed assets and investments in fixed capital for Azerbaijan industry

	2018	2019	2020	2021	2022
Structural independence	1.70	1.44	0.98	1.56	-
Economic complexity of Azerbaijan, place	124	120	121	115	-
Investments in fixed assets, total by Azerbaijan industry, %	3.59	1.12	1.04	1.0	1.96
<i>Production</i>	4.51	1.06	1.0	1.03	2.18
<i>Treatment</i>	1.28	1.66	1.26	1.40	2.26

Source: [11]

As noted above (Table 2), the intensity of the impact of investments on process of reproduction of fixed assets in industries is determined by the ratio of investments to fixed assets. The replacement time for worn-out equipment is much shorter. Improving the situation can be facilitated by active investment activities to increase production efficiency, economic sustainability and improve the social situation of the population.

Let's consider mutual investments of the Turkish republics. Our country is actively attracting foreign investment for the newly liberated lands of Azerbaijan [1] due to the large costs in the field of urban development, transport infrastructure, communications, industrial enterprises, and economic restoration. The most important partner of Azerbaijan is Turkey and there are currently 111 applications from Turkey to invest in Karabakh, which will be create environmental and uptodate engineering structures in

future. SOCAR (State Oil Company of Azerbaijan) plans to implement new investment projects in Turkey's petrochemical sector: growth projects such as international petrochemical trade, increased exports of electricity and natural gas, investments in improving the reliability of logistics and storage systems, and sustainable aviation fuel operations. The agenda includes increasing the number of projects aimed at improving energy efficiency, as well as accelerating decarbonization through the development of environmentally friendly products in Turkey [6].

On March 2024, representatives of Azerbaijan and Kazakhstan discussed the creation of a joint investment fund, the organization of joint production in industrial parks, the construction of a grain terminal in the port of Alyat, cooperation in the shipbuilding sector, as well as the possibility of participation of Kazakh companies in projects implemented in territories liberated from occupation. The representatives also discussed issues of expanding cooperation in the oil and gas sector, the possibility of increasing the volume of transit of Kazakh oil along various routes, as well as cargo transportation along the Middle Corridor [8].

Over the past 2 years, mutually beneficial trade relations between Azerbaijan and Uzbekistan have improved. The presidents of the two countries set a goal to increase the volume of mutual trade to \$1 billion over the next five years. A joint investment fund worth \$500 million, created on February 2023, creates prospects for cooperation in the field of gas chemistry, energy, agriculture, food industry, and also contributes to additional favorable conditions for bilateral and transit cargo transportation with a discount and preference of up to 50% for rail transportation through infrastructure Azerbaijan. Following the results of a trilateral meeting between representatives of Azerbaijan, Uzbekistan and Kazakhstan, held on November 2023, a joint communiqué was adopted, which reflected issues of energy exchange with a focus on cooperation in creating appropriate infrastructure, development and export of ammonia and green hydrogen, renewable sources, etc. [9].

The Azerbaijan-Kyrgyz Development Fund will begin operating since autumn of 2024. The representatives have already completed internal procedures. Yaks, agricultural products, and textiles are exported from Kyrgyzstan to Azerbaijan. Azerbaijan is investing \$850 million in projects of Kyrgyz entrepreneurs in the field of processing fruits, vegetables and construction, and also plans to supply oil products to partners and develop tourism [12].

As noted above, a sustainable economy that can compete on the basis of innovation requires a certain level of economic complexity. A country's economic complexity is a reflection of its current competitiveness and determines the potential for its future competitiveness. Therefore, to improve

the level of economic complexity, it is advisable to carry out real structural changes in order to increase the country's competitiveness and the level of sustainable development. The development of the economy and its modernization is associated with the need to change the structure of economy by not only domestic but foreign investments (table 3).

Table 3 – SWOT analysis of investments from Turkish republic to Azerbaijan industry

Strengths	Weaknesses
The main investors of Azerbaijan are Turkey and Kazakhstan, which invest in many innovative projects in the construction of cities, industrial facilities and transport and communication facilities.	Uzbekistan and Kyrgyzstan signed an agreement in 2024 on investing in industrial facilities in the liberated lands of Azerbaijan.
Opportunities	Threats
Investments are being introduced into the ICT sector enterprises, into the industrial production sector, into urban planning, and into the tourism industry subjects.	Azerbaijan's investments to other Turkish republics exceed the investments of Turkey and Kazakhstan to Azerbaijan.

Source: [2]

Despite the fact that the technology market in Azerbaijan can be called “young” in relation to developed countries, it is developing and strengthening, gaining dynamism. State support contributes to the growth of labor productivity, which indicates the advisability of state support for the innovation market.

The reform package proposed by the International Bank for Reconstruction and Development in 2022 will contribute to annual GDP growth in Azerbaijan by an average of 1.7 percentage points until 2050. Azerbaijan's long-term growth will be affected by points A to E (Table 4.).

Preliminary data suggests GDP growth will peak at 2.1 percentage points in the 2030s - when most reforms have matured and TFP growth is rising rapidly - but then in the long run in 2040 it approaches 1.6. As can be seen from Table 4, private investment reforms lead to significant additional economic growth: medium-term growth of about +0.5 in the 2030s. In the long term, gradual growth will be observed in the areas of non-energy TFP and human capital.

Additional growth is likely to come from the non-energy sector, with reforms boosting non-energy GDP growth by almost 2 percentage points through 2050. But in the long term, there may be some decline in the energy sector of Azerbaijan (see Table 4.). GDP per capita is projected to increase from US\$5,880 in 2020 to US\$10,213 in 2050. The ratio of cumulative growth to the base scenario will be 74%/11%.

Table 4 - Summary of simulations for Azerbaijan

	Average growth rate, Percentage			
	2024-50	2024-29	2030s	2040s
I. Headline GDP				
Baseline	0.5	1.1	0.5	0.1
Incremental growth from reforms (one-by-one), ppts:				
A. Non-energy TFP growth	0.9	0.6	1.1	0.8
B. Human capital growth	0.4	0.0	0.3	0.6
C. Private investment	0.3	0.2	0.5	0.1
D. Public investment	0.0	0.2	0.0	-0.1
E. Female participation	0.1	0.1	0.1	0.1
Combined reforms package	1.7	1.0	2.1	1.6
II. Non-energy GDP				
Baseline	1.6	2.0	1.8	1.3
Incremental growth from reforms (one-by-one), ppts:				
A. Non-energy TFP growth	1.1	0.9	1.5	0.7
B. Human capital growth	0.5	0.0	0.5	0.8
C. Private investment	0.2	0.1	0.3	0.2
D. Public investment	0.0	0.1	0.0	0.0
E. Female participation	0.1	0.2	0.2	0.0
Combined reforms package	1.9	1.4	2.6	1.7
III. Energy GDP (Oil +Gas) Baseline				
Baseline	-2.3	-0.2	-2.2	-3.5
Incremental growth from reforms (one-by-one), ppts:				
A. Non-energy TFP growth	-0.1	-0.1	-0.3	0.1
B. Human capital growth	-0.1	0.0	-0.1	-0.1
C. Private investment	0.4	0.2	0.9	0.1
D. Public investment	0.0	0.3	0.1	-0.2
E. Female participation	0.0	0.0	0.0	0.0
Combined reforms package	0.3	0.4	0.5	-0.1

Source: [7]

First, the reform package cannot solve the problem of dwindling oil reserves and natural resources. Second, reforms increase the productivity of the non-energy sector relative to the energy sector. This productivity gap leads to additional investment in the non-energy sector and this increasingly reduces the impact of reforms on the energy sector.

Reforms improve not only the internal structure of the economy, but also its changes in the post-oil period of development. It is necessary to direct efforts and investments to the development of radical technological developments in the production and processing of hydrocarbons, and their optimal transportation. Real institutional reforms should be aimed primarily at industry, the sphere of high-tech services, and transport infrastructure.

CONCLUSIONS

Economic development and its modernization is associated with the need to change the structure of the economy. A qualitatively new structural policy is advisable, based on an analysis of the changes that have been observed in recent years of economic development [3-5]. Supporting the innovation market is important at the initial stage, as it can subsequently hinder further development and lead to a decrease in the dynamism of the innovation market. This requires consistency and continuity of activities to improve efficiency and focus on achieving real results.

The priorities for the development of the national economy of Azerbaijan based on competing innovations are:

- production, financial, organizational, marketing, environmental innovations in the field of energy, manufacturing, ICT, and transport infrastructure;
- concentration of all attracted investments not only in production areas, but also in urban planning and the creation of industrial structures;
- acceleration of reconstruction, rehabilitation, modernization of unprofitable industries;
- investing and supporting the coordination of research activities with practice, creating a chain “University (Scientific Institute) – industrial production – investment (financing);
- creating mechanisms to stimulate organizational innovation;
- improving state support mechanisms in order to increase agricultural production using radically intensive methods;
- support for the development of agro-industrial integration;
- sustainable development of personnel training.

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