

Innovative and Traditional Industries in the Azerbaijan Economy: Dualism or Contradictions

Parvana Mamadova
Azerbaijan Technical University
Baku, Azerbaijan

Mikhail Y. Lukyanov
Ufa State Petroleum Technological University
Ufa, Russia

Leyli R. Rustamova, Stanislav I. Chernyavsky
MGIMO University
Moscow, Russia

Abstract—Azerbaijan is one of the best developed economies in CIS, its oil and gas sector contributes to the development of the country the most significant part. At the same time, the innovative sector plays a very important role in the contemporary situation – the oil prices are hard to predict, the global situation is turbulent. In this regard, the development of innovative economy for Azerbaijan is one of the key priorities. The article aims at the revelation of the main aspects of interactions between the traditional and innovative industries of the country's economy and to assessing the risks and benefits that the shift to innovations may bring to the economy of the country. The novelty of the article incorporates the development of the ineffective innovations vicious circle for the economy of the country.

Keywords—Azerbaijan; innovations; traditional industries; influence; institutions

I. INTRODUCTION

The innovative development of the economy today may contribute to the new and prosperous industries' development, bringing additional profits to the government (taxes), corporate sector (through innovations distribution) and private sector (through higher disposable income and lower costs of products) [1].

Still, this scenario is limited by the economic institutions and path dependence of the economic development of the country – the majority of the current innovative leaders have either massively invested in innovations for a long period of time creating a strategy of sustainable development of innovations in their economy (just as the USA or Germany), or have undergone revolutionary changes (Japan and China), which contributed to the development of a mighty innovative economy sector prior to the other sectors.

When speaking about the former USSR countries, especially those countries, which possess rich natural resources, such as Russia and Azerbaijan, the countries tend to form dependence on the extraction of the natural resources, majorly, oil and gas, and trading them with Europe or China (depending on the political and logistics situation).

In this regard, the development of innovations in both mentioned countries fails (or, at least, failed until recently), as the rate of return on innovations is generally lower than the rate of return on oil and gas industries [2]. In this article, the authors aim to assess the innovative potential of the Azerbaijani economy and to reveal the interconnections between the innovations sector and the traditional industries in Azerbaijan.

II. METHODOLOGY

The authors pursue the following methodology in this paper.

The first step is the estimation of the traditional and innovative industries contribution to the GDP. The traditional industries for Azerbaijan are the industries, connected with the extraction of hydrocarbons, while the innovative industries, according to [3, 4], are to penetrate all the sectors of the national economy. In order to do that, the authors refer to the GDP structure and growth and conduct an analysis of the GDP dynamics and correlation analysis of its sectors' development, allowing to proceed to the second step, the analysis of the innovative cluster finance.

The second step is the analysis of the financial resources used to finance the development of innovations. It is based on the research of the structure of investment inflow in the sector in 2018.

The two previous steps lead to development of the potential vicious circle of innovations in the country and allow to offer the ways of how to avoid it.

III. THE ANALYSIS OF THE GDP COMPOSITION AND MAIN ECONOMIC INSTITUTIONS OF AZERBAIJAN

The first step of the analysis is to assess what the influence of the traditional industries on the Azerbaijani economy is. This assessment contributes to the formation of the institutions in the economy of the country and allows to evaluate the flexibility of these institutions, which are to be transferred to the innovative development paths.

As we have already mentioned, the traditional industry for Azerbaijan is the oil and gas industry, while at the same time, with the development of globalization, the country has become one of the actively trading economies of the Caucasus region. Taking this into account, it is necessary to point out the revenues of the country from exports.

Fig. 1 demonstrates the dynamics of the main components of GDP. These dynamics are non-linear and massively depend on the oil and gas sector, which serves as the driver for the national economy. This statement is easily proved by the deviation of the GDP from the previous track of growth ratio with the growth or fall of the oil and gas sector revenues, while the two other sectors preserve their dynamics of development.

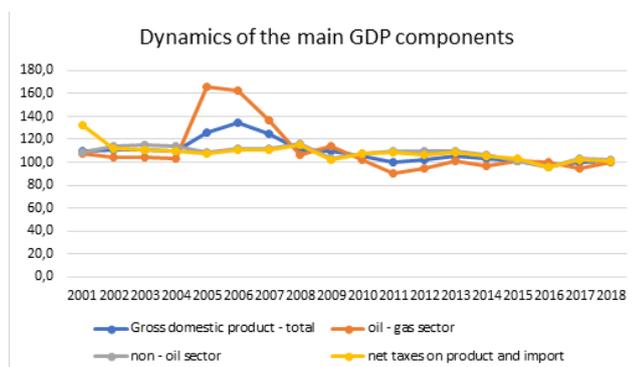


Fig. 1. The dynamics of the main sectors of the Azerbaijani economy (based on [5]).

The further study of the statistics is based on the correlation analysis of the sectors' development. The correlation matrix is presented in Table 1.

TABLE I. CORRELATION MATRIX (OC – OIL AND GAS SECTOR, NOC – NON-OIL SECTOR, NTIE – NET TAXES ON PRODUCT AND IMPORT, CALCULATED BY AUTHORS)

	OC	NOC	NTIE
GDP	0.928439296	0.511964132	0.362559888
OC		0.208616807	0.149770904
NOC	0.208616807		0.621498516
NTIE	0.149770904	0.621498516	

The analysis of the matrix allows to estimate the capital flows in the Azerbaijani economy, which are directed mainly from the oil and gas sector to the personal capital of the Azerbaijani richest people, while the main taxpayer is non-oil sector. At the same time, it is the second largest contributor to the GDP, and hence may be considered as the main contributor to the innovative development of the country's economy [6].

In this regard, the Azerbaijani economy has only one way to generate innovations – to push the non-oil sector to produce new products. When comparing this option to the capital flows in Russia, for instance, the situation differs – due to higher market liberalization, the privatization of the oil and gas industry brings more harm to the Azerbaijani innovative development than to the Russian [7].

The main market institutions in the country are aimed at the production of significant amounts of natural resources, and, as it follows from [8], these institutions are not pro-innovative. At the same time, we cannot avoid mentioning the main factors, contributing to the innovative development of the country:

- 1) The high volatility of oil prices. This factor leads to the higher expenses and lower profits in the traditional sectors of the national economy, forcing the corporations to diversify their business. Due to the fact that these corporations are built on the basis of reliance on high ROE, the search for new industries turns into search for high ROE, building up innovations demand.
- 2) The necessity to diversify exports. While the country is in the state of transition of the economy to innovative development, the financial resources needed for this process are significant, so they can be acquired through trade surplus gained by export growth. Because of the oil price volatility, stable financial inflow can be gained only by export diversification.
- 3) The potential social unrest. High revenues and a higher average income of the Azerbaijani citizen, compared to its neighbors, leads to the unrest in case the dynamic of income growth shifts to the downward. In order to avoid negative social effects, the government of the country is forced to seek ways to preserve the dynamic of population income – one of the possible ways is to develop innovative economy.

All the mentioned factors contribute to innovations development in Azerbaijan, at the same time, they lead to the growth of surge for innovations by the corporations and population. Hence, the interests of all the main parties of the economy (state, corporate and private sector) are the same – they all support the innovative development of the economy.

IV. THE MAIN INNOVATIVE TRENDS IN AZERBAIJAN

Innovations are needed by all the economy sectors of the Azerbaijani economy, still the financial model for these innovations and the institutional structure of the support of science is not developed yet. Fig. 2 allows to give several important conclusions on the development and future of the innovative development model of Azerbaijan.

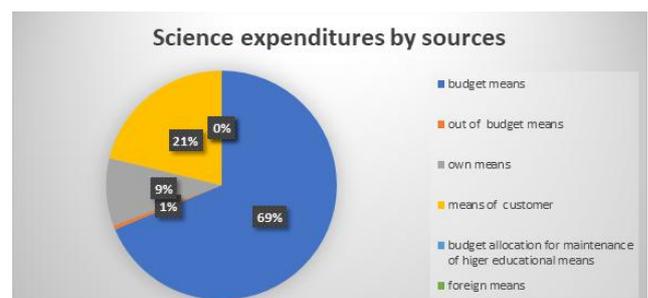


Fig. 2. Science expenditures structure in Azerbaijan [5].

The majority of financial resources invested in the Azerbaijani innovations are acquired by the sector from

government, while the 21% share of investments from clients is not enough to consider the sector oriented to the profitable projects.

Underneath this structure of investments there are several following reasons:

- 1) The financial resources of the private and corporate sector require high rates of return, while the current stage of the innovative sector development in Azerbaijan does not provide them.
- 2) The Azerbaijani budget offers several mechanisms of innovations stimulation through the funds, cofinanced by Azerbaijan and UNDP [9] and offered for innovative projects in all spheres.
- 3) The innovations' spheres in Azerbaijan, according to the Innovation Agency under the Ministry of Transport, Communications and High Technologies of Azerbaijan, are robotics, social innovations and ecology – namely the spheres of innovative development under Industry 4.0, so the technologies, which are required, are created from a low base, forcing massive investments in public goods, which can be offered only by government or by big enterprises seeking for new sources of revenues in the future [4, 9].
- 4) The number of projects that are interesting for the private companies due to path dependence is quite narrow, and the majority of research financed by customers are aimed at developing traditional industries, and forcing them to provide extra profits.

The named reasons contribute to the high dependence of innovations on the government spending policy, which, in turn, depends on the budget revenues and the proved effectiveness of innovations. Hence, the development of innovations in Azerbaijan depends on the current results of the innovations incorporation in the national economy of the country, so there is a danger of creation of a new vicious circle, which will look the following way (Fig. 3).

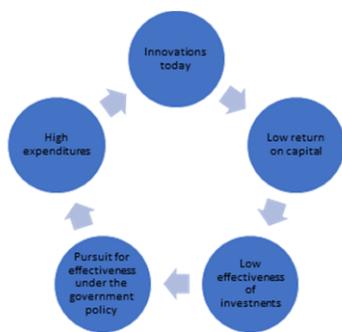


Fig. 3. The potential ineffective innovations vicious circle in Azerbaijan (developed by the authors).

It is important to avoid the circle presented in Fig. 3 in order to preserve the innovative dynamics of the Azerbaijani economy.

V. DISCUSSION

The current stage of the Azerbaijani economy leaves enough space for the maneuver of innovative development of

the country. First of all, the revenues from oil and gas are still high enough, secondly, all the economic agents are interested in innovations and lastly, the global conjuncture is beginning the transformation in accordance with the Industry 4.0 technologies.

The only danger for the innovative development of Azerbaijan is the vicious circle of ineffective innovations presented above. The research provided allows to make conclusions on how to avoid it.

The first and foremost step is the creation of the mechanisms of innovations effectiveness assessment under the Innovation Agency, as the main investor institution in the innovative sphere in the country. In case of “innovation-for innovation-only” project offered for support to the agency, it should have the mechanisms to reject it and prove the ineffectiveness of such an approach [10].

The second step is the creation of mechanisms for the attraction of private investments in the innovative economy and the promotion of vision of Azerbaijani economy as an innovative one. This includes the fiscal stimulus for the innovative businesses, the benefits for the corporate investors in innovative projects, such as the priority access to the research results and the financial bonuses, for instance, the financial support of their export products created with implementation of innovations developed in Azerbaijan.

The creation of a government program “Developed in Azerbaijan – 2020” aimed at the international marketing of the Azerbaijani innovations.

The creation of instruments of international cooperation in the sphere of investment in Azerbaijani innovations. This system should include not only the UNDP, but also individual economies, which are to invest in Azerbaijani science. This should be achieved by the proliferation of mechanisms of international investment cooperation, for instance, with Turkey or the Arab world, based on the principles of Islamic banking. This practice will contribute to the development of both innovations and cultural ties between Azerbaijan through Turkey and the countries of the Persian Gulf.

The introduction of control mechanisms allowing to avoid or decrease the quantity of opportunist behavior in the sphere of innovations and their financing. These mechanisms are to be under control of the government authorities, and to provide control over the quality of innovative services provided to the client at all stages (from the development of the product to the user experience control).

All the mentioned measures will have the most of their effect in case they are implied as a complex and in case the conditions in the Azerbaijani economy do not change to the worse due to a further decline in oil prices. In this case, the implementation of these measures will be needed in any case with no regard to the limits, which are aimed to be overcome in the supposed measures.

VI. CONCLUSION

The article gives a review of the state of innovative development and its correlation with traditional industries in Azerbaijan. The main conclusion is that the model imposed in the Azerbaijani economy differs significantly from the model offered in other CIS states – namely, the scientific

development is financed by the government, but not from the sources acquired from taxes and government corporations, but from the funds raised in cooperation with international organizations.

The other important point is that the current economic situation in the country forces the corporate and the private sector to push the innovative development forward, despite the risks that may arise during the process. This push may result in the creation of the ineffective innovations' vicious circle (taking into account the institutional specifics of the country into false innovations vicious circle), which in turn will lead the economy in the recession.

The measures, which are to be taken to avoid this process, concentrate on the creation of a single strategy of innovative development and the control mechanisms regulating this sphere. In other case, the effect the innovations provide on the economy of the country will prove to be negative.

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