REPUBLIC OF AZERBAIJAN

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ABSTRACT

of the dissertation for the degree of Doctor of Philosophy

FISCAL MECHANISM AND IMPROVEMENT OF INNOVATIVE DEVELOPMENT

Speciality: 5308.01 – "General economy"

Field of science: 53 - Economic sciences

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Dissertation Council ED 2.10 of Supreme Attestation Commission under the President of the Republic of Azerbaijan, operating on the basis of the Azerbaijan State University of Economics

Chairman of the Dissertation council: Doctor of economic sciences, professor **Yashar Atakishi Kalbiyev**

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INTRODUCTION

Relevance and degree of development of research. In the "Sustainable Development 2030" agenda adopted by the United Nations in 2015, the 9th main goal of the 17 goals proposed for the implementation of sustainable development is defined as the main goal of establishing the joint development of industry, innovation, and infrastructure. Investments in industrial development, human capital and technological progress play an important role in building sustainable infrastructure, promoting sustainable industrialization and innovation, according to the 9th key goal identified in the 2030 Agenda. Achieving sustainable development goals in the Republic of Azerbaijan, which is a full member state of the UN, has been chosen as the main priority for future development.

The main state programs in our country are the future vision development concept covering the years 2012-2020, strategic road maps covering the years 2016-2030, socio-economic development priorities covering the years 2021-2030, covering the years 2022-2026 In the strategy of socio-economic development, competitiveness, economic inclusion, further improvement of social well-being are defined as priority directions of economic development.

Today, the countries that allocate more funds to science in the world and as a result achieve rapid development are the United States ($679.4 billion), China ($551.1 billion) and Japan ($182.2 billion). Israel (4.8%) and South Korea (4.5%) are the leading countries in spending on science as a percentage of the Gross Domestic Product (hereafter GDP), while Azerbaijan (0.2%) ranks 96th in the world according to this indicator. The formation of a favorable fiscal mechanism for innovative development is also a necessity arising from this.

Azerbaijani scientists T. A. Guliyev, A. J. Muradov, M. A. Ahmadov, RTHasanli, R. A. Balayev, A. Hüseynova, S. I. Humbatovan, T. N. Aliyev, Z. M. Najafov discussed the advantages of innovation-based economy, financing of innovations, fiscal regulation of the economy. issues, financial risks, studies on the digital financial economy, Azerbaijani scientists AFMusayev, A.A. Alekbarov, A.J.

Mammadov, I.Z. Seyfullayev, SMMammadov, Sh.S. Gafarov , YAKalbiyev, ZMMammadov, Russian scientists Yeshelyubskaya, YPAmmosov , RRNelson, F. Valenta, I.N. Lapin, LV Kantarovich, V. Rappoport, DMGvishiani, I.T. Balabanov, ABBorisov, VLMakarov, SYGlazyev were elaborated with reference to the scientific works of I.V. Skolbyakova.

The researches of world economists, especially JAShumpeter, RMSolow, PMRomer, VDXartman, HDKhaushtein, TSBryan, G.Mens, K.Freeman, KMShwab and other scientists who researched the issues of economic growth and innovative development, were used in the writing of the dissertation.

The object and subject of the research. Providing innovative development on the basis of science-production-state relations is the object of the research, issues of improving the fiscal mechanism of innovative development are the subject of the research.

Research goals and objectives. Research main job Its purpose is to develop scientifically based proposals and recommendations for its improvement based on research and study of the fiscal mechanism in ensuring innovative development in the Republic of Azerbaijan.

To fulfill this goal, the following tasks were defined and fulfilled in the study:

- Investigate conceptual approaches to ensuring innovative development;
- To study the application of financing and fiscal mechanism in innovative development;
- To analyze innovative development indicators in the national economy;
- To assess the implementation of the fiscal mechanism of innovative development in our country;
- To study the institutional directions and state policy of innovative development in the Republic of Azerbaijan;
- Investigate the possibilities of using world experience in improving the fiscal mechanism of innovative development;
- To determine the directions for increasing the efficiency of the implementation of the fiscal mechanism of innovative development in our country;

- To make proposals on the formation and improvement of the national innovation system in Azerbaijan;

Research methods. Research methods such as comparison, analysis, expert, mathematical-statistical, induction, deduction, personal observation, scientific abstraction, econometric modeling, systematic approach, graph, table, statistical and survey methods were used in writing the research paper.

The main provisions submitted to the defense. The main provisions presented to the defense consist of the following:

- Effective fiscal policy aimed at ensuring innovative development requires a maximally limited choice of scientific research directions and innovation development vectors.

- A significant increase in budget allocations to the scientific-research sector in the country can lead to effective results only at the level of reform aimed at ensuring the interaction of science and production in the scientific-research sector .

- The role of the fiscal mechanism in innovative development is not limited to the application of tax subsidies and tax breaks, as well as providing the flow of funds to investment and scientific research, as claimed in most studies. The stimulating role of the fiscal mechanism is also evident in the support of venture funding and the application of the mechanism of public procurement to innovative products.

- At the level of modern global economic processes, the serious impact of the fiscal mechanism on innovative development depends significantly on the resource potential of each country - in particular, the state's financial capabilities and the country's scientific personnel potential.

- In order to increase the real impact of fiscal policy on innovative development in Azerbaijan, it is considered appropriate to create a special preferential tax environment for foreign investors who can turn the country into a place of innovation and to use other mechanisms of fiscal policy, such as the mechanism of public procurement.

- In terms of increasing the impact of fiscal policy on the development of innovation, it is appropriate to make serious improvements in the depreciation policy - to cover only the equipment and facilities used in technological and direct production with a rapid depreciation policy, to increase the depreciation rate for the main funds used in scientific research

to 30-50 percent.

- The innovative development of companies and entrepreneurial structures, which are the main locomotive of the innovative development of the national economy, especially high-tech export and ICT manufacturing enterprises, depends significantly on state concessions, the effectiveness of fiscal policy and incentives.

- In order to create value and achieve success in the modern economy, in order to increase the competitiveness of the global innovation index, it is appropriate to determine the measurement criteria for the purpose of assessing the impact of non-technological innovations on the innovative development and the well-being of the population .

Scientific novelty of the research. in the Republic of Azerbaijan In order to improve the fiscal mechanism of innovative economic development, the following scientific innovations were obtained:

- Implementation of effective fiscal policy in our country, opportunities for development of science, structure of domestic investments and new directions of state policy were studied.

- Using statistical and empirical methods, some indicators related to innovative development in Azerbaijan were evaluated.

- A survey was conducted in more than 100 large, medium, small and micro enterprises of our country regarding the research of innovation and its financing possibilities, and the results were analyzed, proposals and recommendations were prepared.

- In order to achieve the increase of the economic efficiency of the indicators, new approaches applied in the world experience were studied, suggestions for improvements were put forward based on the strategic development priorities of our country.

Practical significance of the study. The researched results can be used to improve the depreciation policy in our country, to update the structure of science expenses of the state budget, to prepare a state program to implement innovative development, to analyze the current situation related to innovative development in the country, and to make decisions.

Approval of research results . The main content, provisions, proposals and recommendations for the development of the innovative economy of the dissertation were reflected in 28 articles (7 articles, 21

theses) and thesis materials, 4 of which were published abroad, with a total volume of 16 chapters recommended by the Higher Attestation Commission of the Republic of Azerbaijan.

The name of the institution where the dissertation work was performed. It was performed and discussed at the Department of Economics of the Azerbaijan State University of Economics.

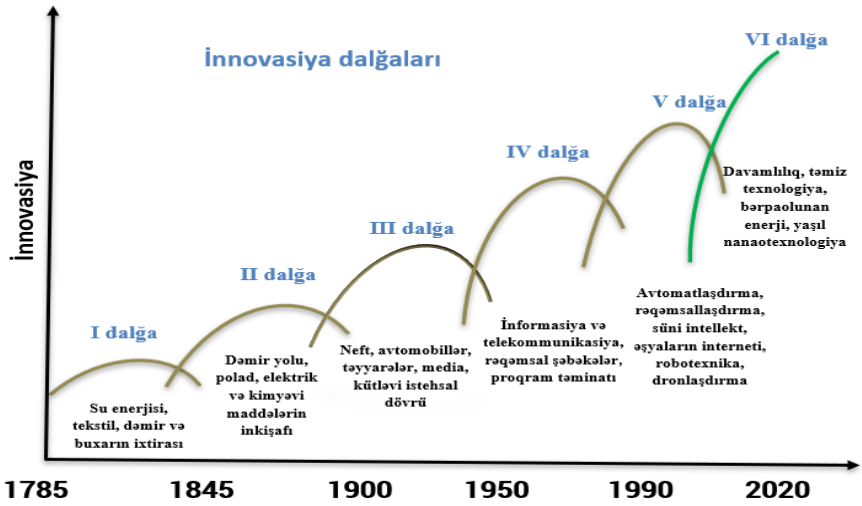
The structure of the research work. Research work introduction (16517 marks), three chapters (chapter I – 65104 marks, chapter II – 103408 marks, chapter III – 118398 marks), conclusion (8379 marks) 26 tables, 25 pictures, 10 graphs, 2 diagrams and results including 159 It consists of 151 (176 together with literature) pages along with the list of literature used in the title.

BRIEF CONTENT OF THE DISSERTATION

The dissertation consists of an introduction, three chapters, main results and a list of used literature. In the introduction of the dissertation, the relevance of the topic is justified, the purpose of the work, the issues solved to achieve the set goal, the main propositions defended, the scientific novelty and practical significance of the obtained results are given. **In the first chapter of the dissertation** entitled " **Theoretical-methodological foundations of using the fiscal mechanism in ensuring innovative development",** issues related to waves of innovation and conceptual approaches to innovative development, financing in innovative development and constituent elements of using the fiscal mechanism were studied.

The main feature of the modern stage of economic processes in the globalized world is characterized by the transition of human civilization from industrial society to post-industrial society. This process is measured by the impact on all spheres of social life as a result of the increasing opportunities of science and technology, its global nature, and the scientific and technological achievements that lead to large-scale socio-economic changes. Thus, the innovation process, which realizes the transformation of newly acquired knowledge into products or technological innovations, and the commercial realization of an innovative idea, comes to the fore.

Waves of innovation are trajectories that reflect periods of advancing technological, social, economic, and environmental change since the Middle Ages. If we characterize innovation waves:



Scheme 1. Waves of innovation [116]

Each wave of innovation spanning different eras is driven by a major invention or discovery that creates new opportunities and challenges for society.

Austrian scientist Joseph Schumpeter (1911) in his first systematic approach to innovative development characterized innovations in specific directions, viewed innovation as a change in technology and management process, and determined the function of the entrepreneur in the process as a link between invention and innovation. [88, pp. 130-150].

Maclauer, the main promoter of Schumpeter's ideas, divided the innovation process into stages of invention, innovation, finance and diffusion. He defined invention as the first stage of an idea, innovation as the application of an invention in a market, and diffusion as the spread of a technology or process throughout the market. [36, p. 83]

Robert Solow (1957) and his associates made special contributions to economic science with their scientific research, studied the state of economic growth , and studied the macroeconomic potential of innovation opportunities.

The American researcher Jansen evaluated the economic efficiency of the application of new technologies and innovation in his work. [89, pp. 9-10]

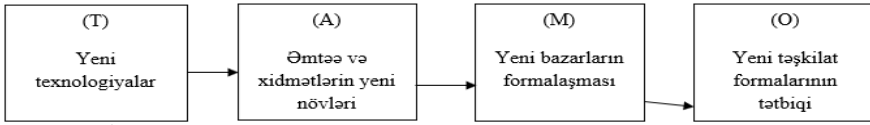


Figure 1. Innovation trajectory [89]

In Figure 1, in the TAMO model, innovation is considered as a mechanism that encourages the development of human capital and the rise of intellectual components [89, p.128-133]

Professor T. A. Guliyev (2013) in his book dedicated to human resources and labor economics, in the chapter entitled "Man and Economy" emphasizes the importance of scientific and technical achievements in the economic system in decision-making and economic dynamics, and calls innovation the product of a new idea [51, p. 81] .

In the studies of Professor A. Huseynova (2020), innovative development is taken as one of the main directions in the modernization of the national economy in our country. According to him, innovation is new and different, as a result of its application to products and services, customer problems are better solved, it has the power to renew the market, it is not always easily accepted, it is not equivalent to discovery and scientific discovery [28, p.42].

Summarizing various theoretical studies, it can be concluded that innovative development in our country spreads to different sectors without a unified approach, which leads to inefficiency. In today's era, when the VI wave of innovation is rapidly spreading, clean technologies, renewable energy, transition to the import and production of green nanotechnologies, the construction of smart cities, the efficient increase of financial resources for the development of human capital, the expansion of the application of communication and information technologies, and the establishment of digital management systems in local companies are managed from a single center. complex promotion measures will ensure the sustainability of the competitiveness of the national economy.

R&D (science expenditure), which is considered the most important innovation development factor, is regarded as a decisive driving force of economic development and technological progress. Since the 20th century, widely developed economic growth theories such as the Harrod-Domar model, Schumpeter growth theory, Solow growth model, Endogenous growth theory, cumulative cause theory, human capital, and theories related to national innovation systems focus on the mechanisms that can support the development of countries. [90, p. 31]

1. Implementation of effective fiscal policy in our country, opportunities for development of science, structure of internal investments and new directions of state policy were studied.

In general, public finance and fiscal policy in the Republic of Azerbaijan are provided as follows: (see scheme 2)

Scheme 2. State financial institutions and fiscal policy in the Republic of Azerbaijan [9]

Fiscal financing for innovative development involves the allocation of public resources to support innovation and technological progress.

The choice of fiscal financing strategies for innovative development depends on the economic and technological context of the country or region. The goal is to promote long-term economic growth, create high-value jobs and solve social problems through innovation.

As a result, if we summarize the constituent elements of the fiscal mechanism of innovative development, we will see that the fiscal

investment obligations aimed at promoting innovations, the financing mechanism of innovative enterprises, socially responsible investments, and innovative financing will lead the economy of Azerbaijan from an economy based on efficiency to an economy based on innovation. As a result, the analysis of economic growth models based on innovative development shows that the triple approach of innovative enterprise, innovative people, and innovative management will accelerate the trend of innovative economy to ensure sustainable development in the national economy.

In the second chapter of the dissertation entitled **"Analysis and institutional directions of the fiscal mechanism of innovative development in the Republic of Azerbaijan"** , the analysis of the general situation of innovative development in the national economy, the evaluation of the efficiency of the implementation of the fiscal mechanism of innovative development, the institutional structure of innovative development and state policy issues were studied.

The measurement of the innovation index for our country is currently calculated on the basis of indicators of research and development costs (science costs), information technology exports, high technology exports, high technology export share (percentage of total production exports), patent applications, patent results (revenues from the sale of intellectual property).

In particular, it should be noted that the application of non-technological innovations also increases the innovative values of the country and the well-being of the population, but due to the lack of measurement tools, the investments made in this field and the values it brings to the country are not taken into account as an indicator in the global innovation index.

2. Using statistical and empirical methods, some indicators related to innovative development in Azerbaijan were evaluated.

The change dynamics of the innovation index of the Republic of Azerbaijan is regularly published based on the reports of the World Intellectual Property Organization.

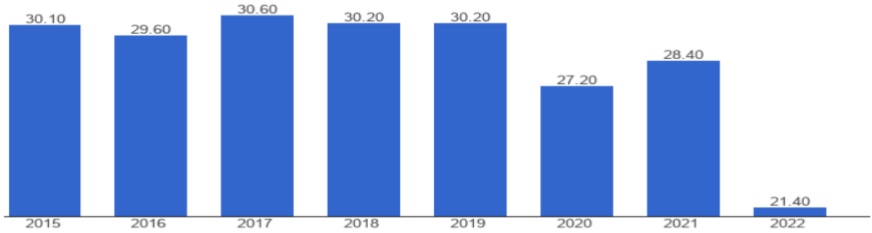


Chart 1. Innovation index score of Azerbaijan (out of a maximum of 100 points) [132]

Graph 1 presents the indicators of the innovation index for Azerbaijan from 2015 to 2022. In the mentioned period, the average value for our country was 28.83 points, in 2022 the minimum was 21.4 points, and in 2017 the maximum was 30.6 points. For comparison, let's note that according to the global rankings, the world average in 128 countries in 2022 was 32.09 points [156].

In the analysis of innovative development indicators in the national economy, *entrepreneurial structures in the state and private sector in Azerbaijan are measured by their share in GDP and economic growth, state budget and fiscal expenditures, science expenditures.*

Table 1.

Age structure of science workers in Azerbaijan by the end of 2022

Age structure of scientific staff	Researchers	Doctors of science	Doctors of Philosophy
Number of researchers - total, people (as a percentage of the total number of researchers)	14522	1422 (9.79%)	5785 (39.83%)
Up to 30 years old	1756	28 (1.59%)	99 (5.63%)
30-39 years old	3197	64 (2%)	945 (29.5%)
40-49 years old	2961	150 (5.1%)	1483 (50%)
50-59 years old	2728	278 (10.2%)	1300 (47.6%)
60-69 years old	2520	453 (18%)	1258 (49.9%)
70 and older	1358	449 (33.1%)	700 (51.5%)

Source: The table was prepared by the author with reference to the information of ARDSK and Science Development Fund.

47.6% of researchers working in Azerbaijan in 2022 are over 50 years old. In the number of staff engaged in research and work in scientific institutions, the number of people under the age of 40 who received doctorate degrees in 2022 is 64 people (only 2%) cannot be considered positive. (see table 1).

MODEL (1) Impact of science spending on GDP growth

Based on the time series data of GDP and science expenditure indicators given in Table 2, the regression dependency will be evaluated with the econometric analysis (E-views 10) software using the econometric modeling method [40].

Table 2. Statistical base of model (1).

İllər	Ümumi Daxili Məhsul (ÜDM) mln manat	Elm xərcləri (EX) mln manat	Daxili investisiyalar (DİNV) mln manat
1995	2133.8	-	149.3
1996	2732.6	-	267.7
1997	3158.3	7.2	308.8
1998	3440.6	6.3	356.1
1999	3775.1	7.9	395.2
2000	4718.1	9.3	460.3
2001	5315.6	9.4	437.7
2002	6062.5	11.4	546.1
2003	7146.5	16.6	938.3
2004	8530.2	20.0	1324.0
2005	12522.5	28.8	2104.9
2006	18746.2	32.0	2901.4
2007	28360.5	43.9	4626.7
2008	40137.2	62.1	7702.2
2009	35601.5	83.3	6079.9
2010	42465.0	92.8	7499.2
2011	52082.0	106.1	10199.0
2012	54743.7	116.7	12148.3
2013	58182.0	117.0	13178.9
2014	59014.1	124.2	12715.0
2015	54380.0	113.2	9058.5
2016	60425.2	110.2	6490.3
2017	70337.8	109.8	8765.2
2018	80092.0	117.8	11874.9
2019	81681.0	122.3	12867.1
2020	72578.1	143.6	12070.8
2021	93203.2	151.8	12561.9
2022	133825.8	167.8	14255.8

Source: Compiled based on the data of the State Statistics Committee of the Republic of Azerbaijan.

Science costs are a factor that positively affects innovative development. Quantitative characteristics of the impact of this factor on innovative development were econometrically evaluated based on the data given in Table 2. The parameters and statistical characteristics of the regression equation were tested for model fit using the method of least squares (OLS) in the E-views 10 (Econometric Views) package.

Table 3.

Statistical characteristics of the econometric model

Dependent Variable: LOG(UDM)
Method: Least Squares

Sample (adjusted): 2012 2022
Included observations: 11 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	10.19497	0.159825	63.78829	0.0000
LOG (EX (-15))	0.371246	0.058557	6.339942	0.0001

R-squared	0.817054	Mean dependent var	11.18042
Adjusted R-squared	0.796727	S.D. dependent var	0.273636
S.E. of regression	0.123371	Akaike info criterion	-1.184278
Sum squared resid	0.136983	Schwarz criterion	-1.111933
Log likelihood	8.513527	Hannan-Quinn criter.	-1.229881
F-statistic	40.19486	Durbin-Watson stat	1.651553
Prob(F-statistic)	0.000134		

Source: Compiled by the author based on the data of Table 2.

in Table 3, we can write the regression equation of the impact of science costs on GDP in the following way: [27]

LOG(UDM) = 10.195 + 0.371*LOG (ELM (-15))

(se) (0.16) (0.06)

R^2=0.817, DW=1.65

Here, GDP-gross domestic product, ELM-expenditure on science, (se) - standard error. The coefficient of determination (R-squared) is equal to 0.817, and about 81.7% of the year-to-year change in the volume of GDP in the studied years can be explained by the change in science costs and the factors that change simultaneously with it.

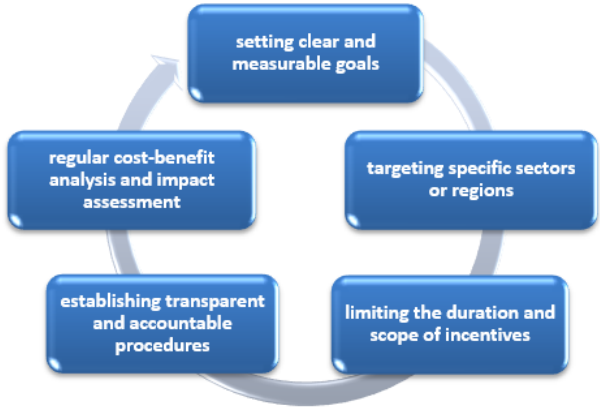
Based on the model (1), we can say that the coefficient of elasticity of GDP in Azerbaijan with respect to science costs is approximately 0.37. That is, a 1% increase in science spending 15 years ago increases the volume of GDP by approximately 0.37% in the current period. Since the elasticity coefficient is constant in the logarithmic model, we can say that the expenditures on science in the current year increase the volume of GDP by approximately 0.37% after 15 years. That is, there are scientific discoveries that are applied to the economy sooner than 15 years, and there are those that take place after 15 years. It should be remembered that the fuzzy logic theory of our compatriot, world-famous Lutfuzade, found its application in Japan after 30 years.

MODEL (2). Assessment of dependence of Gross Domestic Product on investments (see diss. 2.2.)

Investments are a factor that positively affects innovative development. The quantitative characteristics of the impact of this factor on innovative development were econometrically evaluated based on the data in table 2. The results are as follows:

LOG(UDM) = 3.947 + 0.774*LOG(DINV(-1)) +
[AR(1)=0.532,UNCOND]
Prob. (0.0000) (0.0000)
R-squared (determination coefficient) =0.974027, Prob (F-statistic) = 0.000000

Here of coefficients under in brackets written numbers of coefficients importance of the t test probability shows Every two less than 0.05 of the probabilities to be this of coefficients important that it is to say main gives Other with words their wrong dont probability of 5 percent too is below . Other with words from the model received numbers the facts 97.4 percent to reality has approached . The rest part in the model consider not received with facts related was .



Based on the model (2), we can say that the coefficient of elasticity of GDP in Azerbaijan with respect to domestic investments is 0.774. That is, a 1% increase in investment spending annually increases the volume of GDP by approximately 0.77% in the current period. Since the elasticity coefficient is constant in the logarithmic model, we can say that investment costs in the current year will increase the volume of GDP by approximately 77% after 1 year on average.

In order to determine the result of the application of tax incentives, it is important to pay attention to the following:

Scheme 3. Directions for measuring the efficiency of tax incentives

Source: The scheme was developed by the author based on the research of the analysis of tax incentives of the innovative countries of the world.

3. In more than 100 large, medium, small and micro enterprises of our country, a survey was conducted regarding the research of innovation and its financing possibilities, and the results were analyzed, proposals and recommendations were prepared.

Depreciation allowances and rapid obsolescence policies play an important role in shaping the financial environment for innovation within the enterprise. [120] [125].

For the 20 percent level of the profit tax, for every 1 manat that the state does not receive due to depreciation deductions, the taxpayer has an additional source of investment of 4 manats [52].

For the first time in Azerbaijan, the results of the survey conducted by the author are used to measure the R&D activity of business entities that have a role in innovative development.

The survey was organized on the basis of the "Google forum" survey mechanism. The survey included more than 100 micro (20%), small (30%), medium (12.5%) companies, including companies such as SOCAR, Azersu, Azerigaz, Kapital bank, International Bank of Azerbaijan, Innovation Center, Veysaloglu LLC, Htech Invest.) and among large (37.5%) companies.

Table 4.

Funding sources used by companies for R&D expenses

Funding sources used for R&D expenses in companies (in percent)	
From the profit of the previous year	43.2%
From personal funds	42%
From bank loans	18.5%
From other sources	17.3%
From depreciation deductions	12.3%
From tax relief	7.4%
From state subsidies and grants	7.4%
R &D expense incurred.	12.3%

Source: The table was compiled based on the results of the author's survey among companies operating in the Republic of Azerbaijan.

Note: (The sum of the percentages in the table exceeds 100 percent because the companies were given the option of choosing several appropriate answers. During the preliminary observations, it became clear that the companies benefit from one or more sources of funding for R&D expenses.)

The data of Table 4 show that the role of tax incentives applied in the country in the innovative development of companies is low. (total 7.4%). Companies that have to spend the previous year's profit, in other words, investment savings (see Harrod-Domar growth model, paragraph 1.2 of the dissertation) for reproduction (total 43.2%), allocate these funds to the most necessary innovation costs to withstand competition. The result is counter-productive as the company's investment opportunities to expand into wider markets are limited. In this situation, it becomes necessary to stimulate the support mechanisms for obtaining the required financial resources to ensure innovation-oriented development of companies and increase their competitiveness.

Table 6, it was found that the norm of depreciation deductions did not exceed 20% in all companies surveyed. In Table 9, only 12.3% of companies indicated depreciation allowances as a source of funding used for R&D activities. These results suggest that it is appropriate to increase depreciation allowances to 30-50% in enterprises with innovation-oriented expenses. (see: Dissertation introduction, scientific provisions submitted for defense)

In addition, the companies indicated that factors such as lack of personnel in establishing science-industry relations, insufficient competitive environment, obstacles to the development of local production of goods imported from abroad, lack of sufficient financial support are serious obstacles to innovative development.

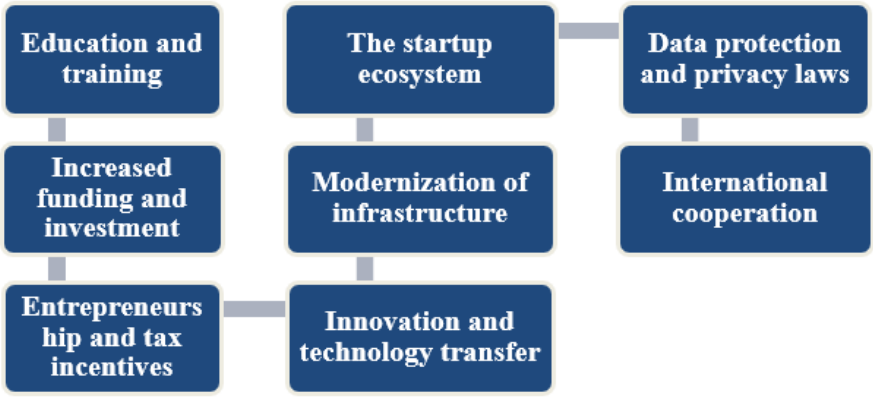
According to the results of the graphs and stationarity tests, the coefficient of elasticity of GDP in Azerbaijan with respect to science expenditures is approximately 0.37. In other words, spending on science in the current year increases the volume of GDP by approximately 0.37% after 15 years. Indeed, there are scientific discoveries that are applied to the economy sooner than 15 years, and there are those that take place after 15 years. The fuzzy logic theory of our compatriot, world-famous Lutfizadeh, has found its application in Japan after 30 years.

In another econometric model, a 1% increase in investment spending annually increases the volume of GDP by approximately 0.77% in the current period. The investment costs made in the current year will increase the volume of GDP by about 77% with an average delay of 1 year.

That is, investments from state or (private) sources act as the main actor of innovative development in the national economy. The results of the conducted studies show that there is a need to create an improved fiscal mechanism in the direction of investments in science and innovative development.

Since the years of independence, institutional activity has been strengthened as a result of systematic and consistent state policy in the Republic of Azerbaijan, and this process has contributed to ensuring innovative development in the country. Our country has shown interest in reforms in the science and education sector to promote research, innovation and development.

At present, the institutional directions and state policy of innovative development in the Republic of Azerbaijan are provided as given in scheme 4 :



Scheme 4. Institutional directions of innovative development and state policy

Source: Prepared by the author based on the analysis of the last 5 years of legislative acts of the President of the Republic of Azerbaijan, the Cabinet of Ministers and the "e-law" base.

education and training programs and structural reforms in this sector is one of the institutional directions that serve innovative development in the Republic of Azerbaijan.

With the Law of the Republic of Azerbaijan "On Science" adopted in 2016, balanced opportunities are created for organizations operating in this direction in our country and incentives are given to their activities.

"The State Program on increasing the international competitiveness of the higher education system in the Republic of Azerbaijan for the years 2019-2023" was approved.

"The State Program for 2022-2026 for young people to study in prestigious higher education institutions of foreign countries" was adopted. The criteria and procedures for selecting young people to study abroad within the framework of the state program have been approved.

In the Law of the Republic of Azerbaijan "On Investment Activity" adopted in 1996, the importance of promotion of innovation development projects was specifically mentioned [7].

According to the order dated 2009, the Science Development Fund was established under the President of the Republic of Azerbaijan. Grants are allocated for the provision of financial resources required for various scientific research projects at the expense of the internal resources allocated by the state. [138].

In 2021, a preferential loan mechanism was created in banks for startups. In order to finance the investment projects of business entities in the field of ICT, the State Fund for the Development of Information Technologies allocates grants to ICT projects, and local banks are selected as trustees for the financial mechanism of granting concessional loans of the fund [143].

The "Model Regulation on Industrial Parks" approved by the Decree dated 2013 is an important basic document that regulates issues related to the construction, management and implementation of commercial activities of industrial parks that meet modern requirements in Azerbaijan.

By the decision of the Cabinet of Ministers of the Republic of Azerbaijan in 2021, the "Rules for maintaining an open register of innovative projects for the public and issuing a "Startup" passport" were approved. According to the rules, the public is related to the activities

related to the creation and implementation of new or improved goods (work, service), technological process based on the application of scientific research and experimental-constructive works and their results in order to achieve economic or social efficiency. determines the procedure for maintaining the register of public information. The aim is to create a centralized open database of innovative projects existing in the country and ensure transparent, flexible and efficient use of that database by the public.

In order to improve management in the field of digitization, innovation, high technologies and communication in the Republic of Azerbaijan in 2021, "Creation of the Innovation Agency under the Ministry of Transport, Communications and High Technologies of the Republic of Azerbaijan (currently the Ministry of Digital Development and Transport) will support the development of the innovative ecosystem in our country, the production and export of local innovations supports, promotes innovation-oriented scientific research, innovative ideas and projects (including start-ups), provides financial support to persons operating in this field, and promotes innovation initiative.

intellectual property laws encourages innovation by ensuring that creators and inventors are fairly rewarded and their ideas are protected.

In 1997, the Law of the Republic of Azerbaijan on Patent was adopted [15].

In 2012, the Law of the Republic of Azerbaijan on protection of intellectual property rights and fight against piracy was adopted [12].

By the Decree of the President of the Republic of Azerbaijan in 2009, Budapest, the transition to the "Cybercrime Convention" (2001) was approved in our country.

By focusing on these legal areas, Azerbaijan can create an environment that promotes innovation, attracts investments, promotes technological advancements and creativity, and creates an environment that supports the growth of a vibrant ecosystem.

In the third chapter of the dissertation entitled **"Priorities of improving the fiscal mechanism of ensuring innovative development in the Republic of Azerbaijan"** possibilities of using world experience in improving the fiscal mechanism of innovative development, priorities , issues of improving the national innovation system were studied.

4. In order to achieve the increase of the economic efficiency of the indicators, new approaches applied in the world experience were studied, suggestions for improvements were put forward based on the strategic development priorities of our country.

Using the opportunities of world experience can significantly improve the fiscal mechanism of innovative development in Azerbaijan (scheme 5)

Tax relief, especially aimed at innovative industries and research and development activities, can stimulate growth. These incentives include tax breaks, loans, etc. to encourage investment in innovative enterprises. includes.

Scheme 5. Directions of using world experience in fiscal support of innovative development in Azerbaijan

Source: Prepared by the author based on international experience analysis studies.

Effective application of the fiscal mechanism of innovative development in the Republic of Azerbaijan can be viewed in several directions:

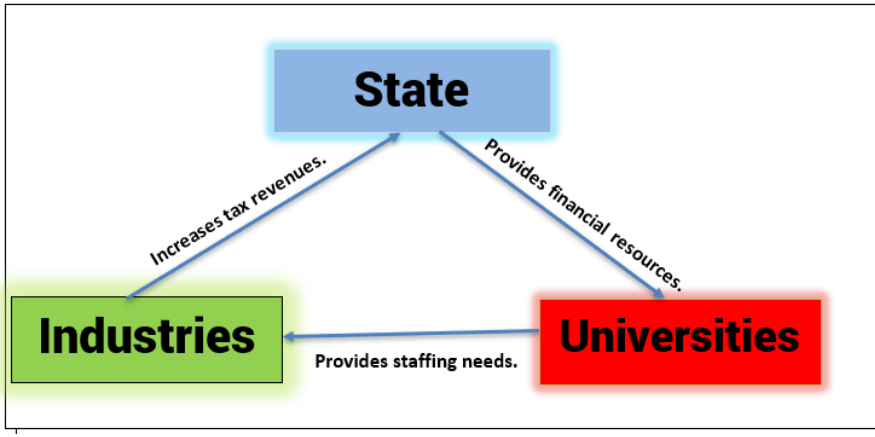
- By improving the use of science expenditures from the state budget;
- Providing investments in innovative business structures within the expenses allocated from the state budget;

- By improving the expenses incurred for the maintenance of e-government within the expenses allocated from the state budget;
- By promoting the use of depreciation allocations allocated to enterprises in the direction of innovative development.

In order to effectively apply the fiscal mechanism of innovative development in Azerbaijan, it is appropriate to continue the following strategic measures:

Allocating significant funds to R&D initiatives to promote innovation, encouraging collaboration between universities, research institutes and industry, which are the main locomotives of technological progress, must remain a top priority. (see scheme 6)

Cooperation between universities, industry and government plays an important role in promoting innovation and accelerating economic development. Looking at the analysis of obstacles and opportunities for university-industry cooperation, it covers the stages of ideation, initiation, implementation and implementation.



Scheme 6. University-industry-state mechanism for innovative development [3]

In establishing a relationship, the issues of encouraging industry and universities to cooperate, preventing the leakage of commercial secret information of companies during cooperation, mutual trust, and financial security are considered important provisions. In order to solve the problems, it is necessary to improve the legislation in the direction of

financial support, commercial secret obligation, intellectual property, copyright agreements. (see scheme 6).

In addition, investment guarantee is important in establishing the main priorities, such as improving the quality of education at the secondary and higher levels, improving the material and technical base, and developing ICT skills, which are the main factor of innovation.

Table 5.

GZIT analysis of innovative development

STRENGTHS	WEAK SIDES
- ICT infrastructure development - Innovation clusters - Technological parks - A large number of young people - Existence of state funding program for study abroad	- Lack of venture capital - Staff shortage in technological specialties in higher schools - Small number of entrepreneurial enterprises producing high technology - Failure of startup incubators to provide continuous support - Absence of a legislative act on innovative development
OPPORTUNITIES	THEY HESITATED
- State support - Presence of the Ministry of Digital Development and Transport The presence of the State Agency for Service to Citizens and Social Innovations under the President of the Republic of Azerbaijan - Availability of AR Intellectual Property Agency - Availability of SME (Small and Medium Business) Agency .- Wide tax incentives applied to technology parks - Adoption of the Competition Code - Creation of new foreign markets (Azerbaijan-Turkey-European market) - New transport corridors (Zangazur corridor)	- Post-pandemic economic crisis - Inability to establish relations between universities and the industrial sector - Young people's enthusiasm for science is low

Source: compiled by the author based on research materials of the state policy in the direction of innovative development in the Republic of Azerbaijan.

Table 5 , the development of ICT infrastructure and the presence of technological parks, at the same time, the large number of young people, the creation of access to education based on world experience are the strong points of the formation of innovative development. In this direction, the constituent elements of institutionalization act as the main factor. However, difficulties in financing, post-pandemic world economic crisis, low attraction of venture capital through foreign investment, insufficient support of incubators, lack of innovation legislation slow down the development in itself. (see table 5) It may be useful to implement comprehensive measures based on international experience in the direction of GZIT analysis to solve the problem.

Venture business is a risky business area that is mainly implemented with the principles of venture financing for knowledge-intensive high-tech production areas [82, p.24]. In this process, two entrepreneurs - one with financial resources, and the other with ideas and energy - interact with each other for the realization of technical progress and profit. Venture financing is a long-term risky investment in equity capital of newly created small and medium-sized high-tech firms focused on knowledge-intensive product development and production process.

Conducting relevant regulatory works for each category included in the MIS is primarily the main responsibility of the state, and these should mainly consist of the following:

- Determination of framework conditions to ensure development of economy based on innovation;
- Drawing up a forecast of technological development and determining scientific and technical priorities based on it;
- Acceptance of programs for the development of innovation infrastructure;
- Preparing and implementing measures to stimulate innovative activity;
- Ensuring equal participation of science, industry and business structures in the process of implementation of innovation-oriented policy [117].

In developed countries, the coordination of the activity of innovation systems and the organization of information exchange are always kept in mind.

According to the MIS concept, technological innovation institutes operating in certain fields also act as transnational companies.

As a result of the analysis of the world experience of MIS, taking into account the social, cultural and economic conditions of Azerbaijan, the following should be considered more important as the main functions of MIS in our country:

1) The state's innovation policy should be developed not as an addition to the policy implemented in the economic, industrial, and scientific fields, but as a policy that combines these directions.

2) Relevant state and non-state institutions should be closely involved in the development strategy of MIS. At the same time, this factor can play an important role in the correct distribution of financial resources.

The success of reforms aimed at ensuring effective science-production interactions often depends on the cooperation and coordination of various stakeholders, including government agencies, universities, research institutes, businesses and entrepreneurs. Such efforts can lead to greater innovation, economic growth, and the practical application of scientific knowledge to real-world problem solving.

CONCLUSION

Fiscal incentives as a part of science, technology and innovation policy are applied more and more flexibly, and in order to reach a wide range of targets, it is also necessary to control their use administratively.

The experience of developed countries shows that the state:

- provision of innovation-oriented financial allocations to higher education institutions;
- providing subsidies to innovative business entities;
- creation of joint cooperation between higher education institutions and industrial enterprises ensures the innovative development of the economy.

Although there are enough initial studies and ideas in our country, we see that there are serious problems in the implementation of applied research based on these ideas. In many cases, existing innovative ideas cannot pass from the initial research stage to the stage of practical application. One of the main reasons affecting this fact is the difficulty of access to international information centers and material and technical problems in forming the infrastructure required for conducting applied research.

Another important issue is the establishment of specialized research centers at a level that meets modern requirements, strengthening the work of existing centers, and making these centers open and free of charge for anyone who wants to conduct research, regardless of their scientific degree. Efforts should be made to ensure access of the centers to international information systems and search systems. Studies show that not only the organization of the activities

of these centers, but also the involvement of specialists of these centers in additional training, gives impetus to their innovative activity.

In the dissertation, the fiscal mechanism of innovative development was analyzed and the following scientific results obtained were substantiated:

1) As a result of the research of theoretical and conceptual approaches related to innovative development, it was determined that innovative development in Azerbaijan spreads to different sectors without a unified approach, which causes inefficiency. In the modern era, when the VI wave of innovation is rapidly spreading in our country, clean technologies, renewable energy, the transition to the import and production of green nanotechnologies, the construction of smart cities, the effective increase of financial resources for the development of human capital, the expansion of the application of communication and information technologies , and the establishment of digital management systems in local companies Centrally controlled complex incentive measures will ensure the sustainability of the competitiveness of the national economy.

2) As a result, if we summarize the constituent elements of the fiscal mechanism of innovative development, the analysis of economic growth models shows that the triple approach of innovative enterprise, innovative people, and innovative management to ensure sustainable development in the national economy will accelerate the trend of innovative economy.

3) The result of the application of tax incentives has been studied and determined that there is a need to select clear and measurable goals in the field of these incentives, to target specific sectors and regions, to limit the duration and scope of incentives, to create transparent and accountable procedures, and to conduct regular cost-benefit analysis and impact assessment. .

4) It has been determined by the studies carried out in the research study that depreciation deductions and rapid obsolescence policy play an important role in the formation of the financial environment for innovation within the enterprise. Increasing depreciation rates in enterprises to 30-50% can improve financial opportunities and encourage innovative development.

5) According to the results of the graphs and stationarity tests based on the econometric analysis of the indicators of innovative development in the research work, the coefficient of elasticity of GDP in Azerbaijan with respect to science expenses is approximately 0.37. That is, a 1% increase in science spending 15 years ago increases the volume of GDP by approximately 0.37% in the current period. In other words, spending on science in the current year increases the volume of GDP by approximately 0.37% after 15 years. Indeed, there are scientific discoveries that are applied to the economy sooner than 15 years, and there are those that take place after 15 years. The fuzzy logic theory of our compatriot, world-famous Lutfizadeh, has found its application in Japan after 30 years. Also, the coefficient of elasticity of GDP in Azerbaijan with respect to domestic investments was determined at 0.77%. A 1% increase in investment spending annually increases the volume of GDP by approximately 0.77% in the current period. The investment costs made in the current year will increase the volume of GDP by about 77% with an average delay of 1 year. That is, investments from state or (private) sources act as the main actor of innovative development in the national economy. From the obtained results, it can be concluded that there is a need for investments in science and innovative development.

6) After studying the innovative development experience applied by states that are innovation leaders and close to our country in terms of economic indicators, it was determined that continuous evaluation of the effectiveness of fiscal mechanisms implemented in a number of countries and being open to adapting strategies based on the developing global landscape is very important for sustainable innovation.

7) The directions of increasing the efficiency of the implementation of the fiscal mechanism of innovative development in our country have been studied and it has been determined that investing in human capital, improving the quality of education in the medium and long term, and creating a flexible investment mechanism of the "science-education-production" triangle serve to improve the innovation environment.

OFFERS:

1. To improve the structure of scientific expenses from the state budget - So it is proposed that doctoral students and dissertations should carry out their research in research centers equipped with innovative laboratories created in higher schools and be provided with a salary in exchange for their activities. It will also strengthen the capacity of higher education institutions to establish a research university.

2. The Entrepreneurship Development Fund of the Republic of Azerbaijan should allocate a significant part of its funds (about 2%) to business loans for investment in the real sector, and it is proposed to implement an online control system (software) for the use of funds in this area.

3. It is proposed to establish a state guarantee mechanism for attracting venture capital to domestic enterprises by ensuring financial accountability.

4. Creating a free venture fund at the expense of foreign debts - it can be ensured on the basis of a commitment agreement between the lending country and the borrowing country (establishment of a single technological zone).

5. It is proposed to implement a promotional policy in order to increase the cooperation between enterprises that produce and export high technologies and companies that are leaders in the field of information technologies and higher education institutions of the country.

6. The Tax Code of the Republic of Azerbaijan and the Law on Accounting do not require the directions of using depreciation expenses in companies. For the formation of a highly competitive national economy, it is important to determine new technological solutions and conduct research in order to ensure the effectiveness of depreciation deductions in this direction. In order to ensure innovative development in all economic sectors, legal regulation of the effective use of depreciation expenses, the application of appropriate accounting for the evaluation of the results of tax relief, such as attributing depreciation deductions to expenses deducted from income, is inevitable.

7. In a strategy of tax credits related to angel investment and venture capital, to encourage private investment in startups and innovative companies, some governments offer tax credits to angel investors and venture capitalists who provide financing to eligible firms. The application

of this mechanism can be important in terms of improving the fiscal mechanism of innovative development in our country.

8. Depreciation allowances act as a financial instrument that provides companies with the costs associated with investing in innovative activities over time, thereby encouraging the development of new products, processes and technologies. This cost can make it more financially efficient for businesses to invest in new technologies and innovative processes. Balancing the incentives of depreciation allowances, which stimulate innovations in the depreciation policy of the state, with fiscal responsibility, the differentiation directions of the new model of tax relief are proposed. Thus, changes in the depreciation costs for the main resources used in scientific and technical activities in diversified areas of the economy, the use of renewable energy, energy-saving machines and equipment (the list and actual results in production have been approved by the relevant executive authorities) are positive for the innovation ability of enterprises. will affect.

The following works of the author were published on the subject of the dissertation:

1. Giyasova ZH, "Innovative development and improvement of innovative entrepreneurship in Azerbaijan", AR DSK "Statistical News" magazine, Baku, 2021
2. Giyasova ZH, "Financial mechanisms for ensuring innovative development", ANAS, "Economic growth and public welfare" magazine, Baku, 2021
3. Giyasova ZH, "Evaluation of the use of the fiscal mechanism of innovation-oriented development in Azerbaijan", "Scientific News" magazine of Azerbaijan State University of Economics, 2021
4. Giyasova ZH "The role of tax policy in promoting innovation activity in Azerbaijan", Azerbaijan tax magazine, 2021
5. Giyasova ZH, "Evaluation of the use of the fiscal mechanism of innovation-oriented development in Azerbaijan" Scientific News Journal of the University of Economics, volume 5, pp. 164-174, 2017

6. Giyasova ZH, "Indicators of competitiveness of Azerbaijan's economy " , materials of the conference held at Sumgayit State University, Baku, 2017

7. Giyasova ZH, "Objective factors determining the transition to an innovative development model in the modern era", materials of the XIX Republican scientific conference of researchers, pp. 273-275, Baku, 2015

8. Giyasova ZH, "The role of the state's fiscal policy in ensuring innovative development", materials of the III international scientific conference of young researchers of Caucasus (now Baku Engineering) University, Baku, 2015

9. Giyasova Z. G., "Research and development within economic entities as the basis of innovation", Economy and entrepreneurship, pp. 999-1004, 2016

10. Giyasova ZH, "Knowledge-based economic activity and economic development", 37th International Scientific Conference on Economic and Social Development, WOS, p.1534-1543, 2019

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