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ABSTRACT
of the dissertation for the degree of Doctor of Philopsophy

ENHANCING THE OIL RESOURCE UTILIZATION MECHANISM VIA THE STATE BUDGET

Speciality: 5301.01 - Internal fiscal policy and public finance

Field of science: Economic sciences

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GENERAL DESCRIPTION OF RESEARCH

Relevance and study level of topic. The decline in oil prices in recent years has had a negative impact on the economies of oil-exporting countries and, as a result, has led to a decrease in the rate of economic growth. A number of countries have devalued their national currencies in order to eliminate potential problems in the current account balance and the growing budget deficit, which has resulted in a high inflation risk in the economies of most countries.

The regulation of the oil factor in state budget revenues provided on the basis of transfers from the State Oil Fund of the Republic of Azerbaijan to the state budget necessitates the application of many new fiscal challenges and new approaches.

Given the high degree of uncertainty and sensitivity of the world oil market, the increasingly declining oil revenues, the limited role of state budget expenditures in constantly supporting economic growth, as well as in the context of new realities and opportunities revealed by low oil prices, including at a time when global transformation processes to a digital economy are accelerating in the world, as well as against the backdrop of the restoration of historical territories liberated from occupation and their reintegration into the country's economy, the issues of transitioning the development and growth model of the Azerbaijani economy to a completely new quality have become even more urgent.

Against the backdrop of low oil prices, the role of oil revenues and state budget expenditures in financing and expanding domestic demand is decreasing, and as a result, the ability to generate economic growth through domestic demand is limited, and the formation of an economic growth model oriented towards external demand (exports) is the main strategic challenge.

It is also considered appropriate to ensure discipline in expenditure and investment in the state budget and to apply a progressive mechanism in terms of the use of oil revenues.

In addition to the above, ensuring budget sustainability, improving the mechanism for using oil revenues through the state budget by studying the experience of advanced countries,

appropriately transitioning to a result-based budget, as well as a "green economy" and "green financing", and implementing the OMF are among the main goals set for the country's economy.

Thus, increasing the result-based and effective nature of state expenditures, implementing project (program) management and a sustainable mechanism for using oil revenues remain relevant.

In Azerbaijan and many other countries (especially oil countries), sustainable fiscal policy, efficient use of oil revenues, determination of the optimal level of transfers from oil revenues to the state budget, development of the non-oil sector, etc. are constantly addressed and studied in the field of public finance.

However, it should be noted that although certain studies have been conducted in the field of use of oil revenues and sustainable fiscal policy, in our country mainly tax, customs and other issues related to fiscal policy have been studied more.

In general, the works of a number of Azerbaijani scientists in the field of fiscal policy and use of oil revenues, including A.S. Muradov, U.G. Aliyev, A.A. Alekperov, M.Kh. Hasanli, D.A. Bagirov, M.M. Sadigov, V.I. Bayramov, Y.A. Kalbiyev, M.A. Atakishiyev, S.M. Mammadov, S.I. Humbatova and others, can be especially noted.

Numerous studies have been conducted by foreign scientists on the efficient use of oil revenues and sustainable development. Among the scientists, we can mention J.D. Hamilton, D.N. Hyman, J. Gruber, L. Ghalayini, P. Daniel, A. Khayati, V. Mignon, L. Francois, E.P. Kiselitsa, S.S. Laurence and others.

At the same time, there have been significant studies in this area by the IMF (The International Monetary Fund), the World Bank (The World Bank) and other reputable financial institutions.

The object and subject of the research. The object of the research is the analysis of the state budget, fiscal sustainability, development of the non-oil sector and the efficient use of oil revenues.

The subject of the research is the identification and improvement of directions for the efficient use of oil revenues through the state budget by studying the studies conducted by leading oil countries and international financial institutions in the field of efficient use of oil.

The purpose and tasks of the study.

It is necessary to reduce the dependence of the Azerbaijani economy on hydrocarbon resources, including the oil factor, in the short and long term. The result I expect in my dissertation is to reduce fiscal dependence on oil prices, to investigate, identify, and correctly apply ways to effectively use oil revenues through the state budget, and to assess the impact of oil revenues on macroeconomic indicators.

At the same time, my goal is to identify sustainable fiscal policy and ways to optimally use oil revenues as a result of research in this area.

To achieve these goals, the following tasks have been set:

- ✓ Study the mechanism of effective use of oil revenues in advanced oil countries;
- ✓ Identify the main directions of non-oil sector development;
- ✓ Identify the correlation-regression relationship between oil revenues and budget expenditures;
- ✓ Investigate the possibilities of applying the medium-term framework (MTF) recommended by the WB and IMF for oil countries in our country;
- ✓ Identifying ways to inject oil revenues into the economy in a favorable manner through the state budget and studying the framework of the "green budget";
- ✓ Studying the prospects for ensuring a sustainable fiscal policy regardless of the volatility of oil prices in the world market;
- ✓ Studying ways to increase the efficiency of state financial control;
- ✓ Exploring the possibilities of developing domestic production at the expense of oil revenues, promoting exports, and transforming these revenues into human capital;
- ✓ Analyzing the weight of oil revenues in the state budget and the oil sector's GDP, including determining the elasticity coefficient of the existing dependence between oil revenues and GDP, and other tasks.

Research methods. In the research work carried out in the direction of investigating the issues of effective use of oil revenues, economic diversification and transition to a result-based budget in the Republic of Azerbaijan, many statistical materials were examined and the progressive experience of leading oil countries in the use of oil revenues was studied, as well as concrete facts related to the mentioned

directions in our country and the world were analyzed on a scientific basis. has been done.

In addition to those mentioned in the research work, methods such as economic statistical analysis, comparison and programmatic approach, mathematical modeling and scientific abstraction were used.

The main provisions for the defense. In the dissertation work, a number of proposals and substantiated ideas were put forward against the background of the analysis of the efficient use of oil revenues through the state budget and the correct and justified injection of these oil revenues into the country's economy.

In this regard, the following can be noted:

1. It is necessary to study the issues of development of the non-oil sector and ensuring fiscal sustainability;

2. Reducing the dependence of the state budget on funds from the oil sector and transforming the country's economy into a competitive national economy should be the focus of attention;

3. It is necessary to study world experience in the use of oil revenues and analyze the oil revenue management system in Azerbaijan;

4. It is important to optimally inject oil revenues into the country's economy through the state budget and ensure the improvement of the technological base and intellectual level of the economy;

5. There is a need to study and apply the concept of green economy and green financing, including the green budget framework, based on the experience of advanced oil countries;

6. It is useful to study the issues of injection of oil revenues into the real sector of the economy and diversification of the economy;

7. There is a need to increase reserves for a possible crisis (depression) situation in the country's economy and minimize the non-oil budget deficit;

8. It is important to determine the dependencies between budget expenditures and oil revenues, as well as GDP and the oil sector using econometric models;

9. Ensuring fair intergenerational distribution in the use of oil revenues, increasing transparency, and developing a result-based

budget mechanism remain important;

10. Effective use of oil revenues in the post-war period, ensuring sustainable economic development and macroeconomic stability are among the main conditions;

11. It is important to assess the impact of changes in the base expenditures of the consolidated budget on non-oil GDP, non-oil revenues of the consolidated budget, and in general on the ratio of the non-oil base deficit of the consolidated budget to non-oil GDP based on econometric models;

12. It remains necessary to increase the weight of the non-oil factor in GDP and non-oil revenues in state budget revenues.

The scientific novelty of the research. In the dissertation work, for the first time, the theoretical and empirical foundations of the problem of fiscal sustainability in terms of the conjuncture of oil prices in the world market were investigated, ways to reduce the dependence of the state budget on oil revenues were specifically shown, appropriate models were developed by evaluating the weight of the oil sector in GDP and oil revenues in the state budget, and methods for the effective injection of oil revenues into the economy through the state budget were scientifically proven.

The scientific innovations presented for defense by the author and in the direction of research are as follows:

- The prospects for the development of the non-oil sector and increasing the weight of non-oil revenues in the state budget were analyzed and new proposals were put forward;
- By studying the experience of advanced oil countries, ways to reduce the dependence of the state budget on oil revenues in the long term were specifically shown, as well as the importance of promoting domestic production by ensuring economic, including export diversification was proven;
- The necessity of applying the concept of "green financing" and the framework of "green budget" in our country has been scientifically and practically substantiated, as well as its application prospects have been shown;
- New approaches have been given to coordinating the

process of oil revenue distribution with economic and social priorities;

- Ways to improve mechanisms in medium-term budget planning and transition to result-oriented budgeting have been presented;
- The correlation-regression relationship between budget expenditures and oil revenues has been analyzed, an appropriate mathematical model has been developed, and an assessment has been made based on that model;
- Reasoned recommendations and proposals have been developed by approaching the issue of fair distribution of oil revenues between generations and the problem of determining the optimal limit of transfers from SOFAZ to the state budget from a new perspective;
- The effects of the basic expenditures of the general budget on non-oil GDP, both commercial and non-commercial, have been analyzed and assessed based on appropriate econometric models;
- The effects of non-oil GDP, both commercial and non-commercial, on the non-oil revenues of the consolidated budget were determined based on mathematical models.

The theoretical and practical significance and foundations ot the research. In the dissertation, the publications of many economists, scientists and specialists on oil revenues and its effective use have been collected and summarized. At this time, special attention was paid to issues such as fiscal stability, proper injection of oil revenues into the economy through the state budget, and development of the non-oil sector.

The results of the research and the proposed suggestions and recommendations can be used by the relevant state institutions that control the preparation and implementation of the state budget at the macroeconomic level and manage the oil revenues.

The materials of the dissertation work (including scientific innovations and proposals) can be used in the development of teaching-methodical materials, as well as in the teaching of macroeconomics, finance and other similar subjects at UNEC and

other educational institutions as lecture material.

Approbation and implementation of the results. The main provisions of the research, justified recommendations and proposals were presented at scientific-practical conferences held in the republic, as well as at international scientific-practical conferences, scientific articles and theses on the topic of the dissertation were published in journals indexed in prestigious scientific databases known in the country and internationally.

Thus, 1 (one) article of the author included in Scoups and other scientific bases was published in the "International Journal of Energy Economics and Policy" magazine in the Republic of Turkey.

At the same time, at the "XXII Republican Scientific Conference of Doctoral Students and Young Researchers" jointly organized by the Ministry of Education of the Republic of Azerbaijan and the Azerbaijan State Pedagogical University in 2018 and the "Doctoral Students and Young Researchers" organized by the Ministry of Education of the Republic of Azerbaijan and Azerbaijan University of Architecture and Construction in 2019 At XXIII Republican Scientific Conference of researchers, the author made presentations with theses and those theses were published accordingly.

In addition, the author's two theses (Economic development and sustainable fiscal policy for oil countries and Oil revenues, fiscal Framework and Economic development: The case of Azerbaijan) were held in 2020 and published in "CPCI (Web of Science), ProQuest, EconLit and It was published in the materials of the conferences "Economic and Social Development, 54th International Scientific Conference on Economic and Social Development" and "Economic and Social Development, 57th International Scientific Conference on Economic and Social Development", which are indexed in prestigious scientific databases such as EconBIZ.

In addition, the article "Efficient use of oil revenues in post-pandemic and post-conflict periods: The case of Azerbaijan" prepared by the author together with the scientific supervisor was included in many prestigious scientific databases organized by "TURAN Strategic Research Center" in 2022. was published in the materials of the conference "IV Scientific Conference of Economics and Management

Researches".

In total, 16 scientific works were published in the research process.

The name of the organization in which the dissertation work was carried out: Dissertation work was carried out at the UNEC.

The Volume and Structure of the Dissertation. The dissertation consists of an introduction (13,357 characters), three chapters (Chapter I – 69,603 characters, Chapter II – 98,536 characters, Chapter III – 96,105 characters), eleven sub-sections, a conclusion (10,067 characters), and a list of 137 references. Additionally, the dissertation includes 9 tables, 21 graphs, 6 diagrams, and 1 figure. Excluding tables, graphs, diagrams, and the reference list, the main body of the dissertation comprises a total of 278,801 characters.

CONTENTS OF DISSERTATION

MAIN CONTENT OF THE RESEARCH

The **"Introduction"** section of the dissertation defines the relevance and degree of development of the topic, the object and subject of the research, the goals and objectives, the methods used in the research process, the main provisions put forward for defense, the scientific novelty of the research, theoretical and practical significance, as well as information on its approval are provided.

The first chapter of the dissertation, entitled **"The Oil Factor in the Formation of the Azerbaijani Economy",** studies the theoretical and methodological aspects of the use of oil revenues, world experience in this direction, the role and effects of oil revenues in the socio-economic development of Azerbaijan. It is important for the country's economy to achieve balanced economic and regional development by correctly injecting oil and gas revenues, which are on an increasing trend as a result of the implementation of the policy of efficient use of hydrocarbon resources, into the non-oil sector, and to optimally manage revenues.

Currently, in many oil countries, the model proposed by Friedman (1957) (Permanent Income Hypothesis) is used to manage oil revenues. According to this model, a limit on the oil revenues that can be spent for each year is determined. The remaining revenues are directed to the reserve fund. The model is based on net financial assets and current oil revenues. There is another rule for the use of oil revenues - the Bird-in-hand rule. According to this rule, oil revenues are converted into financial and other assets and only the income obtained from the management of these assets is used.

This rule is generally accepted as the most conservative rule and tends to limit the use of oil revenues in particular. L.Ghalayini, in his study on the analysis of the relationship between oil prices and economic growth, correctly notes that for both crude oil exporting (oil countries) and importing countries, oil price fluctuations have serious effects on their economic activity. This is also characterized by changes in real demand and supply[1].

[1] Ghalayini, L. The Interaction between Oil Price and Economic Growth // Middle Eastern Finance and Economics, – 2011. №13, – p. 128-141.

At the same time, A. Khayati, based on his empirical analysis, proves that economic diversification, capital efficiency, labor productivity and a competitive economy are of great importance for oil countries[2].

The creation of a fiscal model of the use of oil revenues (The World Bank: Petroleum fiscal modelling) is necessary for the efficient use and management of these revenues. This model has three main goals:

1. Modeling the results that emerge during the analysis of fiscal policy;

2. Regular monitoring of the flow of funds;

3. Correct forecasting of revenues and optimal implementation of fiscal planning.

In terms of optimal and efficient use of oil revenues, the model known as the Norwegian model in the international arena is currently in the interest of many countries rich in natural resources.

In general, the mentioned model is known for a number of positive aspects:

1) According to the legislation of the current Norwegian state, the exploited natural resources belong unconditionally to the people, and the legitimate interests and rights of the people related to resources are protected by law and regulated within the framework of the law.

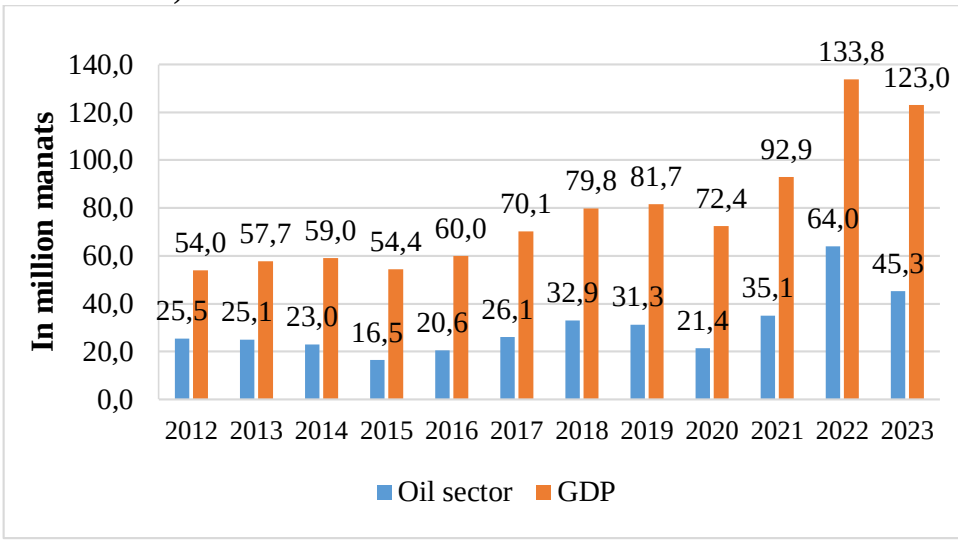
2) The state has always been conservative in the use of oil money, and a small part of the current financial needs has been compensated by oil revenues. Oil revenues are mostly accumulated in funds and sterilized.

3) A special monitoring system has been created for oil and gas production, transportation and use of revenues, and the policy of using natural resources is mainly focused on the optimal and fair distribution of income between generations.

As can be seen from the graph prepared by the author, there is a direct correlation between GDP and the oil sector. Thus, GDP growth over the years has increased in parallel with the oil sector. This means that the dependence of the Azerbaijani economy on oil revenues has not yet been completely eliminated. However, in recent years, considerable

[2] Khayati, A. The Effects of Oil and Non-oil Exports on Economic Growth in Bahrain // International Journal of Energy Economics and Policy. – 2019. №9(3), – p. 160-164.

work has been done in this direction (replacing the oil sector with the non-oil sector).



Graph 1. Dynamics of the oil sector and GDP in the Republic of Azerbaijan

Source: Compiled based on data from the State Statistical Committee

Let's look at the growth dynamics of state budget expenditures in recent years.

Table 1. Main directions of state budget expenditures, in billion manats

	Years							
Spending directions	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Defense and national security	2.19	2.62	2.84	3.16	3.76	4.54	4.90	5.85
Education	1.75	1.74	1.96	2.2	2.77	3.09	3.7	4.55
Science	0.11	0.11	0.12	0.12	0.14	0.15	0.17	0.12
Social protection and social security	2.65	2.35	2.15	2.28	3.11	3.16	3.46	4.39
Health	0.7	0.7	0.71	0.87	1.69	1.38	1.42	1.86
Agriculture	0.59	0.51	0.7	0.83	0.86	0.91	0.92	1.2

Source: The table was prepared by the author based on data from the Ministry of Finance of the Republic of Azerbaijan.

As can be seen from the above table, in recent years, expenditures in the state budget for the main directions have been increased accordingly. In particular, due to the COVID-19 pandemic that occurred in the world in 2020-2022, oil prices in world markets have decreased. However, an analysis of the table shows that in those years, an increase in budget expenditures for priority directions was ensured.

Despite the fact that the main dynamics of economic growth in Azerbaijan has been provided for many years at the expense of natural resources, in the conditions of the economic crisis that occurred in 2009 and against the background of a sharp decline in oil prices in world markets in 2014, as well as during the pandemic that caused a negative shock to the whole world in 2020, the Azerbaijani economy managed to emerge from the mentioned upheavals despite facing serious risks.

In the second chapter of the dissertation entitled **"Analysis of the current state of oil revenue utilization"**, modern approaches to the use of oil revenues, the oil revenue management system in our country were studied, and the budget rule applied in the Republic of Azerbaijan was analyzed and its evaluation based on econometric models was carried out.

In oil-rich countries, oil revenues constitute a large part of budget revenues at various stages of economic development. However, the experience of the past period has shown that the continuation of this trend is considered risky for the country's economy. In this regard, in the long term, socio-economic development should be achieved at the expense of oil revenues, economic diversification should be carried out, and budget revenues should be provided from the real sector through taxes and other revenues by developing the non-oil sector.

In our opinion, countries that provide high specialization in the world arena, increase and apply production technologies, innovation potential, as well as develop areas that can create sustainable added value will be able to be competitive at the regional and global levels.

Azerbaijan has confidently continued its policy in the use of oil revenues in recent years and has taken a serious approach to the issues of efficient management of revenues and ensuring transparency in the oil sector.

In order to ensure macroeconomic and fiscal sustainability for

Azerbaijan, effective budget management and its coordination with the organization of a result-oriented budget, ensuring the optimality of state expenditures, rational use of oil revenues, and reducing the dependence of budget revenues on oil price fluctuations remain relevant.

Based on the above, the lack of optimal management of the oil sector and improper injection into the economy can create the following difficulties:

- The fact that a large part of oil revenues are directed to financing current expenses, rather than creating added value, makes the Azerbaijani economy always dependent on oil prices;
- The use of large amounts of oil revenues to cover current expenses slows down the implementation of economic reforms and leads to complacency in fiscal, exchange, and diversification policies. As a result, Azerbaijan's intention to build a globally competitive economy does not become a reality;
- The state of the oil industry at that time after gaining independence proves that the use of large amounts of oil revenues is not correct in terms of fair intergenerational distribution, and in this case, only a spoiled ecological environment, unnecessary and outdated infrastructure are left for future generations;
- The emergence of the Harrod-Balassa-Samuelson effect in the economy. It is explained that since the general price and prices of production factors are rapidly increasing, there is no interest in the development of non-oil production areas in the medium and long term.

The experience of oil countries proves that positive results can be achieved if oil revenues are spent by the state mainly for three purposes:

- Human capital development;
- Major infrastructure projects of national importance;
- Ensuring a favorable micro and macroeconomic environment in the country.

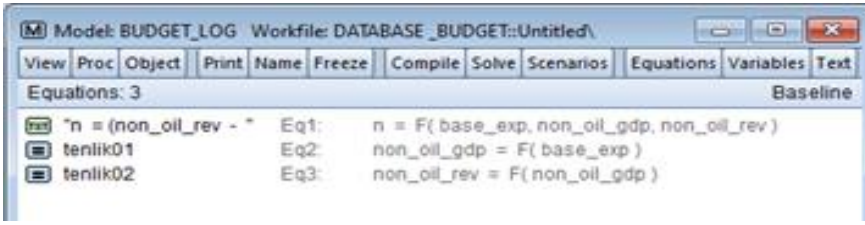
Diversification of the economy in Azerbaijan, especially the redirection of oil revenues mainly to the non-oil sector, will serve to achieve the following economic goals:

- Reducing the dependence of the state budget on oil revenues in the long term;

- Achieving sustainable and sustainable economic development in the economic sphere, initially through the intensive expansion of the non-oil sector, including the non-oil industry;
- Supporting socio-economic development in the regions, ensuring employment;
- Creating a basis for diversification of the economy;
- Increasing the weight of the non-oil factor in the country's GDP and increasing the share of non-oil revenues in state budget revenues;
- Ensuring the application of innovative production methods in the non-oil sector and achieving fundamental structural changes in the economy;
- Increasing export potential, ensuring that competitive Azerbaijani products take a worthy place in the international arena[3].

In this chapter, an assessment was made of how changes in the base expenditures of the consolidated budget affect non-oil GDP, non-oil revenues of the consolidated budget, and in general, the ratio of the non-oil base deficit of the consolidated budget to non-oil GDP[4]. The assessment is based on solving a system of structural equations using the two-order least squares method. The model was empirically constructed in the EViews statistical software package based on data for 2007-2023 (the time interval in the equations may differ from the point of view of data processing).

Data used in models



Picture 1. Solution of the system of equations using the two-order least squares method (EViews result)

[3] Bagirov, O.M. World experience of economic diversification // – Baku: ANAS News. Economics series, – 2018, No. 4, – pp. 141-145.

[4] Rules for preparing the medium-term expenditure framework // Decree No. 235 of the President of the Republic of Azerbaijan dated August 24, 2018. – Baku, 2018.

The model consists of two equations. The first equation reflects the relationship between the base expenditures of the consolidated budget and non-oil GDP, and the second equation reflects the relationship between non-oil GDP and non-oil revenues of the consolidated budget. These equations are implemented as a joint system and empirical results are obtained.

Based on the Augmented Dickey Fuller (ADF) and Phillips Perron (PP) test results for the LOG(NON_OIL_GDP), LOG(BASE_EXP) and LOG(NON_OIL_REV) series, the series are stationary at the 5% statistical significance level.

Thus, considering that a 1% increase in non-oil/gas GDP leads to a 1.18% increase in non-oil/gas revenues of the consolidated budget and that a 1% increase in base expenditures of the consolidated budget increases non-oil GDP by 1.20%, this in turn leads to a 1.42% increase in non-oil revenues of the consolidated budget (1.20*1.18=1.42)[5].

In the third chapter of the dissertation, entitled **"Ways of Effective Use of Oil Revenues"**, an assessment of the impact of oil revenues on macroeconomic indicators was carried out, as well as ways to increase the development of the non-oil sector and the effective use of oil revenues of the state budget were shown, as well as

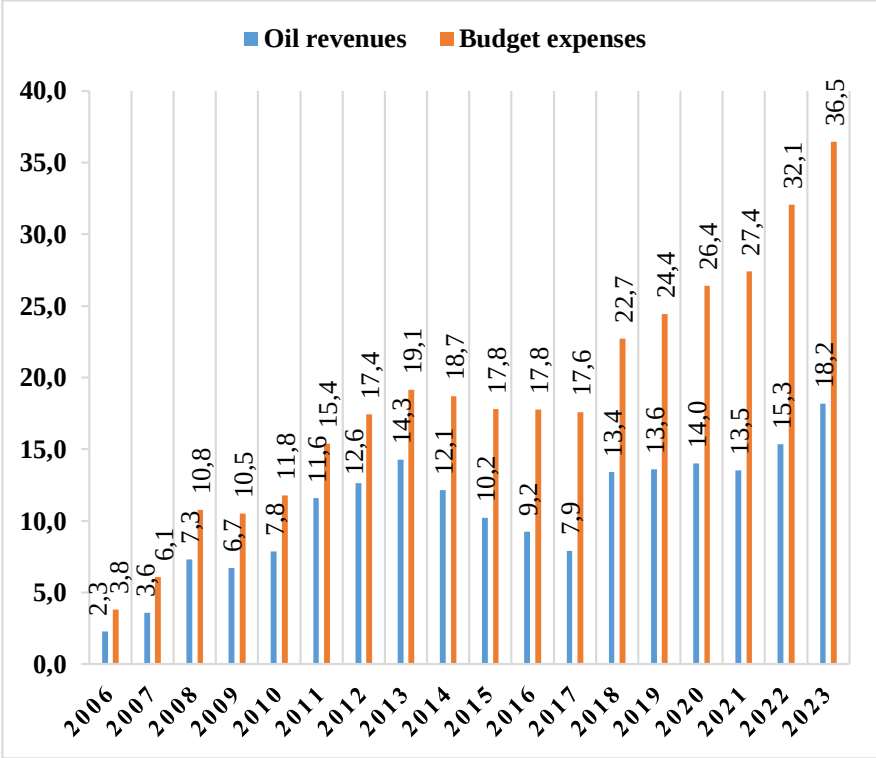
the necessity of ensuring sustainable economic development in the post-war period and the application of the concept of "green financing" was substantiated.

In addition, the chapter in question analyzed the weight of oil revenues in the state budget and identified directions for improving the mechanism for preparing a result-based budget.

The income obtained from the oil sector, which is the basis of the Azerbaijani economy, plays a fundamental role in the optimal regulation of budget expenditures by affecting the increase in state budget revenues and determining economic growth in the country as a whole. In this regard, assessing the impact of oil revenues on budget expenditures is of great economic importance. The following graph shows the dynamics of budget expenditures and oil revenues for the

[5] Gasimli, V.A. Analysis of budget rules and fiscal sustainability in Azerbaijan / V.A. Gasimli, O.T. Sadigov, A.S. Suleymanov // "Economic Reforms" scientific and analytical journal –2025, №2(11)-2024, – pp. 7-36.

Republic of Azerbaijan for the period 2006-2023 (Graph 2).



Graph 2. Dynamics of oil revenues and state budget expenditures for 2006-2023, in billion manats

Source: Compiled based on data from the State Statistical Committee

As can be seen from the graph presented above, in accordance with the increase in oil revenues, the development trend of the budget expenditures for the period under study was also characterized by the same dynamics. The analysis proves that there is a fundamental dependence between both indicators. Using the EViews-12 application software package and the method of least squares to determine the correlation-regression relationship between oil revenues and budget expenditures, we get the following result ***(Table 2)*** .

Table 2. Correlation-regression relationship of dependence between oil revenues and budget expenditures (E-views-12)

Dependent Variable : Y
Method : Least Squares
Date : 02/05/23 Time: 22:45
Sample : 2006-2022
Included observations : 17

Variable	Coefficient	Std . Error	t- Statistic	Prob .
X	1.783510	0.207341	8.601827	0.0000
C	-784.3561	2278.675	-0.344216	0.7355

R- squared	0.831444	Mean dependent there is	17633.99
Adjusted R- squared	0.820207	SD dependent there is	7579.401
SE of regression	3213.814	Akaike info criterion	19.09844
Sum squared receipt	1.55E+08	Schwarz criterion	19.19646
Log likelihood	-160.3367	Hannan-Quinn criteria .	19.10818
F- statistic	73.99143	Durbin-Watson stat	1.246450
Prob (F- statistic)	0.000000		

Source: *Evi ews -12 program compiled based on an extract from the application*

As can be seen from the table prepared by Eviews-12 application program, the coefficient of explanatory variable X, which expresses oil revenues as a causal factor, is significantly greater than its standard error (t=8.6). This characterizes the statistical significance of the coefficient on the obtained result.

Based on the obtained results, the regression equation is given in the following form:

Y = 1.78351048828*X - 784.3560509 (1)

Here: (t) (8.6) (-0.34) R^2 =0.820, DW=1.2464

As can be seen, there is a high correlation between oil revenues and budget expenditures according to the Chaddock scale. As an explanatory factor included in the model, factor x, which represents oil revenues**, explains 82% of budget expenditures. 18% of budget expenses are explained due to other factors.**

Let's determine the adequacy of the model according to its statistical significance to determine the relevant results according to

the model (1) obtained according to the Eviews-12 application software package. For this purpose, the statistical significance of the corresponding regression equation can be determined by checking the autocorrelation of the residuals and the Fisher criterion.

Autocorrelation should be checked in order to check the correctness of the model specification . This indicator is mainly determined according to the formation of the conclusion about autocorrelation based on the criteria of Darbon-Watson statistics . To this end, let us test the autocorrelation of the residuals in the model based on the Darbon-Watson breakpoints.

As can be seen from the table, the Darbon-Watson statistic (DW) is equal to 0.464 . Darbon-Watson breakpoints for the explanatory variable (m=1) and n=17 observation periods with 95% confidence interval :$\alpha = 0{,}05$ $\boldsymbol{d_l = 1{,}133}$, $\boldsymbol{d_u = 1{,}381}$ has been

If $d_l \leq \text{DW} < d_u$so, the conclusion about the presence of autocorrelation between the mentioned indicators will not be established.

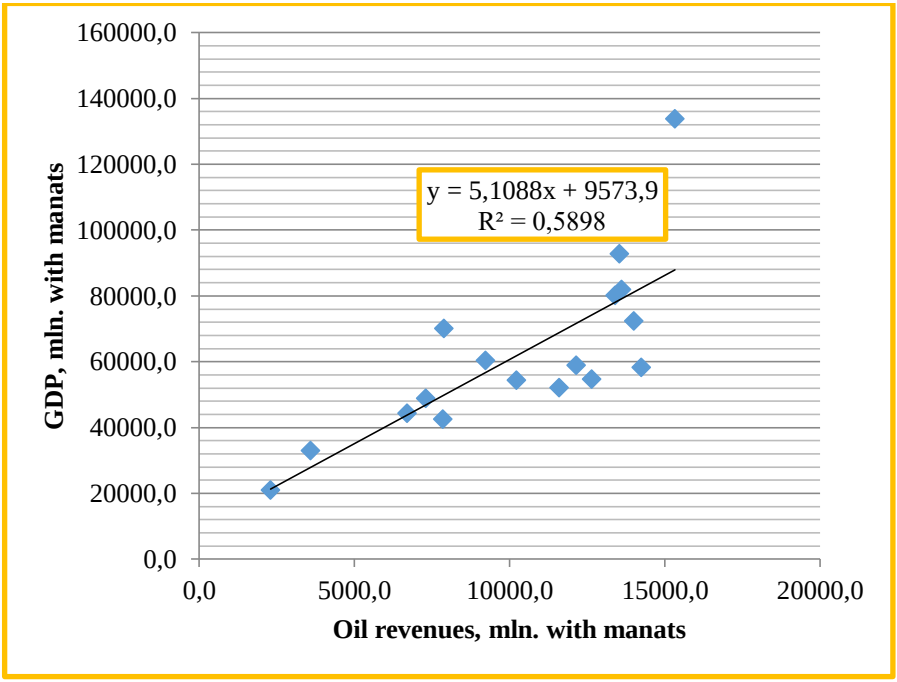
$d_l = 1{,}133 \leq \text{DW} = 1{,}264 < d_u = 1{,}381$ since there is no autocorrelation between the studied indicators. This is also established in addition to the statistical significance of the obtained regression equation proves that the model is also adequate.

In addition to the above, the elasticity coefficient calculated by taking into account the coefficient of the independent variable (in the relationship equation), as well as the arithmetic average values of the cause and effect factors, gives the following result:

$$\mathbf{E_1 = (\alpha_1 \times \bar{x})/\bar{y} = (1.7835 \times 10327.02)/17633.99 = 1.04474 \quad (3)}$$

According to the elasticity coefficient, a 1% increase in oil revenues in Azerbaijan results in a 1.045% increase in budget expenditures.

It should be noted that the increase in oil revenues is one of the important factors determining the growth of the country's GDP. On the basis of statistical data, we will see the correlation-regression dependence between these indicators in the form described in the graph below.



Graph 3. Oil revenues and GDP correlation-regression addiction

Source: *Compiled from an extract from the Eviews -12 software application*

As can be seen from the graph, there is a relationship between oil revenues and GDP expressed by the linear regression equation y = 5.1088x + 9573.9. According to the Chaddock scale, the correlation between these indicators is at a noticeable level ($R^2 = 0.5898$).

Based on the indicators determined above (the coefficient of the independent variable, the cause and effect factor), we can calculate the elasticity coefficient as follows:

$$E_1 = (\alpha_1 \times \bar{x})/\bar{y} = (5.1088 \times 10327.02)/62332.1126 = 0.84641232 \quad (4)$$

According to the elasticity coefficient, a 1% increase in oil revenues in Azerbaijan results in a 0.85% increase in GDP. This shows that the impact of oil revenues on GDP is at a high level.

It is known that the "Green Economy" is understood as an economy based on sustainable economic and social development,

improving people's living conditions, protecting future generations from environmental degradation and eliminating environmental risks. It should be noted that in accordance with the trends in the world, initiatives are being implemented in our country to develop a green economy.

The liberated territories of the Republic of Azerbaijan have wide opportunities to become a "green energy" zone, which in turn will give impetus to the formation of a "green economy" in our country. Currently, the process of restoring these territories is being carried out in accordance with the principles of the "green economy"[6].

CONCLUSION

As a result of the research and studies, the following are proposed:

1. It has been determined that the state budget depends on oil revenues in the medium and long term.

In this regard, first of all, the country's economy's dependence on oil should be minimized, transforming the country's economy into a competitive national economy, and continuing measures to further improve the business and investment environment should be one of the main strategic goals of the state. The export potential and the range and volume of competitive products in the international arena should be increased. Also, sustainable economic development, fiscal and monetary stability should be achieved in the economic sphere, primarily through the expansion of the non-oil sector, including the non-oil industry.

2. It is necessary to expand the areas of application of program-targeted methods of budget planning and improve medium-term budget planning.

The proposals related to the above can be classified as follows:

- To harmonize the directions of budget expenditures with the

[6] Gasimli, V.A. Green economy / V.A. Gasimli, R.Z. Huseyn, R.F. Huseynov [et al.] – Baku: –2022, – pp. 116-122

OMPF and to implement the implementation of expenditures mainly through targeted state programs;

- To align the use of oil revenues with this framework during the implementation of the OMC;

- To coordinate the increase in budget expenditures with the dynamics of GDP growth;

- To coordinate the process of budget allocation with economic and social priorities;

- To switch to result-oriented budgeting.

3. Ensuring long-term sustainable economic development, the formation of a knowledge economy, and accelerating the production of competitive products through the expansion of science-intensive technology and innovative activities are of great importance.

It is advisable to ensure the application of innovative production methods in the non-oil sector and achieve fundamental structural changes in the economy, as well as to ensure the stimulation of the technological and intellectual base of the economy through state budget expenditures.

4. Developing human capital by training qualified and professional personnel and improving scientific infrastructure, and modernizing the material and technical base of science are the main conditions for a modern competitive economy.

We believe that the transformation of oil capital into human capital should always be kept in the spotlight, and funds from the state budget or SOFAZ should be allocated in this direction on a regular basis.

5. The government's increase in reserves for a possible future crisis, minimizing the non-oil budget deficit (by developing agriculture, tourism, innovation and digital technologies), and choosing budget sustainability as the main target for the long term are the main requirements in terms of ensuring the country's financial stability.

Based on the results of the analysis of the current budget rule based on an econometric model carried out in the dissertation, it should be noted that a 1.0% increase in the base expenditures of the consolidated budget leads to a 1.2% increase in non-oil/gas GDP.

At the same time, a 1% increase in non-oil/gas GDP will lead to a 1.18% increase in non-oil/gas revenues of the consolidated budget. Considering that a 1% increase in the base expenditures of the consolidated budget increases non-oil GDP by 1.20%, this in turn leads to a result that the non-oil revenues of the consolidated budget will increase by 1.42% (1.20*1.18=1.42).

It is practically proven that, with all other conditions held constant, a 1% increase in the base expenditures of the consolidated budget tends to bring the ratio of the non-oil base deficit of the consolidated budget to non-oil GDP closer to zero.

It should be noted that the application of procyclical or expansionary fiscal policy in accordance with oil revenues will maintain the risk of budget revenues depending on revenues from the oil sector in Azerbaijan, as in most other oil countries.

In this regard, it is first of all advisable to implement an expansionary budget policy mainly at the expense of non-oil revenues by limiting the procyclicality of fiscal policy. It is precisely the application of such a process that is considered one of the main factors in the mechanism for using oil revenues through the state budget.

6. When preparing the state budget for each year, it is advisable to increase the expenditure only by the increasing part of tax revenues and at the expense of revenues from the management of the assets of the State Oil Fund. It should be noted that this system is currently used in many advanced oil countries. The Republic of Azerbaijan should also switch to this system after the country has established a solid infrastructure for the economy and a number of existing social problems have been resolved, especially after the return of the liberated lands, as well as after the development of the non-oil sector and the reduction of the weight of oil revenues in budget revenues. It is also considered advisable to use transfers to the state budget only for financing targeted state programs.

7. One of the important aspects of reforms in the budget process should be strengthening public participation and transparency. In the advanced countries of the world, special importance is attached to such reforms. The requirement and provision of budget transparency in the management of public finances is considered one

of the most important achievements of budget policy in the world.

8. Analysis of the correlation and regression relationship between oil revenues, budget expenditures and GDP shows that a 1% increase in oil revenues in Azerbaijan results in a 1.045% increase in budget expenditures.

At the same time, a 1% increase in oil revenues leads to a 0.85% increase in GDP. This also proves that the impact of oil revenues on budget expenditures and GDP is currently at a high level. In this regard, it is necessary to increase the weight of the non-oil factor in GDP and increase the share of non-oil revenues in state budget revenues.

For this purpose, it is necessary to support socio-economic development in the regions and ensure employment. At the same time, it was found in the research process that creating the basis for economic diversification has been a key priority for oil countries in recent years. Especially against the backdrop of the decline in oil prices on the world market in 2014 and 2020, it can be said that one-way development of the economy is always risky in terms of oil price volatility.

9. Improving and increasing the efficiency of state financial control remains necessary, and in this regard, the following are recommended:

- improving the information exchange system between participants in the budget process during the preparation of the state budget;
- defining the boundaries of the budget powers of authorities, financial bodies and budget organizations throughout the budget process, and controlling the implementation of budget powers;
- improving budget classification, adapting revenues and expenditures to a result-based budget.

10. Achieving fiscal sustainability will create the basis for macroeconomic stability. To achieve the set goal, the state sometimes pursues an expansionary fiscal policy by increasing the amount of budget expenditures or reducing tax rates, and sometimes a contractionary fiscal policy by doing the opposite.

According to empirical studies, the effectiveness of budget

expenditures varies depending on the selected research object. Empirical studies conducted for Azerbaijan show that budget expenditures have a stimulating effect on the non-oil sector. In this regard, it is necessary to increase the share of non-oil revenues in GDP and the state budget and determine the optimal level of public debt in relation to GDP.

11. The study of the dynamics of investments in the oil sector (field) and changes in that structure, as well as the application of strict mechanisms in the selection of investment projects, the purposefulness and efficiency (usefulness) of these projects as the main principles remain the main condition.

12. The realization of the existing potential in the formation of the "green economy" and the expansion of the "green financing" initiative are among the main challenges for sustainable socio-economic development.

In this regard, the expansion of initiatives in this direction

13. The coefficients obtained from econometric models show that the share of the non-commercial sector in non-oil GDP is larger than that of the commercial sector, and the increase in the base expenditures of the consolidated budget increases non-commercial non-oil GDP more.

A 1% increase in commercial non-oil GDP leads to a greater increase in non-oil revenues of the consolidated budget than in non-commercial non-oil GDP. This also proves that non-oil revenues of the consolidated budget are more seriously dependent on commercial non-oil GDP.

In connection with the above, it is proposed to direct basic expenditures to stimulate the growth of commercial non-oil GDP.

14. In accordance with the new economic development model, taking into account the historical territories liberated from occupation in the post-war period, oil revenues should be directed mainly to accelerating the development of priority areas of the country's economy, as well as to creating and supporting modern industrial and economic zones.

At the same time, it is recommended to pay attention to the issues of using green energy and creating a green energy zone in the

new development period and in the process of restoration in the liberated territories. Because the issues of clean environment and energy security are among the main challenges of the modern world.

The main provisions of the dissertation, the results obtained and the proposals are reflected in the following published scientific works:

1. Sadigov, OT Necessity of state support for the development of small and medium entrepreneurship // - Baku: Ministry of Finance of the Republic of Azerbaijan - Journal of finance and accounting, - 2016. No. 294, - pp. 39-43.
2. Sadigov, OT Analysis of the modern state of agriculture in the Republic of Azerbaijan and its development prospects // - Baku: Ministry of Finance of the Republic of Azerbaijan - Journal of finance and accounting, - 2018. No. 312, - p. 38-47.
3. Sadigov, OT The need to adopt the "golden rule" mechanism that will regulate the transfer of oil revenues to the state budget and the "Medium-term expenditure framework" // Materials of the XXII republican scientific conference of doctoral students and young researchers, - Baku: - November 22-23, - 2018, - p. 357-359.
4. Sadigov, OT Analysis of the interaction between innovations and human capital development and employment // - Baku : State Statistics Committee of Azerbaijan - "Statistics news" scientific and practical journal, - 2019. №2/2019, - p.69-76.
5. Sadigov, OT Development of the non-oil sector and economic diversification through oil revenues // - Baku: Scientific news of Azerbaijan State University of Economics, - 2019. No. 7, - p. 118-128.
6. Sadigov, OT Analysis of the weight of oil revenues in the state budget and the mechanism for preparing a result-based budget // - Baku: Scientific news of Azerbaijan State University of Economics, - 2019. No. 7, - p. 102-118.

7. Sadigov, OT The role of oil revenues in the socio-economic development of Azerbaijan // Materials of the XXIII Republican Scientific Conference of doctoral students and young researchers, - Baku: - 2019, - p. 368-370.
8. Sadigov, OT State oil fund of the Republic of Azerbaijan and assessment of transfers made by the fund to the state budget // - Baku: Scientific news of Azerbaijan State University of Economics, - 2019. No. 7, - p. 82-97.
9. Sadigov, OT Effective ways of using oil revenues through the state budget // – Baku: News of ANAS. Economy series, – 2019. No. 2019-3, – p. 21-31.
10. Sadigov OT Effective ways to inject oil Revenues into the economy in oil countries // International Journal of Energy Economics and Policy. – 2020. No. 10(2), – p. 319-323.
11. Sadigov, OT Modern challenges in the management of oil revenues // - Baku : State Statistics Committee of Azerbaijan - "Statistical news" scientific and practical journal, - 2019. №4/2019, - p. 69-76.
12. Sadigov OT Economic development and sustainable fiscal policy for oil countries // Economic and Social Development, 54th International Scientific Conference on Economic and Social Development, - Novosibirsk: - May 21-22, - 2020, - p. 183-189.
13. Sadigov OT Oil revenues, fiscal framework and economic development: The case of Azerbaijan // Economic and Social Development, 57th International Scientific Conference on Economic and Social Development, – August – 2020, – p. 126-132.
14. Aliyev, U.G. Budget-tax policy in the Republic of Azerbaijan during the coronavirus (COVID-19) pandemic and post-pandemic period / U.G. Aliyev, OT Sadigov, // - Baku: Azerbaijan Tax Journal, - 2021. No. 1 (141), - p. 121-131.
15. Aliyev, U.G. Efficient use of oil revenues in post-pandemic and post-conflict periods: The case of Azerbaijan / U.G. Aliyev, OT Sadigov, // – Baku: TURAN Center for Strategic Researches-IV Scientific Conference of Economics and Management

Researches, Conference special issue, – 2022 June. No. 14, - p. 251-258.
16. Gasimli, V.A. Analysis of budget rules and fiscal sustainability in Azerbaijan / V.A. Gasimli, O.T. Sadigov, A.S. Suleymanov // “Economic Reforms” scientific and analytical journal –2025, №2(11)-2024, – pp. 7-36.

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