REPUBLIC OF AZERBAIJAN

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ABSTRACT

of the dissertation for the degree of Doctor of Philosophy

WAYS TO ENSURE MACROECONOMIC BALANCE IN THE CONDITIONS OF SUSTAINABLE DEVELOPMENT IN THE REPUBLIC OF AZERBAIJAN

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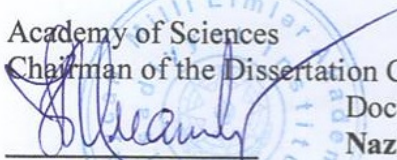**Sevda Mammad Mikayilova**

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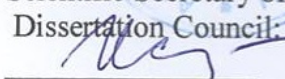**Habil Huseyn Aslanov**

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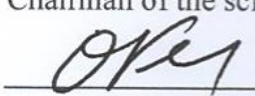
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INTRODUCTION

Relevance and development of the topic. At the present stage, the concept of "sustainability" development, which acts as one of the main indicators of the development of the national economy, has become relevant for scientific research topics. The main reason for this is the inevitability of economic development, not only in terms of self-reliant resources, but also in terms of social and environmental. In particular, it should be noted that the qualitative changes in the needs of members of society have led to the implementation of new technologies in the production, which carries out the process of its provision. The problem of relying on the sustainable development of the economy and its provision is undoubtedly a matter for each state at the level of the national economy, ie at the macroeconomic level. Thus, ensuring sustainable development directly requires positive macroeconomic indicators so that the economy can be resilient to a number of recessions and crises.

The problem of sustainable development and macroeconomic balance is dialectically interdependent and complementary. At the community level, each state may have a different approach to solving these two problems in terms of its resources and technology. Thus, a number of countries that have passed a certain stage of development must ensure a balance between aggregate demand and aggregate supply in order for sustainable development to be sustainable for a certain period of time through other economic indicators. Azerbaijan can be included in the list of such countries. We can assess the quantitative and qualitative changes that have taken place in the Azerbaijani economy over the past decade as an indicator of its sustainability. However, changes in the international arena, threats of economic globalization and so on. requires that the balance at the macroeconomic level in the country is not seriously disturbed. To do this, each country must focus on assessing economic growth, studying the socio-economic effects that ensure balance, and especially taking into account environmental factors. Putting the issue in this form, of course, makes it a topic of extensive research and shows its relevance. From this point of view, we consider that the problem of ensuring

macroeconomic balance in the conditions of sustainable development of the Azerbaijani economy requires a serious scientific approach, and in our opinion, its solution is of great theoretical and practical importance.

Ensuring sustainable development and macroeconomic balance in the national economy is one of the important problems, and its theoretical study is relevant at the request of globalization and competitiveness factors. Given the complexity of the problem and the dynamics of the assessment indicators, we can say that in this regard, a number of economists have developed their own research and theoretical approaches. Issues related to sustainable development and ensuring macroeconomic balance in our country Y. Hasanli [143; 144; 145], R.Guliyev [86], N.M.Imanov [58], I.Kerimli [60], M.A.Ahmadov [43; 44], M.X.Meybullayev [65], G.Manafov [155], K.F.Sadigov, F.P.Rahmanov, Sh.S.Qafarov [82]. R.T. It has been extensively studied by Hasanov [55] and other scientists. Russian economists S.N. Bobylev [95], E.V. Girusov [97], R.A. Perelet [123], D.M. Gvishiani, B.M. Mirkin [119], L.G. Naumova [119], A.V. Yablokov, L.G. Melnik, V.P. Kolesov [110], S.Yu. Pleshkov [125], V.M. Popov [126], M.A. Zaiganova [101], E.V. Chiyanova [129], M.O. Likhachev [116; 117; 118], O.L. Govorina [98; 99], other foreign countries economist W.Darity [168], J.D. Sachs [165; 166], K.Murphy [157], R.Topel [158], R.Shimer [141; 164], R.E.Hall [142], M.Baker, R.J.Gordon [140], D.Neumark [159; 160], E.Malinvaud [153; 154], R. Layard [151], J.F. Helliwell [165], J.Poterba [163], P.Minford, D.Peel [156], L.Katz, B.Krueger [149], R.E.Lucas [152], L.E.Jones [148] and others'scientific works research on sustainable development and ensuring macroeconomic balance is found.

It should be noted that without diminishing the importance of the works of economists who have done some research in this area in our country, we can say that the problems of sustainable development and macroeconomic balance have not become the object of independent research. It is this necessity that led to the choice of the topic of the dissertation, defined the goals and objectives that allow the achievement of scientific innovations.

Objectives and aims of the dissertation. The main purpose of the research is to study the theoretical and methodological issues of ensuring macroeconomic balance in the context of sustainable development in Azerbaijan and to develop scientifically substantiated proposals in this regard. In accordance with the purpose of the study, the following tasks are planned to be performed:

- Carry out theoretical assessments to ensure macroeconomic balance;

- To study macroeconomic aspects of ensuring sustainable development;

- To identify new paradigms in macroeconomic equilibrium;

- To calculate the impact of ensuring macroeconomic balance on economic growth;

- To analyze socio-economic indicators in ensuring macroeconomic balance in the conditions of sustainable development;

- To show the directions of increasing the impact of the real macroeconomic equilibrium model on economic growth in the economy of Azerbaijan;

- To identify ways to reduce the role of oil revenues in ensuring macroeconomic balance;

- To make proposals and recommendations to reduce the impact of negative environmental factors in the context of sustainable development.

Research methods. Organizes works of Azerbaijani and foreign scientists, conceptual provisions of classical and modern economic theories, decrees and orders of the President of the Republic of Azerbaijan, laws adopted by the Milli Majlis and other normative-legal documents dedicated to ensuring sustainable development and achieving macroeconomic balance in these conditions. At the same time, theoretical and empirical research of local and foreign scientists and specialists, economic analysis, comparison, economic-mathematical, statistical, correlation, regression, time series analysis methods and graphical approach were used during the research. The correlation method was widely used in the research process as a method of assessing the relationship between indicators.

The main provisions of the defense:
Provision 1:
The dynamics of aggregate demand and its components in the Azerbaijani economy for the last 18 years was studied and it was determined that the aggregate demand depends on the population's income, consumption expenditures, investments, loans, public procurement, public expenditures, exports, imports and prices. Compared to other indicators, there is less dependence between GDP and "net exports" in Azerbaijan. The fact that exports are mainly dependent on oil and the demand for consumer goods is due to imports has created a certain dependence between imports and exports.
Provision 2:
The increase in prices in the Azerbaijani economy over the past 18 years has not resulted in a decrease in demand. Even if we take into account the figures for 2008, when exports were very high, we can see that the P-AD correlation is quite strong (correlation coefficient R = 0.97). If we do not take into account the figures for 2008, then we can be sure that this relationship is stronger (R = 0.9914).
Provision 3:
Examining the dynamics of aggregate supply (AS), its change over the last 18 years compared to 2000 and the relative change in prices in those years, it was concluded that the volume of aggregate supply in Azerbaijan generally increased during 2000-2014. Although this growth was sharp in 2008, it slowed slightly the following year, but continued to grow smoothly. Although there was a slight decrease in 2015, there was another increase in subsequent years. After 2011, the decline in oil production and the fall in oil prices in the following years had a negative impact on the volume of AS.
Provision 4:
The steady rise in prices in Azerbaijan over the past 18 years has led to an increase in aggregate supply. Of course, the increase in aggregate supply should have stabilized prices after a certain volume and kept the price increase. This was to happen when the AD-AS balance was maintained. Unfortunately, such a long-term balance has not been achieved in the Azerbaijani economy. The steady increase in

aggregate demand and the inability of aggregate supply to "reach" it have resulted in a steady rise in prices.

Provision 5:

The increase in aggregate supply in Azerbaijan over the past 18 years has not reduced the volume of imports at all. On the contrary, there is a serious correlation between them. In the Azerbaijani economy, the correlation between the volume of aggregate supply (AS) and the volume of imports is quite strong, and the correlation coefficient is $R = 0.9717$.

Provision 6:

In recent years, the volume of aggregate demand and aggregate supply in Azerbaijan was equal to 2007 only for a short period of time. In the remaining period, aggregate demand has always exceeded aggregate supply. As a result of aggregate demand consistently exceeding aggregate supply over the last 18 years, prices have only risen during this period.

Provision 7:

In the last 18 years, the relationship between the total volume of oil refining in Azerbaijan and the volume of aggregate demand and aggregate supply has been studied and it has been determined that there is a serious correlation between them.

Provision 8:

The proposal to ensure macroeconomic balance in the context of sustainable development in Azerbaijan may consist of bringing the volume of aggregate supply and aggregate demand closer in the coming years. This means that economic reforms must be carried out so that in the next 5-10 years, the curves representing these two indicators will gradually and as close as possible to each other.

Scientific novelty of the research:

- The dynamics of development of aggregate demand for the last 18 years was studied and the correlation between its consumption expenditures, investments, public expenditures, net exports was calculated.

- In the process of ensuring macroeconomic equilibrium, the correlation between the dynamics of aggregate supply price changes and the volume of imports was calculated.

- The correlation of macroeconomic balance with the volume of oil production was calculated and the environmental factor was assessed in this regard.

- The correlation between the volume of transfers from SOFAZ to the state budget and the level of poverty was calculated and the need to change prices was justified. (pp.142-150).

Object of research The system of interaction of macroeconomic balance with sustainable development.

Subject of research to study the emerging economic relations to ensure sustainable development and achieve macroeconomic balance in these conditions.

Research data sources. The research data of the State Statistics Committee of the Republic of Azerbaijan, statistical-reporting materials of the Ministry of Economy of the Republic of Azerbaijan, the State Oil Fund of the Republic of Azerbaijan, the Ministry of Ecology and Natural Resources, the Ministry of Finance, the Central Bank of the Republic of Azerbaijan and other institutions. was used.

Theoretical and practical significance of the research.

Ensuring sustainable economic development in modern times and the development of theoretical issues and methodological bases for achieving macroeconomic equilibrium in this regard, assessment of the real situation using various macroeconomic indicators, analysis and calculations using various statistical indicators, study of socio-economic bases of the problem, attention to environmental factors The preparation of scientifically substantiated proposals and recommendations on the centralized use of foreign exchange earnings, especially oil revenues, reflects the practical importance of the research. The results of the research can also be used in the teaching of economic theory and macroeconomics.

The edits and proposals received as a result of the research were submitted to the Scientific Research Institute of Economic Reforms of the Ministry of Economy of the Republic of Azerbaijan in the form of a report, received a positive opinion on its application and accepted for use. (January 28, 2016, protocol № IIETI-01-7 / 03)

Approbation and application of research results. The main provisions of the dissertation and practical proposals put forward in

the work were presented at scientific and practical conferences of international and national importance. 18 articles and conference materials on the topic of the dissertation were published.

Name of the organization where the dissertation work is performed. The dissertation work was carried out under the supervision of the Institute of Economics of the Azerbaijan National Academy of Sciences "Theoretical bases of economic policy and history of economic thought", doctor of economic sciences Yuzbashiyeva Gulshan Zaid and doctor of philosophy in economics Mustafayev Asif Mirlazim.

The scope and structure of the work. The dissertation consists of three chapters and nine paragraphs, introduction, conclusions and suggestions. The first chapter is 51 pages, the second chapter is 43 pages and the third chapter is 34 pages. The total volume of the dissertation is 162 pages or 235,000 characters. 21 tables, 3 appendices, 43 graphs, 4 figures, as well as 173 sources were used in the dissertation.

MAIN SCIENTIFIC PROVISIONS PRESENTED FOR DEFENSE

Article 1:

  The dynamics of aggregate demand and its components in the Azerbaijani economy for the last 18 years was studied and it was determined that the aggregate demand depends on the population's income, consumption expenditures, investments, loans, public procurement, public expenditures, exports, imports and prices. Compared to other indicators, there is less dependence between GDP and "net exports" in Azerbaijan.

Table 1 shows the dynamics of aggregate demand and its components in the real economy of Azerbaijan for the last 18 years. The table shows that all components of aggregate demand, except for "net exports", have an increasing dynamics, and as a result have an increasing dynamics in AD. Even the high volume of oil exports in 2008 led to a sharp increase in AD in that year.

Table 1

Aggregate demand in the real economy of Azerbaijan

(AD = C + I + G + X) dynamics (mln. AZN)

Years	C	İ	G	X	AD
2000	3272,2	1289,8	764,0	521,521	5847,8
2001	3498,4	1454,5	807,5	838,945	6599,3
2002	4171,2	2718,0	931,8	491,862	8312,86
2003	4793,8	4249,3	1234,5	-35,442	10242,4
2004	5549,9	5820,3	1502,1	97,608	12969,9
2005	6508,7	6733,4	2140,7	125,12	15507,9
2006	8208,1	7415,6	3790,1	961,785	20375,59
2007	11249,7	10353,9	6086,2	289,548	27979,35
2008	15891,9	13328,0	10774,2	32468,8	72462,9
2009	17417,6	10475,0	10503,9	6862,64	45259,14

				Continuation of the Table 1
2010	19251,5	14118,9	11765,9	11807,68	56943,98
2011	22184,0	17048,8	15397,5	13283,77	67914,07
2012	24564,0	20251,1	17416,5	11118,98	73350,58
2013	28021,2	21448,2	19143,5	10 345,1	78957,9
2014	30799,6,	21890,6	18709,0,	9859,902	81259,1
2015	34963,4	20057,4	17784,5	3688,02	76150,4
2016	39775,0	22868,5	17751,3	8446,45	88841,25
2017	44498,4	24462,5	17594,5	11112,39	97667,79
2018	42136,7	25877,0	22731,6	13589,12	104334,42

Note: The table was compiled by the author on the basis of the data of the State Statistics Committee of the Republic of Azerbaijan.

Graph 1. Development dynamics of AD in the last 18 years
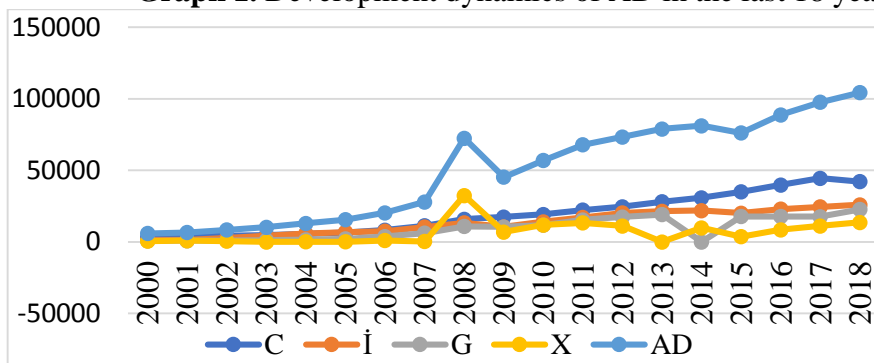
Note: The graph was compiled by the author, (consumer component of AD (increase in solvent demand).

Consumer spending, investment, government spending, exports, imports, prices depend on aggregate demand. Compared to other indicators, there is less dependence between GDP and "net exports" in Azerbaijan. The weak correlation between GDP and "net exports" (correlation coefficient R = 0.8063) is primarily due to the fact that despite the high volume of exports over the past 18 years, imports are also high and the balance of payments is often serious. "Fluctuation" occurs. The fact that exports are mainly dependent on oil and the

demand for consumer goods is due to imports has created a certain dependence between imports and exports.

Article 2:

The increase in prices in the Azerbaijani economy over the past 18 years has not resulted in a decrease in demand. Even if we take into account the figures for 2008, when exports were very high, we can see that the P-AD correlation is quite strong (correlation coefficient R = 0.97). If we do not take into account the figures for 2008, then we can be sure that this relationship is stronger (R = 0.9914).

Graph 2. The relationship between the relative dynamics of change in the volume of AD and the dynamics of relative change in prices.
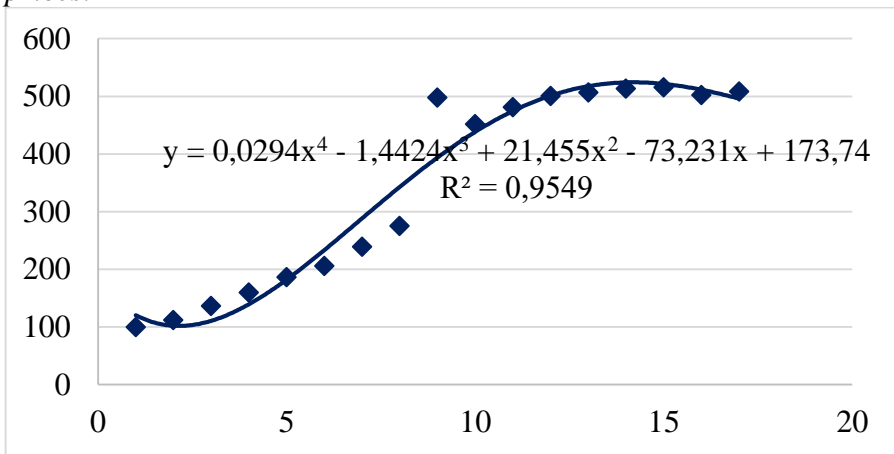
$$y = 0{,}0294x^4 - 1{,}4424x^3 + 21{,}455x^2 - 73{,}231x + 173{,}74$$
$$R^2 = 0{,}9549$$

Note: The graphic was compiled by the author.

Thus, by determining the degree of price dependence of aggregate demand (AD) in the real economy of Azerbaijan, we can propose a model for the volume of aggregate demand (AD) in Azerbaijan:
*$y=0{,}0294x^4-1{,}4424x^3+21{,}455x^2-73{,}231x+173{,}74$*
$R^2 = 0{,}9549$

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Article 3:

Examining the dynamics of aggregate supply (AS), its change over the last 18 years compared to 2000 and the relative change in prices in those years, it was concluded that the volume of aggregate supply in Azerbaijan generally increased during 2000-2014. Although this growth was sharp in 2008, it declined slightly the following year, but again increased smoothly. Although there was a slight decrease in 2015, there was another increase in subsequent years.

Such changes in the growth rate are due to changes in oil exports. Thus, the sharp increase in oil production and rising oil prices since 2004 has significantly increased the aggregate supply. After 2011, the decline in oil production and the fall in oil prices in the following years had a negative impact on the volume of AS.

Graph 3. Dynamics of aggregate supply and price dependence.
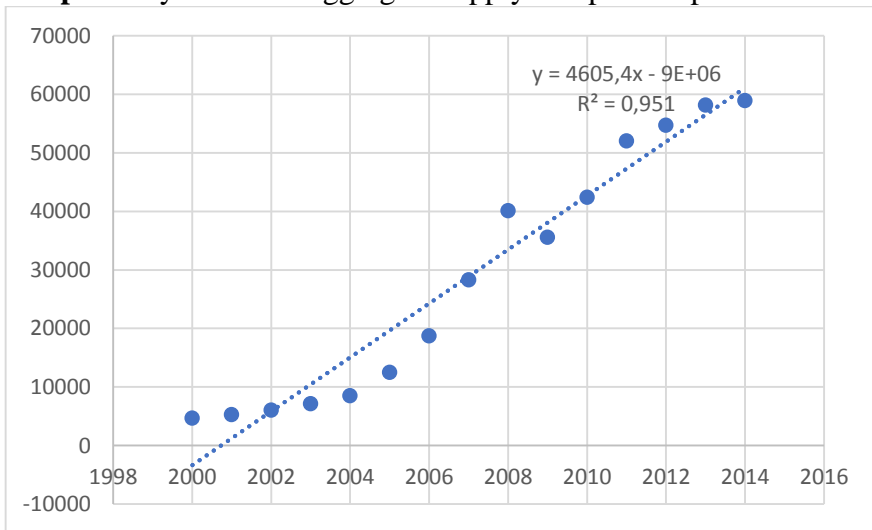
$y = 4605.4x - 9E+06$
$R^2 = 0.951$

Note: The graphic was compiled by the author.

Thus, by determining the degree of price dependence of aggregate supply (AS) in the real economy of Azerbaijan, we can

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propose a model for the volume of aggregate supply (AS) in Azerbaijan:

y=4605,4x-9E+06

Article 4:

The steady rise in prices in Azerbaijan over the past 18 years has led to an increase in aggregate supply. Of course, the increase in aggregate supply should have stabilized prices after a certain volume and kept the price increase. This was to happen when the AD-AS balance was maintained. Unfortunately, such a long-term balance has not been achieved in the Azerbaijani economy.

Graph 4. Dependence of the dynamics of relative change of aggregate supply on the dynamics of price change.

$$y = 0{,}341x + 58{,}058$$
$$R^2 = 0{,}9603$$
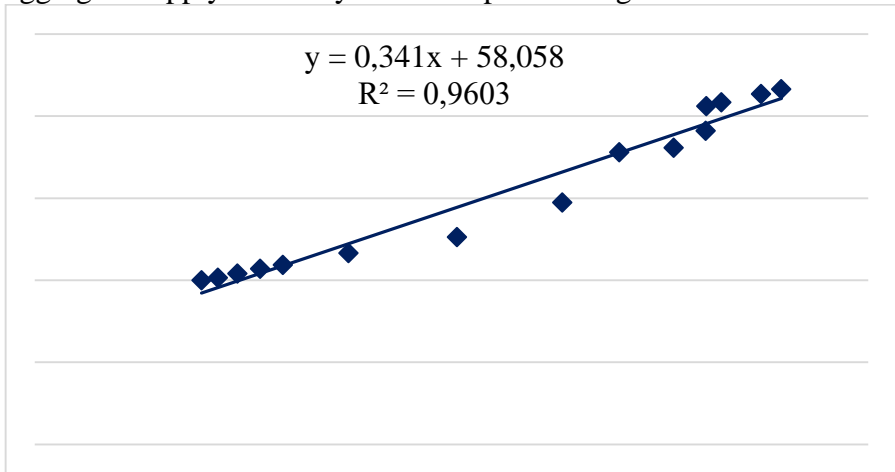
Note: The graphic was compiled by the author

The steady increase in aggregate demand and the inability of aggregate supply to "reach" it have resulted in a steady rise in prices. There is a significant correlation between the dynamics of relative change in aggregate supply and the dynamics of price changes

y=0,341x+58,058

Article 5:

The increase in aggregate supply in Azerbaijan over the past 18 years has not reduced the volume of imports at all. On the contrary, there is a serious correlation between them.

Correlation of aggregate supply (AS) volume with import volume

Years	AS volume (mln,AZN)	Import volume (mln,AZN)
2000	4718,1	1066,611
2001	5315,6	1359,545
2002	6062,5	1632,19
2003	7146,5	2599,938
2004	8530,2	3445,582
2005	12522,5	3874,304
2006	18746,2	4582,029
2007	28360,5	4799,34
2008	40137,2	5736,0
2009	35601,5	4898,48
2010	42465,0	5280,48
2011	52082,0	7707,24
2012	54743,7	7529,262
.2013	58182,0,	8355,75
2014	59014,1,	7166,406
2015	54380,0	9677,535
2016	60425,2	14505,08
2017	70337,8	26044,0
2018	80092,0	33079,62

Note: The table was compiled by the author on the basis of the data of the State Statistics Committee of the Republic of Azerbaijan.

Graph 5. Relationship between aggregate supply volume and import volume

$y = 0,1476x + 1386,5$
$R^2 = 0,9443$
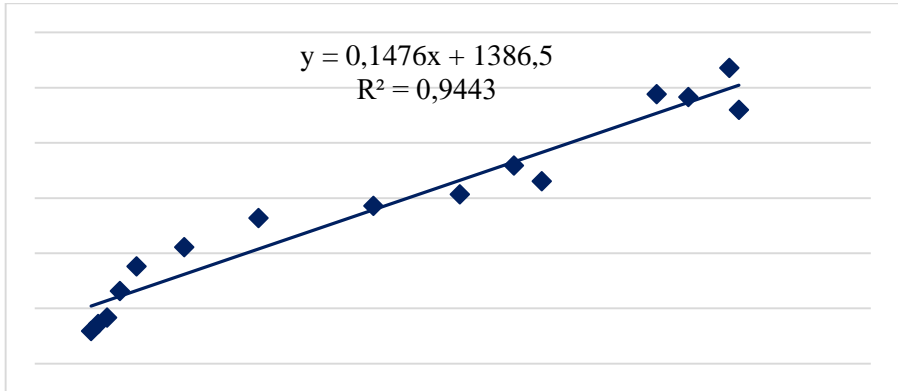
Note: The graphic was compiled by the author.

Thus, in the Azerbaijani economy, the correlation between the volume of aggregate supply (AS) and the volume of imports is quite strong, and the correlation coefficient is equal to R = 0.9717. Determining this degree of dependence, we can propose a model for the volume of aggregate supply (AS) in Azerbaijan:

y=0,1476x+1386,5

Article 6:

The volume of aggregate demand and aggregate supply in Azerbaijan for the last 18 years was equal only in 2007 for a short period of time. In the remaining period, aggregate demand has always exceeded aggregate supply. As a result of aggregate demand consistently exceeding aggregate supply over the last 18 years, prices have only risen during this period. In recent years, aggregate demand has outpaced aggregate supply, and the widening gap between them suggests that prices are not stabilizing, but rising.

Thus, by following the dynamics of the relationship between aggregate demand and aggregate supply in Azerbaijan over the past 18 years, we can follow the movement of the general level of prices determined in the market. Table 3 shows the volume of aggregate demand and its dynamics compared to 2000, aggregate supply and its

dynamics compared to 2000, as well as the dynamics of price levels over the last 18 years compared to 2000.

Table 3.

The relationship between aggregate demand (AD) and aggregate supply (AS) dynamics.

Years	AD volume (mln, AZN)	AD dynamics in%	AS volume (mln,AZN)	AS dynamics in%	Price change in%
2000	5847,8	100,0	4718,1	100,0	100
2001	6599,3	112,9	5315,6	112,7	101,5
2002	8312,86	142,2	6062,5	128,5	104,4
2003	10242,4	175,1	7146,5	151,5	106,7
2004	12969,9	221,8	8530,2	180,8	113,9
2005	15507,9	265,2	12522,5	265,4	124,8
2006	20375,59	348,4	18746,2	397,3	135,2
2007	27979,35	478,5	28360,5	601,1	157,7
2008	72462,9	1239,1	40137,2	850,7	190,6
2009	45259,14	774,0	35601,5	754,6	193,4
2010	56943,98	973,8	42465,0	900,0	204,4
2011	67914,07	1161,4	52082,0	1103,9	220,5
2012	73350,58	1254,3	54743,7	1160,3	222,9
2013	78957,9	1350,2	58182,0	1233,2	228,3
2014	81259,1	1389,6	58977,8	1250,8	231,4
2015	76150,4	1302,2	54380,0	1152,6	240,7
2016	88841,25	1519,2	60425,2	1280,7	270,7
2017	97667,79	1670,2	70337,8	1490,8	305,7
2018	104334,42	1784,2	80092,0	1697,5	312,6

The table shows that in the last 18 years, the volume of aggregate demand and aggregate supply in Azerbaijan was equal only in 2007 for a short period of time. In the remaining period, aggregate demand has always exceeded aggregate supply.

Graph 6. *Dynamics of development of aggregate demand and aggregate supply in the last 18 years.*
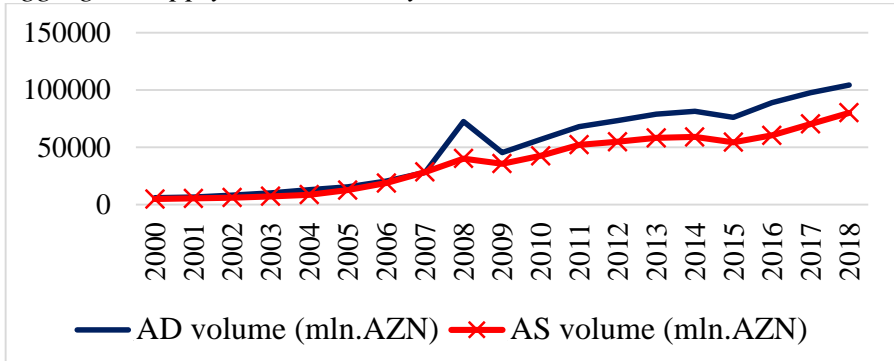
Note: The graphic was compiled by the author

In recent years, aggregate demand has outpaced aggregate supply, and the widening gap between them suggests that prices are not stabilizing, but rising. Of particular concern is the increase in aggregate demand, which may lead to an increase in imports. An increase in the volume of imported goods may have a negative impact on the exchange rate of the manat. Macroeconomic problems connected in a "chain" can have a serious impact on the Azerbaijani economy in the future.

Article 7:

In the last 18 years, the relationship between the total volume of oil refining in Azerbaijan and the volume of aggregate demand and aggregate supply has been studied and it has been determined that there is a serious correlation between them.

Oil production in Azerbaijan increased sharply until 2010, but in subsequent years, despite the decline in oil production, aggregate demand continued to grow. Apparently, the main reason for this is that the incomes are already quite high. Because a large part of oil revenues is already collected in the "reserve fund", ie the Oil Fund, the increase in aggregate demand does not give a serious "reaction" to certain changes in oil production and exports. However, there may be a certain level of oil revenues to which the aggregate demand will "react" to a reduction below that level. Of course, not only the volume of oil

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production and exports play a role here, but also the price of oil on the world market. Because the factor that affects the aggregate demand is the aggregate income from oil. Such a correlation between AD and oil production is very strong and the correlation coefficient is R = 0.9437.

Graph 7. Relationship between AD and oil production.

$$y = -2E\text{-}05x^2 + 1{,}9252x - 2761{,}5$$
$$R^2 = 0{,}9437$$
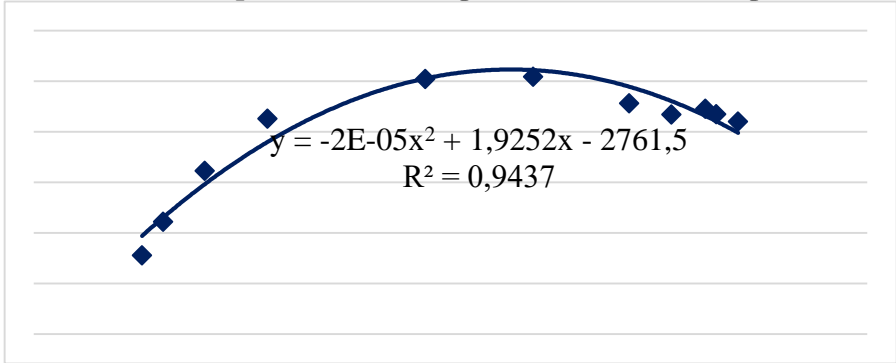
Note: The graphic was compiled by the author.

The relationship between aggregate supply and oil production allows us to draw different conclusions. Thus, since an increase in aggregate demand stimulates an increase in production, there must be a linear correlation between an increase in production and an increase in aggregate supply.

Graph **8.** Relationship between AS and oil production

$$y = 0{,}6061x + 5409{,}8$$
$$R^2 = 0{,}9093$$
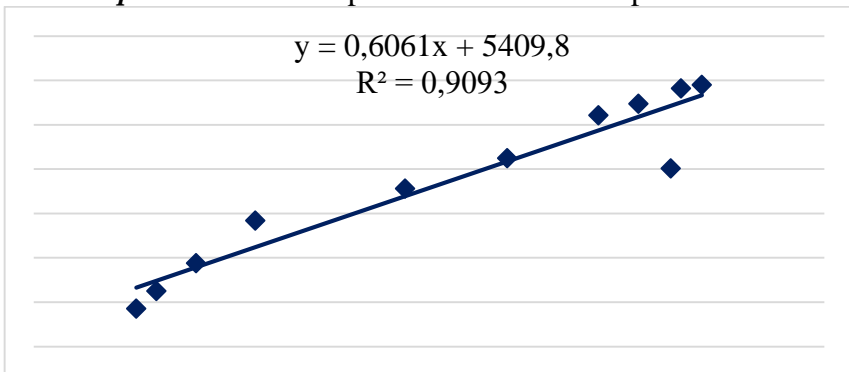
Note: The graphic was compiled by the author.

Indeed, with the increase in production in Azerbaijan over the past 18 years, the volume of aggregate supply has also increased. The linear correlation between these two quantities is quite strong.

Article 8:

The proposal to ensure macroeconomic balance in the context of sustainable development in Azerbaijan may consist of bringing the volume of aggregate supply and aggregate demand closer in the coming years. This means that economic reforms must be carried out so that in the next 5-10 years, the curves representing these two indicators will gradually and as close as possible to each other.

Graph 9. Forecast of possible dynamics of aggregate demand and aggregate supply in the near future.
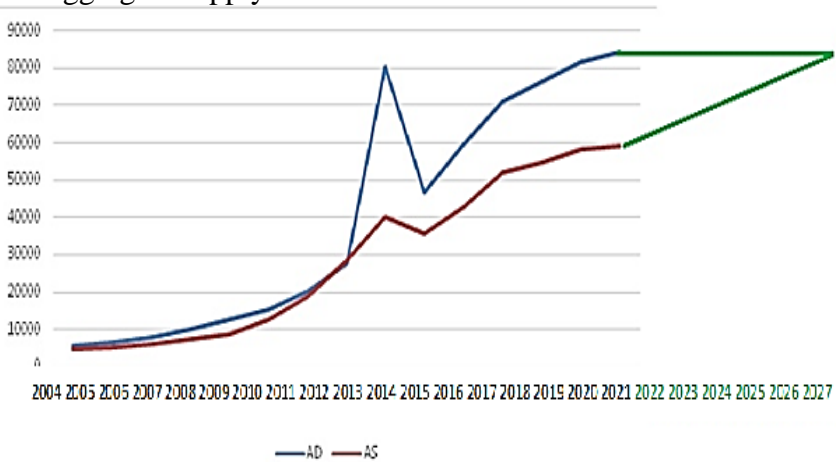
Note: The graphic was compiled by the author

The convergence of these two indicators is theoretically possible in the following cases:

1. Only by reducing aggregate demand;
2. Only by increasing the aggregate supply;
3. Both by reducing aggregate demand and by increasing aggregate supply**.**

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Thus, in order to ensure a balance between aggregate demand and aggregate supply, it is necessary to use the option of increasing aggregate supply rather than the option of reducing aggregate demand. This option makes it necessary to provide goods and services necessary for the domestic market not through imports, but through domestic production.

The possible dynamics of aggregate demand and aggregate supply in the near future can be described as follows. This is in line with the model that 1) consumer spending is not reduced administratively 2) investment is not reduced 3) government spending is reduced by 20-25% 4) net exports are increased by reducing imports. In this model, aggregate demand is maintained almost patiently in the current situation. However, aggregate supply is increased by 20-25% due to increased domestic production. This may be possible only if 1) the bulk of the planned investments is directed to the development of import-substituting industries; 2) to take protectionist measures to stimulate exports and restrict imports.

Research shows that in the coming years, the current economic situation in Azerbaijan may change in three directions. The first direction is to maintain the dominant position of aggregate demand over aggregate supply (about 25-30%) as in recent years, and both indicators have only an upward trend. This is not convincing, because the rapid decline in world oil prices in recent years indicates a rapid decline. Thus, the ratio between aggregate demand and aggregate supply in Azerbaijan cannot develop with the trend of recent years.

The second direction is the tendency of both of these indicators to decrease and gradually converge. Of course, the development of the Azerbaijani economy in this direction in the coming years is not desirable, but this direction is one of the possible options in the context of declining oil revenues, and it is important to study to imagine the scale of possible economic recession in the future.

The third direction is an important trend for the Azerbaijani economy. This direction is to bring aggregate demand and aggregate supply closer to each other, while maintaining the growth dynamics. Aggregate supply should be developed to the extent that the difference between aggregate demand and it is minimized by protecting the

domestic market and domestic production. It is more expedient to have this minimum 3-5%. This difference will be close to the inflation rate in the country and will stimulate the growth of domestic production in accordance with the dominant position of aggregate supply. Maintaining this trend can not only reduce the growth rate of market prices, but also contribute to the protection of the domestic market and the constant improvement of the socio-economic situation of the population and living conditions in general.

Thus, the development of the Azerbaijani economy in all three options will affect the socio-economic situation in the country. Therefore, in the context of the realization of any of these options, it is important to study and predict the possible development trends of socio-economic impacts. Therefore, an attempt was made to model each of these cases separately.

Results and suggestions

After conducting theoretical assessments, it can be concluded that ensuring macroeconomic balance should be applied in two directions. The first direction is the study of the factors that hinder the maintenance of balance, the second is the study of the factors that contribute to the maintenance of balance.

Ensuring macroeconomic equilibrium is an economic process aimed at ensuring sustainable development, which determines the cause-and-effect relationship with a number of other relations in the economy. It should be noted that sustainable development is based on a certain concept in terms of ensuring, and the study found that its main principles for Azerbaijan are:

- The society must be able to give a sustainable character to the course of development in the socio-economic sphere for a long period of time.

- Developments in the use of natural resources are relative in terms of limitations, because society and its current level of development must create alternative sources of resources.

- Meeting the ordinary needs of members of society should not be a problem as one of the possible conditions for sustainable development. It should be borne in mind that the environmental factor, which is the focus of sustainable development, should be relevant in the process of meeting ordinary needs.

- To equate the lifestyles of capital owners with the ecological power of the country and the region, to combine the efficiency of the use of rare resources.

- Population growth and settlement should be coordinated with the global ecosystem of the area and should be aimed at determining the capacity in the production process.

The study found that the concept of sustainable development was approached in the sense of eradicating more poverty for the Azerbaijani economy, and the following measures were considered a priority to achieve this goal:

- Maintaining macroeconomic stability and balanced development of the non-oil sector

- Extensive income opportunities and poverty reduction

- Achieving efficiency in the social protection system and, in particular, reducing social risks

- Strengthening economic measures to improve the living conditions of IDPs in connection with the war

- Implement reforms in the education and health systems in particular and improve the quality of services

- Expansion of infrastructure in the social sphere and improvement of the service system

- Use of economic opportunities for environmental protection due to the ecological situation

- Establishment of an effective management system against the background of continuing institutional reforms

As can be seen, ensuring macroeconomic stability is the main condition for achieving sustainable development. However, in our research, we have shown a dual approach to this issue and have argued that sustainable development and macroeconomic equilibrium are two

complementary processes. However, it is necessary to take into account the time factor related to sustainable development.

When we say "sustainable development", we must mean economic development in such a way that socio-economic development and ecological balance are in harmony with economic growth. In Azerbaijan, we have examined the relationship between "sustainable development" and macroeconomic equilibrium as the relationship between aggregate demand (AD) and aggregate supply (AS) and economic growth, socio-economic development and environmental balance. However, when studying the impact of macroeconomic equilibrium on sustainable development in Azerbaijan, it should be noted that, unlike other countries in the region, oil revenues in Azerbaijan have a significant share in GDP and foreign trade. The added value brought to the country's economy by large-capacity and less labor-intensive extractive industries affects the nature of both aggregate demand and aggregate supply in Azerbaijan.

Examining the dynamics of aggregate demand and its components in the real economy of Azerbaijan for the last 18 years, it was concluded that all components of aggregate demand, except for "net exports", have an increasing dynamics, and as a result AD has an increasing dynamics. Although consumer spending (C), which ranks first in terms of the share of aggregate demand, is three times less than the world average per capita, the dynamics of development does not differ significantly from the dynamics of the world, ie it is growing steadily. The correlation between GDP and consumer spending is very strong and the correlation coefficient is R = 0.7539.

The volume of investments, the second largest aggregate demand, has also increased significantly over the past 18 years. The correlation between the volume of investments and the volume of GDP is strong and the correlation coefficient is R = 0.9856.

Although government consumer spending in Azerbaijan has been growing for the past 18 years, it lags behind the world average. The correlation between GDP and government spending is very strong and the correlation coefficient is R = 0.9928.

Although the volume of exports per capita in Azerbaijan was less than the world average price until 2007 (in some years even 4

times less), in the following years it increased significantly and approached the world average. The general trend of Azerbaijan's import activity over the past 25 years is slightly different from export activity. Thus, while the volume of exports decreased in the first years of independence, the volume of imports did not decrease for several years. Analyzing the dynamics of Azerbaijan's import and export activities over the past 18 years and the volume of "net exports", it can be concluded that the impact of oil revenues is strong in its formation, as the dynamics of "net exports" are mainly related to oil revenues. As a result, both the volume of exported oil decreased and the volume of "net exports" decreased as world oil prices fell. It does not have a strong impact on the overall dynamics of GDP and "net exports" in Azerbaijan. The weak correlation between GDP and "net exports" (correlation coefficient R = 0.8063) is primarily due to the fact that despite the high volume of exports over the past 18 years, imports are also high and the balance of payments is often serious. "Fluctuation" occurs. The fact that exports are mainly dependent on oil and the demand for consumer goods is due to imports has created a certain dependence between imports and exports.

Aggregate demand and aggregate supply play a key role in price formation in the market. If a fixed price represents the balance of aggregate demand and aggregate supply at any time interval, a change in price indicates an imbalance between AD and AS as an "economic indicator". The last 18 years in Azerbaijan have been marked only by an increase in prices. There is also a steady increase in the volume of AD. The increase in prices did not result in a decrease in demand. Even if we take into account the figures for 2008, when exports were very high, we can see that the P-AD correlation is quite strong (correlation coefficient R = 0.97). If we do not take into account the figures for 2008, then we can be sure that this relationship is stronger (R = 0.9914).

In general, the volume of aggregate supply in Azerbaijan has been growing. Although this growth was sharp in 2008, it slowed slightly in the following years, but continued to grow smoothly. The steady rise in prices in Azerbaijan over the past 18 years has led to an increase in aggregate supply. Of course, the increase in aggregate

supply should have stabilized prices after a certain volume and kept the price increase. This was to happen when the AD-AS balance was maintained. Unfortunately, such a long-term balance has not been achieved in the Azerbaijani economy. The steady increase in aggregate demand and the inability of aggregate supply to "reach" it have resulted in a steady rise in prices. There is a significant correlation between the dynamics of relative change in aggregate supply and the dynamics of price change, and the correlation coefficient is $R = 0.9799$.

The increase in aggregate supply did not reduce the volume of imports at all. The correlation between the volume of aggregate supply and the volume of imports is quite strong, and the correlation coefficient is $R = 0.9717$.

For the last 18 years, the volume of aggregate demand and aggregate supply in Azerbaijan was equal to 2007 only for a short period of time. In the remaining period, aggregate demand has always exceeded aggregate supply. As a result of aggregate demand consistently exceeding aggregate supply, only an increase in prices was observed during this period. In recent years, aggregate demand has outpaced aggregate supply, and the widening gap between them suggests that prices are not stabilizing, but rising.

There is a significant correlation between AD, AS and P, which is inversely proportional to the poverty line, and is of a decreasing surface function. The correlation between AD, AS and P and the income level of the population, the number of employed population, the average monthly salary is quite strong.

The sharp increase in the number of private cars with the increase in oil production and refining in Azerbaijan, as well as incomes and consumer spending, has increased environmental risks in the country, especially in Baku. According to the Ministry of Environmental Protection, after 2016, the average daily concentration of pollutants in the atmosphere of Baku decreased. Macroeconomic balance must be ensured so that environmental risk has only a declining dynamics. Such a correlation between AD and oil production is very strong and the correlation coefficient is $R = 0.9714$. The relationship between aggregate supply and oil production allows

us to draw different conclusions. Thus, since an increase in aggregate demand stimulates an increase in production, there must be a linear correlation between an increase in production and an increase in aggregate supply. The linear correlation between these two quantities is quite strong and the correlation coefficient is R = 0.9536.

The correlation between aggregate demand and aggregate supply and the number of cars in the country is very strong.

The possible dynamics of aggregate demand and aggregate supply in the near future can be described as follows. This is in line with the model that 1) consumer spending is not reduced administratively 2) investment is not reduced 3) government spending is reduced by 20-25% 4) net exports are increased by reducing imports. In this model, aggregate demand is maintained almost patiently in the current situation. However, aggregate supply is increased by 20-25% due to increased domestic production. This may be possible only if 1) the bulk of the planned investments is directed to the development of import-substituting industries; 2) to take protectionist measures to stimulate exports and restrict imports.

There is a serious correlation between the expenditures of the Oil Fund and the consumption expenditures of the population, the volume of investments in the Azerbaijani economy, public expenditures, and the volume of imports. There is an inverse correlation between the amount of SOFAZ expenditures and the share of people living below the poverty line. There is a correlation between SOFAZ's revenues and expenditures and the level of income, employment and average monthly salary, and the number of cars. There is a serious need to expand underground and surface metro transport in order to improve the environmental situation in Baku. Such modes of transport can dramatically reduce the number of buses and cars entering Baku by expanding passenger traffic to and from Baku.

The main content of the research is reflected in the following published scientific works of the author:

1. Aslanova I.E., Valiyev D.A. Modern paradigms of sustainable development in the context of globalization // Baku, AU, International scientific conference on "Actual problems of sustainable development in the context of globalization", May 4-5, 2011, pp. 26-29.

2. Aslanova I.E.   The role of the state in ensuring integration and macroeconomic balance at the present stage // - AU, International Scientific Conference on "Integration and Resistance Processes in the Modern World", June 9, 2012, pp. 143-146.

3. Aslanova I.E.   Innovation policy of the state at the macroeconomic level // SSU and Institute of Economics of ANAS, International scientific conference on "Socio-economic problems of innovation-oriented development", September 28, 2012, pp.160-162.

4. Aslanova I.E. Theoretical approach to ensuring sustainable development // AU, "Silk Road" magazine №2, 2015, pp.11-18.

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6. Aslanova I.E.   Assessing the environmental impact of ensuring macroeconomic balance // "Investicii: praktika ta dosvid" magazine, Economic news №13, 2016, pages 65-70.

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8. Aslanova I.E. Paradigms and assessments in ensuring macroeconomic balance // ANAS "Scientific works" №2, 2016, pages 142-147.

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14. Aslanova İ.E. Social security and social protection in the conditions of sustainable development in the Republic of Azerbaijan // AU, "Actual problems of sustainable development and humanitarian sciences" international scientific conference, May 14-15, 2018, pp. 35-37.

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18. Aslanova İ.E. The role of macroeconomic equilibrium model in ensuring sustainable economic development // AU, "Silk Road" magazine №3, 2019, pages 35-42.

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