

## The relationship between public debt and economic growth: The case of Azerbaijan

### Farid Jabiyev

*Department of Economics, Baku Engineering University,  
Karabakh Economic Research Center,  
Azerbaijan State University of Economics (UNEC),  
Azerbaijan*  
[fjabiyev@beu.edu.az](mailto:fjabiyev@beu.edu.az)  
ORCID 0000-0002-6675-0264

### Aghamir Asgarov

*Department of Finance and Accounting, Baku Engineering University,  
Azerbaijan*  
[aesgarov@beu.edu.az](mailto:aesgarov@beu.edu.az)  
ORCID 0000-0002-8355-2649

### Tutu Heydarli

*Department of Economics, Baku Engineering University, Karabakh  
Economic Research Center, Azerbaijan State University of Economics  
(UNEC),  
Azerbaijan*  
[tHeydarli@beu.edu.az](mailto:tHeydarli@beu.edu.az)  
ORCID 0000-0003-3532-8105

**Abstract.** This study investigates the relationship between public debt and economic growth in Azerbaijan by applying FMOLS model to data from 1995 to 2020. The findings of the study show that government debt negatively affects economic growth. They also indicate that a 1% growth in export and real exchange rate increases GDP by 0.209% and 0.202%, respectively. The results of this study are useful for policymakers and they advance the economic literature to facilitate further research into developing oil-rich countries.

**Keywords:** public debt, economic growth, FMOLS, Azerbaijan

**JEL Classification:** F43, H63, H68

**Received:**  
November, 2021  
**1st Revision:**  
August, 2022  
**Accepted:**  
December, 2022

DOI:  
10.14254/2071-  
8330.2022/15-4/13

## 1. INTRODUCTION

The main goal of economic policies pursued by countries is to increase the welfare of the population. Welfare growth is possible with the growth of aggregate production achieved as a result of most efficient use of physical, human and the natural resources. Gross Domestic Product (GDP) growth, which is the sum of the market value of all goods and services produced in a country during a year, reflects economic growth that ultimately raises people's living standards by paving the way for economic development. However, the factors of production mentioned above are not evenly distributed among the countries due to certain historical and geographical reasons. For this reason, especially after the Second World War, war-affected countries turned to borrowing from other entities in order to rebuild their economic systems. In addition, the wave of globalization, which began to accelerate in the 1980s, facilitated the flow of capital between countries and led to the expansion of debt relations. Borrowing is currently a tool widely used by governments for a variety of reasons and purposes. On the other hand, as we know, the financing of public expenditures and public services provided by the state is done at the expense of tax revenues (Gurdal & Yavuz, 2015). For any reason, even in the event of a decrease in these tax revenues, the state may resort to borrowing. In the case of an increase in public spending, the government still sees borrowing as a source of funding because raising taxes or reducing spending is not considered economically and politically viable (Bilginoglu & Aysu, 2008).

The positive or negative effects of public debt on the economy can vary depending on the current economic situation. Moreover, the amount of borrowing, the interest rate received, and the level of economic development of the recipient country make a difference in the impact of debt on the economy. That is why the relationship between public debt and economic growth is a topic of discussion among economists. There are several basic hypotheses about the relationship between public debt and economic growth. One of them is the theory of debt overhang (Bilginoglu & Aysu, 2008). Mainly, this theory was developed in the literature after the debt crises of the 1980s (Toktash, Altiner & Bozkurt, 2019) by some economists such as Krugman (1988), Sachs (1989) and Cohen (1993). A debt overhang is a situation in which the costs of the country's current debt burden exceed its ability to pay. In this case, according to the theory, the capital invested in both the economy and potential production will be subject to tax due to increased debts (Saungweme & Nicholas, 2019). This, in turn, will reduce the interest of both local and foreign investors in the country. The initially received debt is absorbed into the country's economy as an investment, and as a result, economic growth accelerates. However, the existence of debt becomes a problem that limits economic growth in the following years. Thus, as mentioned earlier, if in the future the debt is greater than the repayment potential of the country, this debt will discourage local and foreign investors from investing, which will have a negative impact on economic growth (Saungweme & Nicholas, 2019).

Another popular theory about the effect of public debt on economic growth is the "double gap theory". According to the theory, many developing countries face negative balances and domestic financing shortages when financing capital or imports. This shortage of funds and negative balance is an obstacle for developing countries to reach the desired level of development (Toktash, Altiner & Bozkurt, 2019). In the theory, it is accepted that economic growth is completely dependent on investment and local sources are not enough for investment. For this reason, foreign borrowing is considered the most appropriate strategy for governments. The optimal amount of public debt should be as much as imports exceed exports (Adedoyin & Babalola, 2016).

$$\text{Investment (I)} - \text{Savings (S)} = \text{Import (M)} - \text{Export (X)}$$

The left side of the equation shows a savings deficit, i.e. insufficient domestic funds to finance investments, and the right side shows a surplus of imports over exports, i.e. a negative balance. In both cases, i.e., if there is a shortage in the amount of savings necessary for the targeted economic growth, or if the level of imports exceeds exports, the ground for borrowing from abroad is formed in the country (Yıldız & Saghdic, 2021).

One of the approaches that sees borrowing as a tool to finance investments that developing countries cannot implement due to insufficient savings is the Growth - Cum - Debt Model (Yıldız & Saghdic, 2021). The theory is based on the concept of foreign borrowing for investment purposes to fill the gap between savings and capital within the country. According to the model, additions to the public debt over time continue to accelerate economic growth while maintaining the country's debt-paying capacity.

As many of countries, Azerbaijan also has a debt burden that it has been borrowing from various international financial institutions such as European Bank for Reconstruction and Development (EBRD), Asian Development Bank (ADB), World Bank (WB), Islamic Development Bank (IDB) or individual countries for many years. If we look at a general picture for Azerbaijan, we will see that although the amount of debt has been increasing in our country for the last 25 years, the ratio of public debt/GDP has not reached a level that can form a risk. Simply taking into account the possibility of falling oil prices in the world market, the loans should be used effectively. The total public debt of Azerbaijan has increased by 15,069 billion manats in 25 years. If we look back before 1995, we can say that Azerbaijan depended on international financial and credit organizations. Because those years, i.e. the first years of Azerbaijan's independence, the collapse of the Soviet Union, the disruption of existing relations with previous enterprises, the Nagorno-Karabakh conflict between Armenia and Azerbaijan and the displacement of more than 1 million refugees, the blockade of Azerbaijan in terms of social, economic and informational aspects led to recession of our economy during 1991-1994. For this reason, from 1995 to 2003, the debt/GDP ratio is at a high level and the received loans were mainly used to cover the budget deficit. During 2004-2014, Azerbaijan was considered one of the countries with low debt in the CIS region. During these years, the share of debt in GDP was expressed as a single-digit percentage. However, this rate increased to 18% in 2015, to 22.5% in 2017, and continued with a slight decrease in 2018 (18.7%) and 2019 (17.6%), in 2020 it rose again and amounted to 21.3%. The reason behind such a sharp increase in the debt burden in 2015 was the drop in oil prices in the global oil market, and the related devaluation in our country. . Thus, in 2014, 80% of Azerbaijan's debt was in foreign currency and the subsequent devaluation of the manat increased the specific weight of debt in GDP from 8.5 percent to 18 percent in 2015. During the two years after the devaluation, reforms aimed at macroeconomic stabilization were carried out, and the financial resources required to solve the problems in the financial and banking sector were met with foreign debt. That is, the volume of our foreign debt continued to swell during these two years. Naturally, due to the appreciation of the dollar, the volume of GDP in dollar terms decreased, the debt/GDP ratio increased to 20.6 percent in 2016 and 22.5 percent in 2017 (Pasha, 2018).

Due to the facts listed above, the examination of public debt and economic growth relationship in the case of Azerbaijan making it a particular case for this research. As far as we are aware, there is no empirical analysis focusing on this relationship utilizing the Fully Modified Ordinary Least Square (FMOLS) method with the annual data covering the period ranging from 1995 to 2020 for Azerbaijan. Hence, the aim of the current study is to investigate a long-run relationship between public debt and economic growth in Azerbaijan. The results of the study are crucial for providing appropriate policy insights and also important for other developing oil-rich countries.

## 2. LITERATURE REVIEW

As mentioned in previous chapters, the lack of domestic financial resources, state budget deficits, balance of payments deficits and effective spending of loans for a number of state or socio-economic projects, the optimal amount of debt, the impact on the economy are discussed in the economic literature (Bicer, 2020) In particular, the relationship between public debt and economic growth has been repeatedly worked out by economists. As we know, economic growth means growth in real GDP. According to the traditional theory, while economic growth depends on savings and labor, the new theory of economic growth includes indicators of technological development, as well as public policy. For this reason, the government's fiscal policy, more specifically, the government's debt policy, has been the subject of research as one of the factors influencing economic growth (Tulumce and Yavuz, 2017). The following table lists (Annex 1) some of the studies that have been empirically tested for this dependence, along with results and the methods used.

## 3. METHODOLOGY

In this study, the relationship between public debt and economic growth was econometrically assessed using the Fully Modified Ordinary Least Square method (FMOLS). This model eliminates the problem of endogenousness in time-series data and allows direct assessment of the effects of independent variables on dependent variables. To build an econometric model, the stationarity of variables were firstly tested with the Augmented Dickey-Fuller (ADF) unit root test (Dickey & Fuller, 1981) and then the existence of a long-run relationship between model parameters based on a model based on the FMOLS method tested by Park's Added Variables Test (Park, 1992).

Numerous studies have looked into how public debt affects economic growth. Previous researchers use various framework to estimate the impact of public debt on economic growth. For example, Bilginoglu and Aysu (2008) proposed a framework for Turkey in which GDP is a function of investment, population growth, external debt to GDP ratio and the portion of total export and import in real GDP. Kharusi and Ada (2018) added gross domestic product growth rate, ratio of external debt to GDP, population growth rate, ratio of trade to GDP, inflation rate and human capital proxied by primary school enrolment to the econometric model in case of Oman. Schclarek (2004) has used different variables such as, GDP, export, revenues (current revenue, excluding grants for central government), real per capita capital stock growth in his article. In addition, some studies such as Rapetti et al. (2012), Rodrik (2005), Missio (2015) empirically analyses the relationship between real exchange rate (RER) and economic growth.

According to the studies mentioned above and the country-specific features, the functional specifications in this article can be summarized as follows:

$$\log(GDP_t) = \beta_0 + \beta_1 \log PD_t + \beta_2 \log EX_t + \beta_3 \log EXC_t + \varepsilon_t$$

where, the economic growth is dependent variable which proxied by  $PD_t$  is public debt, real GDP ( $GDP_t$ ),  $EXC_t$  is real exchange rate and  $EX_t$  is export  $\varepsilon_t$  is an error term. In this paper, all the variables are given in logarithmic form.

Table 1

Descriptive variables

Variable	Definition	Measurement	Sources
<b>GDP</b>	The total monetary or market worth of all the finished goods and services produced within a country's boundaries during a certain time period is referred to as the gross domestic product (GDP).	Billions US dollar	World Bank
<b>EXC</b>	The nominal exchange rate is multiplied by the ratio of prices in the two countries to generate the real exchange rate (RER) between two currencies. (Azerbaijan relative to USA)		International Monetary Fund
<b>EX</b>	A good or services sold abroad	Millions US dollar	The State Statistics Committee of Azerbaijan
<b>PD</b>	The money that a country's government borrows is known as the public debt. Governments can borrow from individuals, banks, organizations, and other countries.	Billions US dollar	International Monetary Fund

Source: own compilation

The data to be used for this study include the following indicators covering the years 1995-2020:

\* *Gross Domestic Products (GDP)* - measured in billions USD, in the form of the total value added produced domestically. Annual data are available on the official website of the World Bank.

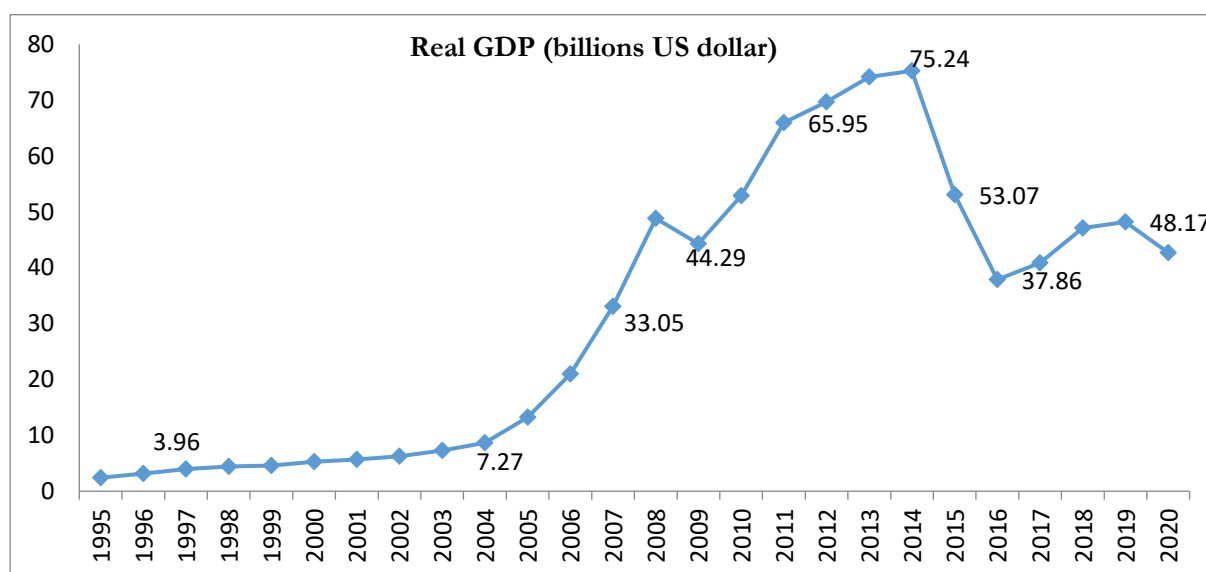


Figure 1. Gross Domestic Products (GDP) 1995-2020

Source: World Bank

\* *Public debt (PD)* - measured in billions of manats, the sum of domestic and foreign public debt. Annual data are available on the official website of the International Monetary Fund.

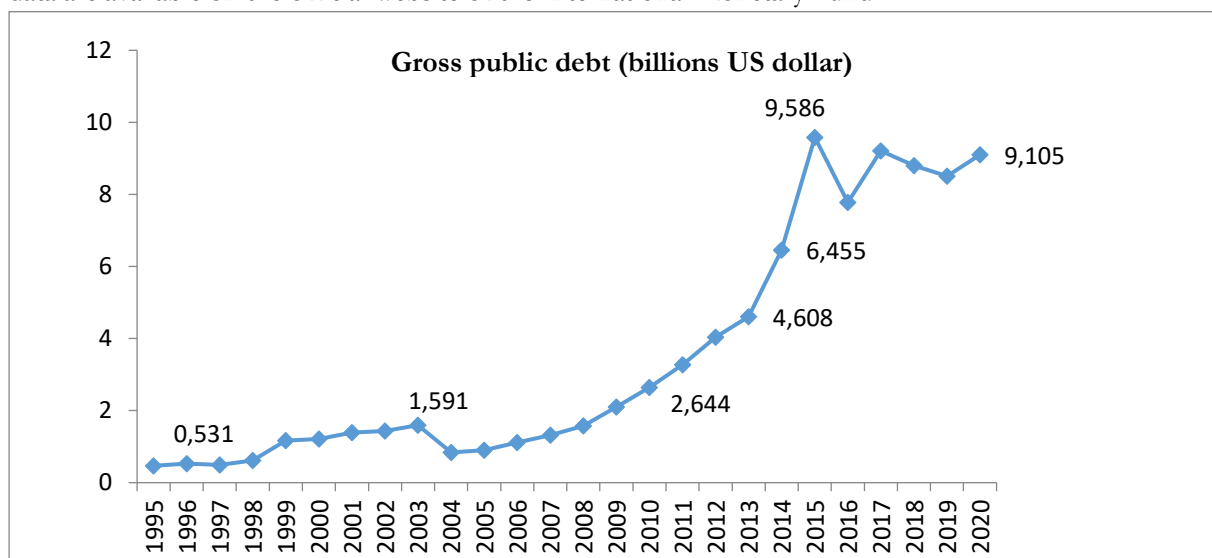


Figure 2. Public debt (PD) 1995-2020

Source: International Monetary Fund

\* *Export indicators (EX)* - developed on the basis of official annual data of the State Statistics Committee of Azerbaijan

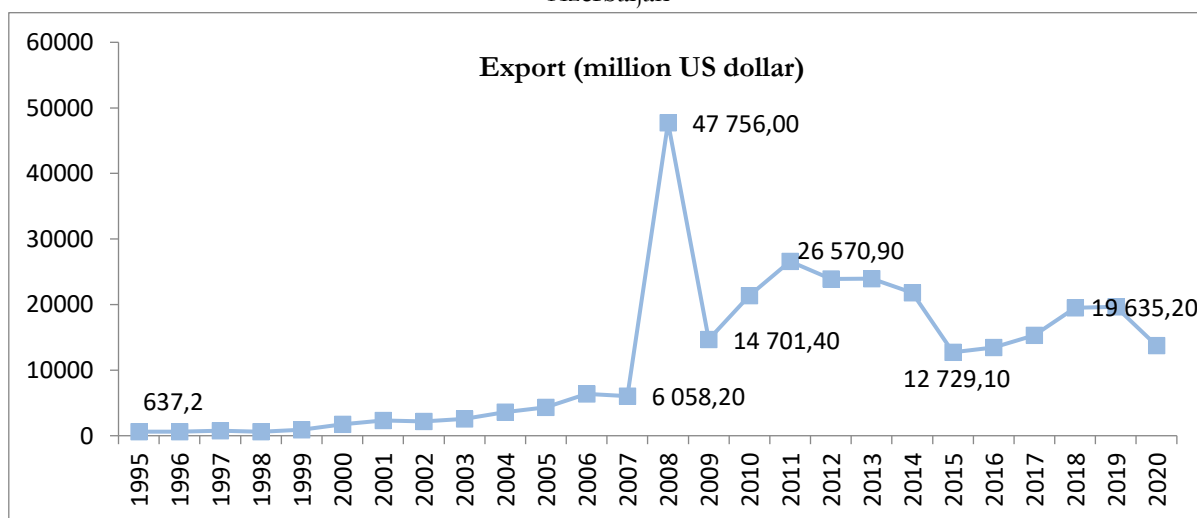


Figure 3. Export indicators (EX) 1995-2020

Source: State Statistics Committee of Azerbaijan

\* *Real exchange rate* - the United States is taken as the trading partner country, calculated on the basis of official IMF data.

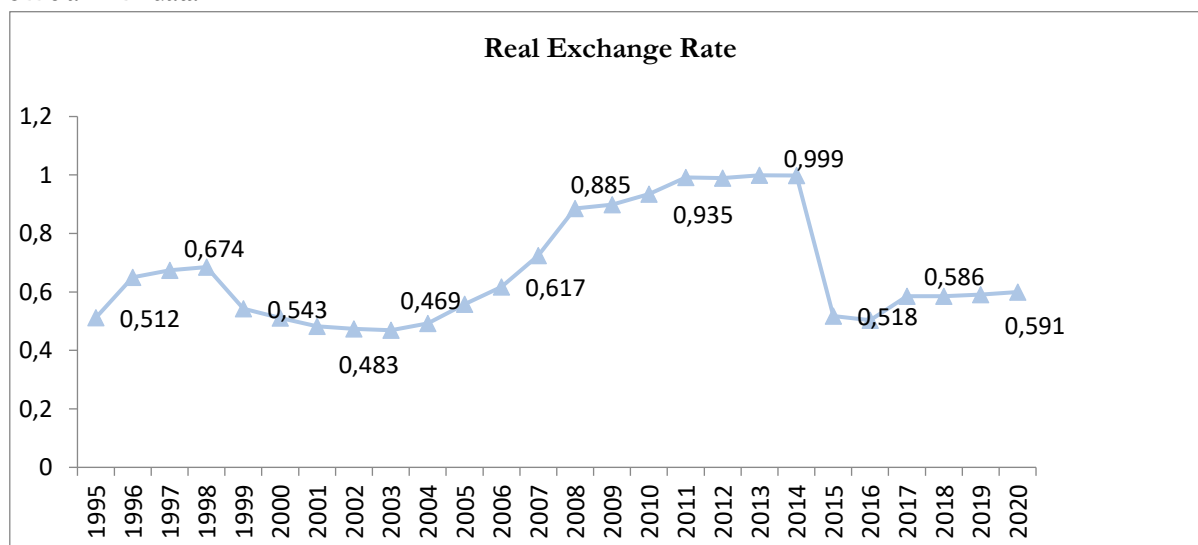


Figure 4. Real exchange rate (EX) 1995-2020

Source: IMF data

As we know, there are two types of exchange rates: real and nominal exchange rates. The nominal exchange rate is understood as the ratio of the two countries' national currencies. The real exchange rate is the rate at which a person can exchange a country's goods and services for another country's goods and services, and has its own calculation rules.

$$\text{Real exchange rate} = (\text{Nominal exchange rate} * \text{local price}) / \text{foreign price}$$

According to the formula, an increase in the real exchange rate means an increase in local prices and a decrease in foreign prices. This means that the country's exports are cheap and imports are expensive. As a result, the volume of imports decreases, while the volume of exports increases (Rodrik, 2008).

#### 4. EMPIRICAL RESULTS AND DISCUSSION

Before estimating the model parameters, the stationarity of the variables should be checked using unit root tests. For this purpose, the Augmented Dickey-Fuller (ADF) test was used. The test results are shown in Table 2.

Table 2

## Unit root tests results

Level					
	t-Statistic	p-values	Lag Length*	Test critical values**	
PD	2.298559	0.9999	3	1%	-3.769597
EXC	-1.639515	0.4484	0	5%	-3.004861
GDP	-1.687067	0.4248	1	10%	-2.642242
EX	-1.723645	0.4072	1		
First Difference					
	t-Statistic	p-values	Lag Length*	Test critical values**	
$\Delta$ PD	-2.774106	0.0769	0	1%	-3.737853
$\Delta$ EXC	-4.176417	0.0037	0	5%	-2.991878
$\Delta$ GDP	-3.602920	0.0139	0	10%	-2.635542
$\Delta$ EX	-8.309548	0.0000	0		

\*MacKinnon (1996) one-sided p-values.

Source: Authors' results.

As can be seen from the table, all of our variables are stationary from the first order difference. The existence of a coherent integration relationship between the variables was then tested according to a model based on the FMOLS co-integration approach. For this purpose, Park's Added Variables Test was used, and the test results are given in Table 3. According to the result, the p-value was 0.7985, ie more than 5%. In this case, we cannot reject the null hypothesis that "Series are cointegrated" with a significance of 5%.

Table 3

## Park Added Variables Cointegration Test Results

	Value	df	Probability
Chi-square	0.065143	1	0.7985

Note: Dependent variable – LOG(GDP).

Null hypothesis: Series are cointegrated;

Source: Authors' results

The result is that there is a coherent integration relationship between variables in long-term. Based on the results of the test, the regression equations evaluated can be considered and interpreted as long-term equations.

Table 4

## Evaluation results of FMOLS model

Regressor	Coefficient	Std.Error	t-Statistic
EXC	0.202	0.082503	2.457073
EX	0.229	0.030921	7.416080
PD	-0.098	0.051954	-1.901966

Source: Authors' results

The model was built using the relevant statistics for 1995-2020, and as a result of a series of tests, no modeling errors or other defects occurred. As can be seen from Table 3, there is a negative impact of public debt on economic GDP. Based on the indicators, we can interpret the model in such a way that "If all other variables remain stable, a 1% increase in public debt will reduce GDP by an average of 0.098%". That is, there is an



inverse relationship between public debt and economic growth. Our results confirm the neo-classical theory. According to neo-classics, who claim that economic growth is possible with an increase in investment, interest payments on foreign debt will increase taxes, and an increase in taxes will reduce disposable income, which means less savings and, consequently, less investment (Peter, 1965). In short, it is impossible to achieve economic growth with foreign debt. The situation is similar in domestic borrowing. Thus, domestic government borrowing reduces the chances of the private sector to obtain loans, and thus the amount of investment. This has the opposite effect on economic growth (Oztürk and Cınar, 2018).

The explanation of the other variables of the model is as follows: *"If all other variables remain stable, a 1% increase in the real exchange rate (EXC) will increase GDP by an average of 0.202%"*. According to an empirical analysis of the relationship between export volumes and economic growth, *"A 1% increase in exports increases GDP by an average of 0.229% if all other variables remain stable"*. Theoretically, exports are considered the locomotive of economic growth, and this theory is based on 4 main principles. Firstly, the increase in exports is due to the growing demand for the country's exports in the global market. High demand means more production and more employment (Ramos, 2001).

On the other hand, as we know, low national income and, as a result, low savings and investments create closed circuits that are characteristic of developing countries (Sharma and Panagiotidis, 2005). The second theoretical basis can be used to finance the investment of export earnings and the import of some intermediate products, which can break the closed circle and stimulate economic growth (Agayev, 2011). According to the third basis of the export-oriented economic growth hypothesis, production factors tend to shift from other inefficiently used sectors to the export sector, as the final product is more profitable in the exported sectors. As a result, the factors of production in the economy are spent more efficiently and total production increases.

The last foundation is related to competitiveness. Thus, as a result of exports, competition is formed between countries, which makes the development of the knowledge economy, research and development model, the application of new technologies inevitable.

## 5. CONCLUSION

This study examines the direction and strength of the link between public debt and economic growth in Azerbaijan. To determine whether there is a cointegration relationship between the variables, Park's Added Variables Cointegration Test were applied to the residuals of the model and according to the test results, it was observed that the time series of the variables were cointegrated and there was a stable relationship between them in the long run. The estimation results indicate that public debt has a statistically significant and negative influence on real GDP as a proxy of economic growth. On the other hand, results of the estimation concluded statistically significant positive effect of real exchange rate and export on real GDP. According to the results of econometric assessment a 1% increase in public debt leads to a 0.098% decrease in GDP. In addition, estimation results revealed that a 1% rise in real exchange rate and export raise economic growth, proxied by real GDP by 0.202% and 0.229%, respectively.

As we mentioned before public debt is the sum of domestic and foreign public debt. So, the acquired negative effect of public debt means that an increase in external public debt servicing, i.e. interest payments, can boost taxes and a raise in taxes will lead to decrease in disposable income which means less saving and less investment. On the other hand, if we take into account internal public debt, when governments borrow domestically domestic savings that otherwise would have been available for lending in the private sector. Consequently, the market's smaller available pool of loanable funds increases the cost of capital for private borrowers, decreasing the demand for private investment, and accordingly, economic growth and welfare.

With the other words, an increase in internal public debt makes it difficult for the private sector to access credit (and cash).

In general, to eliminate the problems associated with public debt in our country, there are need to

- support the development of local financial and securities markets
- reduce the share of borrowings with variable interest rates in the total debt portfolio in order to increase debt sustainability
- ensuring debt sustainability in the medium and long term: Developing countries such as Azerbaijan should pay attention to the fact that the conditions of the external debts they receive are suitable for their economic structure and that they do not disturb their economic balance in the long run. These countries should resort to external borrowing to finance their development investments, not to finance their current expenditures like financing of budget deficits or debt financing.
- accurate identification of projects to be funded

reduce the amount of state-guaranteed borrowings by government agencies: Additionally, debt management should have a very important place in our country. In order to protect transparency, the spending and repayment of the debt should be strictly controlled. It is desirable that the acquired debts are spent not for the financing of the budget deficit, but for the development of the non-oil sector, according to their purpose and in a transparent manner. State companies such as "Azerbaijan Airlines", "Azersu", "Azerishiq", " Azerbaijan Amelioration and Water Farm Open Joint Stock Company", "Azerenergy" attracted large amounts of loans with state guarantees, but did not show responsibility in paying the debt they received. As a result, the liabilities were paid by the state. In our opinion, this and some similar institutions should be diverted from receiving loans, loans should be allocated to priority areas.

## REFERENCES

- Abbas, Syed & Christensen, Jakob. (2010). The role of domestic debt markets in economic growth: An empirical investigation for low-income countries and emerging markets. *IMF Staff Papers*. 57. 209-255.
- Adedoyin L.I., Babalola M.B., Otegunri, A.O. ve Adeoti J.O. (2016) External Debt and Economic Growth: Evidence from Nigeria. *CEconomica*, 12(6), 179-194.
- Ağayev. S. (2011). İhracat ve Ekonomik Büyüme İlişkisi: 12 Geçiş Ekonomisi Örneğinde Panel Eş-tümleşme ve Panel Nedensellik Analizleri. / *Ege Akademik Bakış Dergisi*. 11(2). 241-254.
- Al Kharusi, Sami & Ada, Mbah. (2018). External Debt and Economic Growth: The Case of Emerging Economy. *Journal of Economic Integration*, 33. 1141-1157.
- Ayadi, Foloruso & Ayadi, Olusegun. (2008). The impact of external debt on economic growth: a comparative study of Nigeria and South Africa. *Journal of Sustainable Development in Southern Africa*. 10(3), 234-264
- Bakar, N. A., & Hassan, S. (2008). Empirical evaluation on external debt of Malaysia. *International Business & Economics Research Journal (IBER)*, 7(2), 95-108.
- BİÇER B. (2020). Dış borç - Ekonomik büyüme ilişkisi: 1970-2017 dönemi Türkiye örneği. *Osmaniye Korkut Ata Üniversitesi Osmaniye Korkut Ata University İktisadi ve İdari Bilimler Fakültesi Dergisi*. 4. 23-45.
- Bilginöglü M.A, Aysu A. (2008). Dış borçların ekonomik büyüme üzerindeki etkisi: Türkiye örneği. / *Erciyes Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*. 31. 1-23.
- Cohen, Daniel. (1993). Growth and external debt," CEPREMAP Working Papers (Couverture Orange) 9302, CEPREMAP.
- Cunningham, R. T. (1993). The effects of debt burden on economic growth in heavily indebted developing nations. *Journal of economic development*, 18(1), 115-126
- D. A. Dickey., & W. A. Fuller. (1981). Likelihood Ratio Statistics for Autoregressive time series with a Unit Root. *Econometrica*. 49 (4). 1057-1072.
- Erataş, F. & Başçı Nur, H. (2015). Dış Borç ve Ekonomik Büyüme İlişkisi: "Yükselen Piyasa Ekonomileri" Örneği. *Marmara Üniversitesi İktisadi ve İdari Bilimler Dergisi*, 35(2) , 207-230.

- Forgha, N. G. Mbella, M. E., & Ngangchi, F. H. (2014). External debt, domestic investment and economic growth in Cameroon: A system Estimation Approach. *Journal of Economics Bibliography*, 1(1), 3-16.
- Gürdal, T. ve Yavuz, H. (2015). Türkiye’de Dış Borçlanma-Ekonomik Büyüme İlişkisi: 1990-2013 Dönemi / *Maliye Dergisi*. 1034-1048.
- Kasidi, F., & Said, A. M. (2013). Impact of External Debt on Economic Growth: A Case Study of Tanzania, *Advances in Management & Applied Economics*, 3(4), 59-82.
- Maana, I., Owino, R., & Mutai, N. (2008). Domestic Debt and its Impact on the Economy – The Case of Kenya, 13th Annual African Econometric Society Conference in Pretoria, *South Africa from 9-11*.
- Mercan, N. & Ergen, E. (2018). Ekonomik Büyüme ve Dış Borçlanma Arasındaki İlişki: Türkiye Açısından Ekonometrik Bir Analiz . *Pamukkale Journal of Eurasian Socioeconomic Studies*, 5(2), 13-30.
- Nwannebuike, U.S., Ike, U.J., & Onuka, O.I. (2016). External Debt and Economic Growth: The Nigeria Experience. *Journal of Accounting Auditing and Finance Research*, 4(2), 33-48.
- Öztürk S.Çınar U. (2018). Kamu dış borçlanması ve ekonomik büyüme ilişkisi: Türkiye üzerine ampirik bir uygulama, *Sosyal Bilimler Metinleri*. 1. 66-79.
- Park J.Y. (1992). Canonical Cointegrating Regressions. *Econometrica*. 60(1). 119-143.
- Pasha T.A. (2018). Analysis of Azerbaijan's foreign debt in comparison with factors of economic growth / Materials of the International scientific-practical conference dedicated to the 60th anniversary of ANAS Institute of Economics "Economic growth and public welfare". 91-99.
- Patillo, C. (2002). External Debt and Growth. *IMF/Working Paper*, /02/69, 39(2).
- Peter.A.D. (1965). National debt in neo-classical growth model. *The American Economic Review*. 55 (5). 1126-1150.
- Rais, Syed. (2012). Syed imran Rais & Tanzeela Anwar“Public Debt and Economic Growth in Pakistan: A Time Series Analysis from 1972 to 2010”. *Academic Research International January*. 2(1). 535-544.
- Ramos.F.F.R. (2001). Exports, Imports, and Economic Growth in Portugal: Evidence from Causality and Cointegration Analysis. *Economic Modelling*. 18. 613-623.
- Saungweme T, Nicholas M. O. (2019). The Impact of Public Debt on Economic Growth: A Review of Contemporary Literature. *The Review of Black Political Economy*.1-19.
- Ştefania T. (2014). An application of debt laffer curve: empirical evidence for Romania's case. *Romanian Journal of Fiscal Policy*. 5(8). 29-38.
- Toktaş, Y., Altiner, A. ve Bozkurt, E. (2019). The relationship between turkey’s foreign debt and economic growth: an asymmetric causality analysis. *Applied Economics*, 51(26), 2807-2817.
- Tülümce. Y.S., Yavuz E. (2017). Türkiye’de borçlanma ve ekonomik büyüme arasındaki ilişki. *Uluslararası Yönetim İktisat ve İşletme Dergisi Özel Sayısı*. 1034-1048.
- Umaru, Aminu, Hamidu, Ahmad & Musa, Salihu. (2013). External debt and domestic debt impact on the growth of the Nigerian economy. *International Journal of Educational Research*. 1. 70-85.
- Umutlu, G., Alizadeh, N., & Erkilic, A. Y. (2011). Maliye Politikası Araçlarından Borçlanma ve Vergilerin Ekonomik Büyüme Etkileri, *Uludağ Üniversitesi, İktisadi ve İdari Bilimler Fakültesi Dergisi*, XXX(1), 75-93.
- Yıldız F., & Sağdıç E. N. (2021). Dış Borç ve Ekonomik Büyüme İlişkisi: Kamu ve Özel Sektör Dış Borçları Açısından BRICS-T Ülkeleri Analizi. *Alanya Akademik Bakış Dergisi*. 5(2). 839-863.

## ANNEX 1

Author (s) / Year	Period	Method	Result
Cunningham / 1993	1970-1979 1980-1987	OLS and Chow Test	There is a negative link between the debt burden and economic growth.
Cohen / 1993	1965-1987	OLS	External debt does not affect economic growth.
Patillo / 2002	1969-1998	Panel data analysis	After the external debt / GDP ratio reaches 35-40% and the external debt / export ratio reaches 160-170%, the impact becomes negative.
Abbas & Christensen / 2007	1975-2004	Regression model and Engle-Granger cointegration test	The impact of low public debt on economic growth is positive and significant.
Bakar & Hassan / 2008	1970-2005	Vector autoregressive (VAR) model	1% increase in total external debt leads to 1.29% increase in economic growth in the long run. In the short term, the impact is still positive.
Rais & Anwar / 2012	1972-2010	OLS	The impact of both domestic and foreign debt on GDP per capita is negative.
Umaru and others. / 2013	1970-2010	Engle-Granger Stationarity Test	External debt has a negative impact on economic growth, while domestic debt has a positive impact.
Abdelhadi / 2013	1990-2011	FMOLS and Phillips-Hansen test	There is a link between foreign debt and economic growth. The direction of this dependence is positive.
Bilginoglu & Aysun / 2008	1968-2005	Regression Analysis	There is a negative relationship between external debt and economic growth.
Umutlu and others/ 2011	1990-2008	OLS	External debt has a positive effect on economic growth, while domestic debt has a negative effect.
Kasidi & Said / 2013	1990-2013	OLS and Johansen Cointegration Test	The relationship between external debt and economic growth is positive. But there is no long-term connection.

Kharusi & Ada / 2018	1990-2015	ARDL	In the long run, there is a relationship between the variables and the direction of the relationship is negative.
Eratash & Nur / 2013	1996-2007	Panel Data Analysis	1% increase in external debt reduces economic growth by 0.07%. The reason for the negative relationship is the high debt burden.
Maana / 2008	1996-2007	Barro Growth Regression Model	Domestic public debt has a negligible positive effect on economic growth.
Audel / 2006	1970-2003	OLS	There is no significant link between external debt and economic growth.
Ayadi / 2008	1980-2007	OLS	The impact of external debt service costs on economic growth is negative.
Nwannebuike, Ike and Onuka / 2016	1980-2013	OLS and the Engle-Granger stationarity test	External debt and debt service costs have a negative impact on economic growth, while the real exchange rate has a positive effect.
Forgha, Mbelaa, Ngangnchi / 2014	1970-2014	OLS	External debt has no effect on economic growth.

*Source:* own complication