

**Rahima Nurali NURALIYEVA**

Department of Industrial Economics of ASOIU

Associate Professor of Economics

E-mail: rahima.nuraliyeva@mail.ru

## **ECONOMETRIC ASSESSMENT OF THE IMPACT OF REVENUES FROM CUSTOMS SERVICES ON FOREIGN TRADE RELATIONS ON THE GROSS DOMESTIC PRODUCT IN AZERBAIJAN**

### **Summary**

In recent years, Azerbaijan has become a phenomenon of the modern world with its own model of national development. Thus, the successful completion of complex reforms implemented in our country over the years, the formation of sustainable development trends in the economy has played an exceptional role in the development of the country's economy.

At present, the comprehensive development of the national economy around the world aims to increase the efficiency of production and services, as well as to improve the quality of work in the customs system. The process of creating modern infrastructure systems is important.

**Keywords:** customs system, customs, import-export, correlation, recession, adequacy, foreign trade

**UOT:** 336

**JEL:** H22

**DOI:** <https://doi.org/10/54414/EINP1779>

### **Intradaction**

In general, the growing dependence of the national economy and its sectors on the infrastructure system is considered to be an inevitable consequence of economic development. In recent years, the integration of the national economy of our country into the world economic system has had a great impact on the expansion and development of economic trade relations. The volume and structure of foreign trade are important in ensuring the socio-economic development of the country. Conceptual bases of integration of foreign economic and trade relations of our country, the international experience of the world countries in the conditions of globalization, at the same time, increasing the efficiency of the national economy's impact on foreign trade relations and customs services to macroeconomic indicators has been studied through econometric models.

One of the main issues ensuring the sustainability of development processes in modern times is the correct identification of strategy. In recent years, the formation of the country's economic and political development model has led to positive results. Thus, the

growth rate of GDP and the annual increase in budget revenues led to the expansion of economic reforms.

### **Analiz**

In the regulation of economic development, changes in income from customs services mainly affect economic development by influencing GDP. Among the factors affecting the GDP in the Republic of Azerbaijan, customs revenues increase budget revenues and create favorable conditions for the normal regulation of the economy. In order to get an econometric assessment, the impact of revenues from customs services on foreign trade relations in Azerbaijan on the Gross Domestic Product, let's use the following table.

According to Table 1, EViews, MatLab, MS Excel, MathCad, etc. mathematical software packages can be used for regression analysis of the relationship between the factors on customs revenues affecting the level of GDP in the Republic of Azerbaijan for 2009-2019. For this purpose, using the Eviews software package, we obtain the following result based on the data in Table 1.

Table 1

**Dynamics of GDP and factors influencing it in the Republic of Azerbaijan .**

Years	GDP(million/manat)- Y	Receipts on customs dutiesX1	VAT receipts at customsX2	Revenues from customs excisesX3	Customs road tax receiptsX4
2009	28360,5	160,28	535,06	72,36	4,32
2010	40137,2	238,64	775,23	91,15	5,35
2011	35601,5	205,68	832,52	67,78	6,75
2012	42465,0	218,25	810,95	62,89	9,6
2013	52082,0	231,58	835	62,76	12,2
2014	54743,7	230,62	883,37	76,85	17,51
2015	58182,0	298,25	986,08	81,34	17,58
2016	59014,1	365,89	1070,96	57,04	16,87
2017	54380,0	387,38	1101,16	83,59	19,78
2018	60425,2	546,64	1366,91	86,56	56,55
2019	70337,8	768,27	1915,78	101,81	37,68

**Source.** Compiled by ARSCC ARDSK materials and by the author.

Table 1 2

Dependent Variable: Y  
Method: Least Squares  
Date: 06/01/2022 Time: 16:51  
Sample: 2009 2019  
Included observations: 11

Variable	Coefficient	Std. Error	t-Statistic	Prob.
X4	260.2032	172.0788	0.956352	0.0000
X3	-113.5510	130.0796	-0.493529	0.0000
X2	65.37515	37.95169	1.722589	0.0000
X1	-89.09687	86.20840	-1.033506	0.0000
C	17933.64	14290.07	0.842348	0.0000
R-squared	0.786415	Mean dependent var		50520.82
Adjusted R-squared	0.644024	S.D. dependent var		12422.50
S.E. of regression	7411.721	Akaike info criterion		20.96247
Sum squared resid	3.30E+08	Schwarz criterion		21.14333
Log likelihood	-110.2936	Hannan-Quinn criter.		20.84846
F-statistic	5.522950	Durbin-Watson stat		1.287340
Prob(F-statistic)	0.00000			

**Source.** It is developed by the author based on Eviews application software package

Based on the results obtained from the Eviews application software package, the regression equation will be as follows:



Estimation Command:

=====

LS Y X4 X3 X2 X1 C

Estimation Equation:

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$$Y = C(1)*X4 + C(2)*X3 + C(3)*X2 + C(4)*X1 + C(5)$$

Substituted Coefficients:

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$$Y=260.203175137*X4-113.551049414*X3+65.3751512365*X2-89.0968689395*X1+17933.6393465 \quad (1)$$

We can construct a new regression equation by analyzing the correlation dependence between the free variables included in the model (1) and the dependent variable, removing the factors with weak correlation dependence from

the object of study. For this purpose, according to the data in Table (1), if we build a correlation matrix in the MS Excel application software package, we get the following table

**Cədvəl**

**2**

	Y	X1	X2	X3	X4
Y	1				
X1	0,79882	1			
X2	0,842422	0,984726	1		
X3	0,387807	0,648261	0,614123	1	
X4	0,732335	0,826071	0,795041	0,503675	1

**Source. Developed by the author based on the MS Excel software package.**

As can be seen from the table, there is an average positive relationship between the variables Y and X3 on the Chedok scale (0.3-0.5) ( $R_{yx} = 0.4$ ). There is a very high direct relationship between the other free variables and the Y variable

As a result, the regression equation will be as follows.

$$Y = 260.203*X4 - 113.551*X3 + 65.375*X2 - 89.097*X1 + 17933.64 \quad (2)$$

Based on this correlation equation, it can be concluded that a single increase in the factor (X1), which represents the receipt of customs duties, leads to a decrease in GDP by 89.1 units, one unit increase in factor (X2) representing VAT on customs leads to 65.8 units of GDP increase, one unit increase in factor (X3) representing receipts from customs duties decreases by one unit of GDP to 113.55 units,

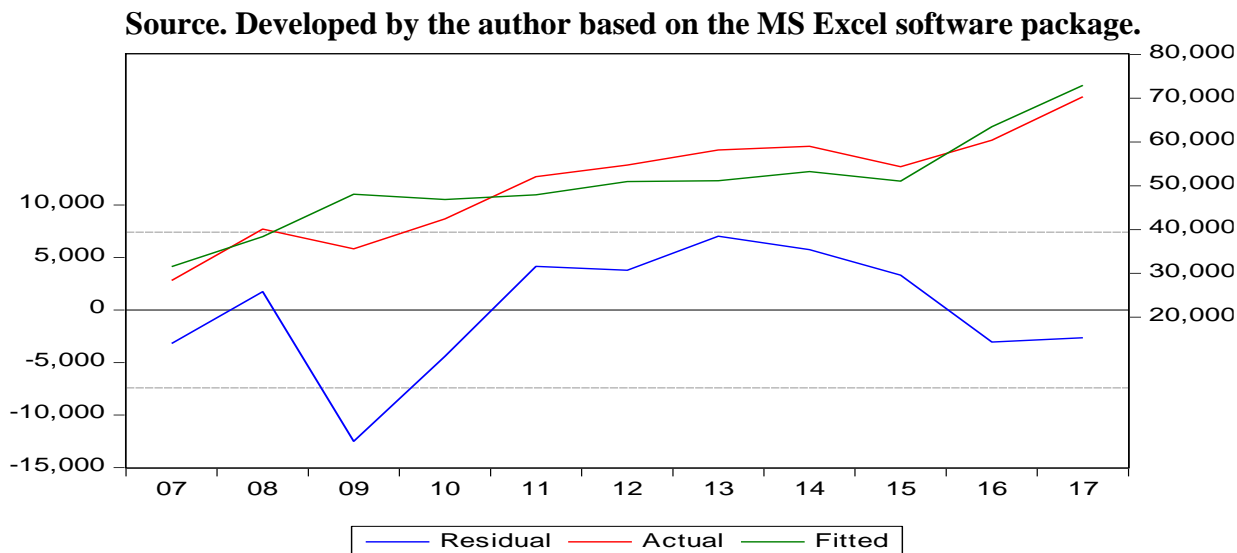
one unit of customs duty tax (X4) increase leads to an increase in GDP of 260,203 units.

The multiplicity correlation coefficient  $R = 0.644$  indicates a high correlation between the dependent variable Y, which represents GDP, and the free variables (X1, X2, X3, and X4) that represent the factors included in the model. The fact that the coefficient of determination  $R^2 = 0.786$  means that the corresponding regression equation is explained by 78.6% of the variance results, and 21.4% by the influence of other factors. High coefficient of determination shows that the regression equation better expresses the initial data and that the majority of the result factor (78.6%) is explained by the factors included in the model.

The dynamics of the Fitted and Actual values, as well as the residuals between them, based on the regression equation of the built-in

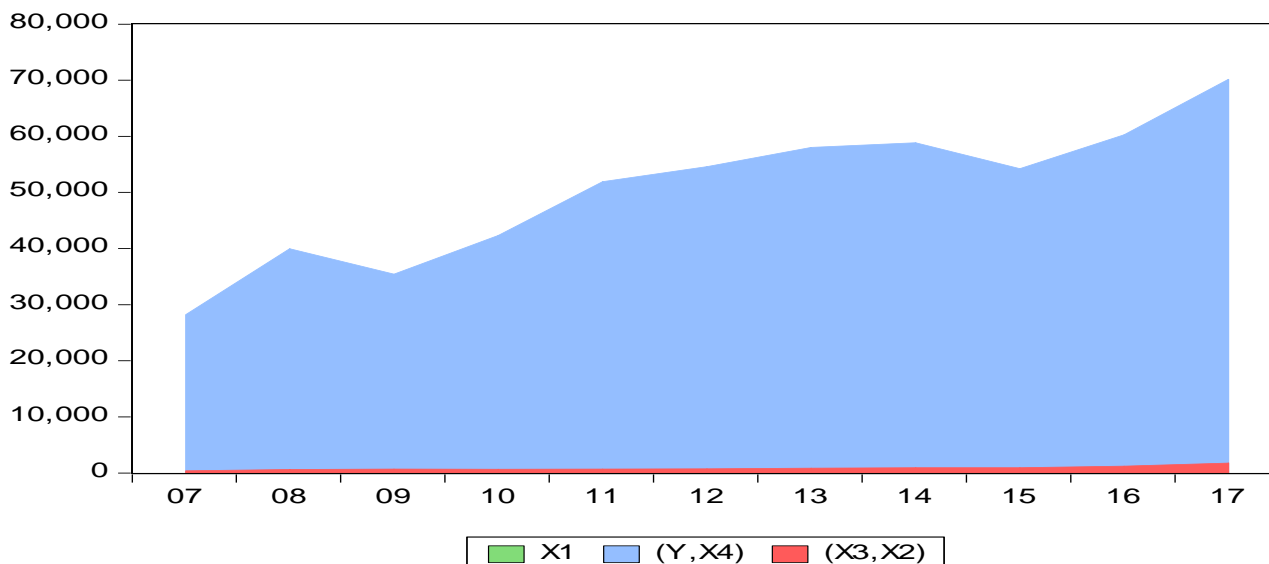
model (2) and the Eviews application software package, are given in the graph below.

**Graphic 4**



**Graphic 5**

As can be seen, GDP is expected to increase.



Source. Developed by the author based on the Eviews software package.

With the help of the F-Fisher test, the statistical significance of the set of regression equations as a whole can be checked. For this purpose, the F-Fisher criterion should be compared with the value of  $F_{table}(a; m; n-m-1)$ .

According to Table 2, which reflects the results of the Eviews software package,

**F- statistic (Fisher's criterion) = 5.52**

In EXCEL, we set the value of table F using the formula  $F_{table}(a; m; n-m-1) = Fraspobr$ ,

$F_{table}(a; m; n - m - 1) = Fraspobr(0,05; 4; 6) = 4,53$

When F-Fisher's criterion is compared with the value of  $F_{table}(a; m; n-m-1)$ , it appears that  $F\text{-Fisher's criterion} > F_{table}(5.52 > 4,53)$ . This means that the regression equation as a whole is statistically significant. This means the adequacy of the established model (2).

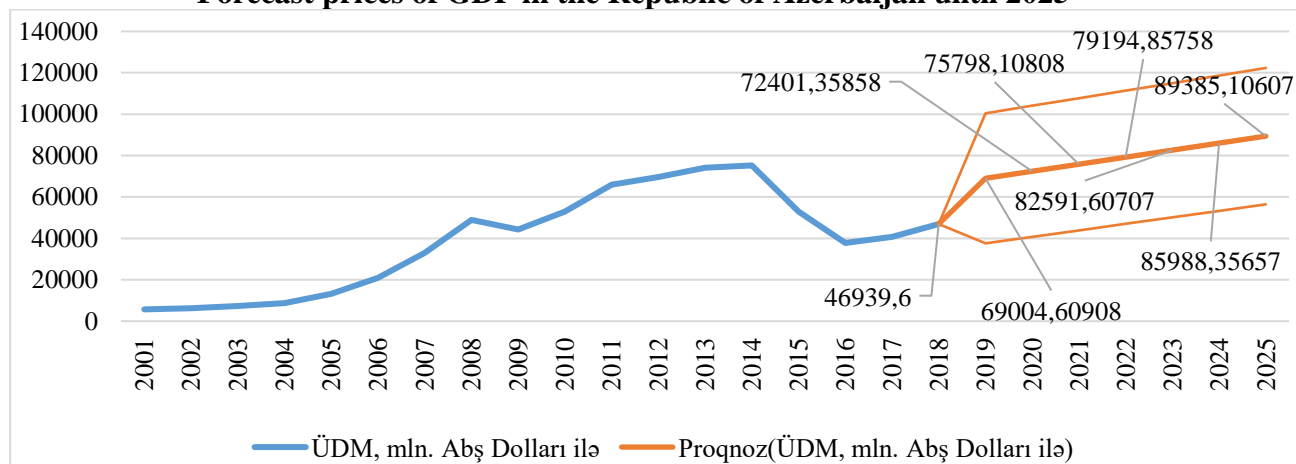
According to the Eviews application software package, if we graphically describe the dynamics of GDP in the Republic of Azerbaijan

and the factors affecting it, we get the following result.

The graphs below show the annual estimates and standard errors of GDP found by the regression equation obtained from the Eviews application software package, as well as a number of characteristics of the use of the equation for forecasting purposes.

**Graphic 6**

**Forecast prices of GDP in the Republic of Azerbaijan until 2025**



**Source. Prepared by the author based on the data in Table 1.**

### Conclusion

As a result of the study, it was determined that as a result of the successful economic policy pursued in the national economy of Azerbaijan, conditions were created for the growth of the Gross Domestic Product and economic development was normalized. There is a high correlation between the factors on GDP and customs revenues, expressed by the equation  $Y = 260.203 * X4 - 113.551 * X3 + 65.375 * X2 - 89.097 * X1 + 17933.64$ . Based on this correlation equation, it can be concluded that a single increase in the factor (X1), which represents the receipt of customs duties, leads to a decrease in GDP by 89.1 units. One unit increase in factor (X2) representing VAT on customs leads to 65.8 units increase in GDP, one unit increase in factor (X3) representing receipts from customs duties leads to one unit increase in GDP 113.55 units and an increase in the volume of customs duties (X4) leads to an increase in GDP of 260,203 units. The study also calculated the forecast prices of EDM until 2025.

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**Rəhimə Nurəli qızı NURƏLİYEVƏ**  
ADNSU-nun Sənaye İqtisadiyyatı kafedrası  
İqtisadiyyat Elmləri üzrə Dosent  
E-mail: rahima.nuraliyeva@mail.ru

## **AZƏRBAYCANDA XARİCİ TİCARƏT ƏLAQƏLƏRİNƏ GÖMRÜK XİDMƏTLƏRİNDƏN DAXİLOLMALARIN ÜMUMİ DAXİLİ MƏHSULA TƏSİRİNİN EKONOMETRİK QIYMƏTLƏNDİRİLMƏSİ**

### **Xülasə**

Son illər Azərbaycan özünəməxsus milli inkişaf modeli ilə müasir dünyanın fenomeninə çevrilib. Belə ki, bu illər ərzində ölkəmizdə həyata keçirilən kompleks islahatların uğurla başa çatdırılması, iqtisadiyyatda davamlı inkişaf meyillərinin formalaşması ölkə iqtisadiyyatının inkişafında müstəsna rol oynamışdır.

Hazırda bütün dünyada milli iqtisadiyyatın hərtərəfli inkişafı istehsalın və xidmətlərin səmərəliliyinin artırılması, habelə gömrük sistemində işin keyfiyyətinin yüksəldilməsi məqsədi daşıyır. Müasir infrastruktur sistemlərinin yaradılması prosesi mühüm əhəmiyyət kəsb edir.

**Açar sözlər:** gömrük sistemi, gömrük, idxal-ixrac, korrelyasiya, tənəzzül, adekvatlıq, xarici ticarət

**Рахима Нурали НУРАЛИЕВА**, к.э.н., доцент  
«Кафедра экономики и промышленности» АГУНП  
E-mail: rahima.nuralyeva@mail.ru

## **ЭКОНОМЕТРИЧЕСКАЯ ОЦЕНКА ВЛИЯНИЯ ДОХОДОВ ОТ ТАМОЖЕННЫХ УСЛУГ ОТ ВНЕШНЕТОРГОВЫХ ОТНОШЕНИЙ НА ВАЛОВОЙ ВНУТРЕННИЙ ПРОДУКТ В АЗЕРБАЙДЖАНЕ**

### **Резюме**

В последние годы Азербайджан стал феноменом современного мира со своей собственной моделью национального развития. Таким образом, успешное завершение комплексных реформ, реализуемых в нашей стране на протяжении многих лет, формирование тенденций устойчивого развития в экономике сыграли исключительную роль в развитии экономики страны.

В настоящее время комплексное развитие национальной экономики во всем мире направлено на повышение эффективности производства и услуг, а также на повышение качества работы в таможенной системе. Важен процесс создания современных инфраструктурных систем.

**Ключевые слова:** таможенная система, таможня, импорт-экспорт, соотношение, спад, адекватность, внешняя торговля.

**Daxil olub:** 11.01.2023