Eminov, Anar; Suleymanov, Elchin; Mirzayev, Anar

Article

Econometric modelling : the impact of tourism tax to incomes amount

Academic journal of economic studies

Provided in Cooperation with:
Dimitrie Cantemir Christian University, Bucharest

Reference: Eminov, Anar/Suleymanov, Elchin et. al. (2018). Econometric modelling : the impact of tourism tax to incomes amount. In: Academic journal of economic studies 4 (4), S. 157 - 161.

Academic Journal of Economic Studies
Vol. 4, No. 4, December 2018, pp. 157–161
ISSN 2393-4913, ISSN On-line 2457-5836

Econometric Modelling: The Impact of Tourism Tax to Incomes Amount

Anar Eminov[1], Elchin Suleymanov[2], Anar Mirzayev[3]

[1,3]Tourism and Management University, Azerbaijan, [1]E-mail: a.eminov@atmu.edu.az, [3]E-mail: a.mirzayev@atmu.edu.az
[2]Baku Engineering University, Azerbaijan, [2]E-mail: elsuleymanov@beu.edu.az

Abstract *Assessing the impact of the change in the value-added of tourism in Azerbaijan on the state budget revenue by modeling the econometric model. Comparative statistical analysis, correlation - regression method of mathematical statistics. Growth ratio of budget revenues has been determined by the increase in the physical volume of the tourism sector as the type of business activity in the Gross Domestic Product. The income from the tourism sector and the limited amount of scientific research on the payment of tax payments paid to the budget. Can be used as a scientific source to determine the effectiveness of tax revenue by the physical volume of the tourism sector as the type of economic activity in the gross domestic product. The main factors for evaluating the role of tourism in the development of Azerbaijan's economy were determined, a model of regression of the influence of the additional release in the tourism sector on tax revenues was established by the application of the econometric model and its economic interpretation was given.*

Key words Tourism, tax, Gauss-Markov Condition, econometric model, confident interval

JEL Codes: Z33

1. Introduction

In modern scientific research, tourism is considered as an integral part of the complex social-economic system. Thus, tourism is a service sector that reflects the financial and non-material needs of tourists, who serve as a non-productive sphere of economy, fulfilling the function of full and effective recreation of people. Tourism sector development is one of the major sources of income for most countries. The tourism industry, which is a major source of revenue for the country's economy, has a significant impact on both national and international recognition. This sector is the basis of many developed and emerging economies. At present, tourism in the international arena holds the third place in the world in terms of global export potential, leaving behind only the oil and automotive industry (Reports of The state Statistical Committee of the Republic of Azerbaijan, 2018). The development of the tourism sector is of particular importance in shaping the country's gross domestic product, stabilizing the balance of payments, providing employment and increasing budget revenues. Along with the mentioned tourism, tourism also contributes to the increase of tax revenues to the budget by multiplying the key sectors of the economy - transport, communications, construction, agriculture, production of consumer goods and so on (Pindyck and Pubinfeld, 1998).

Tax revenue in the tourism sector is a complex, multidisciplinary and multi-variable process, and its effectiveness depends on the organization, planning, and quality of audits of more tax audits. In this regard, the necessity of investigating the theoretical-methodological issues of the impact of the change in the value-added tax in the tourism sector on the volume of tax revenues, and the fact is that there is a great practical requirement for a rational and efficient methodology taking into accounts the features of accounting and tax accounting in tourism organizations.

2. Theoretical aspects of the researching tourism activity

Regardless of the level of development, tourism activities play an important role in the economic and investment climate of most countries. Tourism in the world economic system plays an important role in solving social, economic and other problems as an important factor and area of activity. At the international level, tourism is one of the dynamically developing areas (Reports of The state Statistical Committee of the Republic of Azerbaijan, 2018). Even during the recent global financial crisis, sustainable growth is observed in the tourism sector and the average annual growth rate of the field is 4-6%. According to the World Tourism Organization's 2015 statistics, 10% of gross domestic product and 11% of world consumption expenditures fall on tourism sector, one of every 11 jobs, 12% of investments, 6% of world exports (1,4 trillion US dollars), 10,7% of tax revenues are created as a result of tourism activities (http://www.eviews.com/home.html). Thus tourism activity is one of the most profitable areas in the world.

Taking this into consideration, it is important to note that a number of countries with extensive tourism potential do not fully utilize their capabilities, which significantly reduces the charm of foreign tourists as well as tourism revenues. The

importance of discovering the tourism potential components of the area and its impact on tourism activities is explained by the fact that, with the help of the information obtained, it is possible to have the tourism potential of a given area in the future in its single development programs. The aforementioned emphasizes the relevance of the whole research. In the research, the tourism sector is considered as a focal point for the tourism statistics deployment of the National Statistical System of the Republic of Azerbaijan, as well as a combination of public catering and recreation, entertainment and arts, and the norm of added value created by tourism activities in the construction of the econometric model is TFUDM formula. Since tourism taxation from the tourism to the state budget is reflected in VAT, income tax, income tax, simplified tax, property tax and land tax types, and the taxation of tourism to the state budget (BVDO). Changes in the tastes of tourists, increase in the leisure time, development of tourism infrastructure, development in information and communication technologies, development of transportation and emerging new fast trains, increase in the profits and mass factor in tourism led to high competition between countries.

2. Literature review

In the economic literature, a full measure of tourism business, as one of the important and significant spheres of socio-economic activity of our country, is not evaluated properly. Compared with other areas of economic knowledge, the number of theoretical and practical works in this field is not so much. There are, however, a number of local scholars who have studied this problem in their work in various aspects of tourism in the country.Among these scientists are A.H.Salmanov, A.G.Alirzayev, R.M.Gasimov, EI.Aslanov, E.G.Mammadov, F.G.Abbasov, B.V.Gilinsov, H.B.Sol ta, R.S.Safarov. These authors give a broad coverage of theoretical and methodological and practical issues related to tourism development, utilization of tourism potential, improvement of services for different tourism types, enhancing the role of tourism in regional development, raising investment attractiveness and other activities.

3. Methodology of research

There are quantitative and qualitative aspects of studying any of the economic processes and events. A particular methodology is used to study these processes. The methodology is a set of methods, tools, and approaches to study economic events and processes. Quantitative and qualitative aspects of the investigated events and processes are revealed through scientific abstraction, theory, graphics, statistics, economic-mathematical modelling, and other methods. The modelling method used to investigate the impact of the volume of GDP production on the type of tourism activity on the state budget tax deductions is the economic theoretical methodology of studying the process. The econometric methodology is used to model the impact of the state budget on tax revenues in the research work. The econometric methodology used for the modelling of the research object consists of the following three stages (William, 2001):

1. To show the econometric model or the hypothesis as a stochastic equation and to define the initial theoretical expectations of the parameters of the model. At the same time, the equation in the logarithmic equation is determined by taking into account the peculiarities of the economic process, expressing random errors:

$$LOG(BVDO) = C(1) + C(2)*LOG(TFUDM) + \varepsilon \quad (1)$$

Note that (1) the BVDO - the statistical order of the state budget tax revenues (in thousand manats), TFUDM - the statistical order of GDP production by types of tourism activity (in thousand manats); ε - denotes random displacements.

2. Collection of statistical indicators for the variables included in the model and estimation of regression factors by the appropriate method of econometrics.

3. Assessment of the regression model's ratios according to economic, statistical and econometric criteria.

4. Information base of the model

The statistical survey period covering 2005-2015 puts forth the following goals:

- identify trends in the dynamic development of the tourism sector in the country's economy;
- determine the impact of the total value added tax in the tourism sector on the taxation of the state budget;
- determine the use of the results obtained in the activities related to economic growth.

The statistical information used in the research work was collected for statistical publications of the State Statistical Committee of the Republic of Azerbaijan for the period 2016 covering the period 2005-2015, the information was processed, the necessary indicators were summarized and in order to analyze the econometric estimates were processed in the application of software package "E-views".

Table 1. GDP production and budget tax revenues by type of tourism activity in 2005-2015 (thousand manats)

Years	Type of tourism activity GDP production, current TFUDM at prices	Value Added Tax, Income Tax, Income Tax, simplified tax, property tax and land tax receipts to the state budget BVDO
2005	123600,00	1 096 755,90
2006	165900,00	2 293 119,60
2007	233000,00	3 873 584,50
2008	443800,00	4 881 313,70
2009	590900,00	3247324,40
2010	731500,00	3494170,40
2011	1025200,00	4476926,00
2012	1348600,00	4795873,60
2013	1602400,00	5236152,80
2014	1869000,00	5661848,00
2015	2088100,00	6990000.00

Source: data by ARDSK, State Statistical Committee of the Republic of Azerbaijan, 2016

5. Realization of econometric model and analysis of received results

The article finds a correlation between the GDP (TFUDM) and the state budgetary tax receipts (BVDO) of the type of tourism activity, estimated to be approximately R = 0.8 and the regression model was used by using the small squares method. The fact that the number of observations is three times greater than the number of evaluated parameters is essential for the statistical significance of the model in the econometric evaluation, which is provided in our model. Since the calculation of the parameters and the econometric model's adequacy (tests) using the least squares method requires considerable time, the parameters have been implemented through the application software "Eviews" (Table 2).

As you can see, the model pays initial econometric criteria. The Value of Coefficient in the table is significantly greater than standard errors (Std Error) indicates that the t-Statistic is valid. One of the important conditions for the construction of the econometric model is the payment of the Gau-Markov terms (http://www.eviews.com/home.html).

Table 2. Results of the regression model analysis

Dependent variables: LOG(BVDO)

Method: The smallest squared method

Date: 11/02/16 Time: 21:00

Alternative : 2005-2015

Included observations: 11

Variables	Coefficient	Std. Sıhv	t-Statistic	Assump
C	9.313542	1.213757	7.673314	0.0000
LOG(TFUDM)	0.436429	0.090517	4.821528	0.0009
R-squared	0.780905	Mean dependent var		15.15108
Adjusted R-squared	0.769895	S.D. dependent var		0.510723
S.E. of regression	0.284407	Akaike info criterion		0.486144
Sum squared resid	0.727986	Schwarz criterion		0.558489
Log likelihood	-0.673795	Hannan-Quinn criter		0.440541
F-statistic	23.24713	Durbin-Watson stat		1.931399
Prob(F-statistic)	0.000945			

Source: The results of the calculations made using the software "Eviews" of ARDSK database

The remainder of this statistical result is a test of autocaralysis. Durbin-Vatson's statistics are important in econometric analysis. It is desirable that the Durbin-Vatson coefficient is close to 2.This ratio is 1.93 compared to the results of the "Eviews" application software package (Table 2). The received gauge is considered valid. Thus, according to the Durbin-Vatson coefficient, one can argue that there is no first draft autocorrelation of the remains. According to the determination factor (R-squared = 0.78), tax revenues to the state budget (BDO) in real terms in 2005-2015 can account for 78.09% of GDP dependent on the type of tourism activity (TFUDM). High detection of the determinant coefficient may indicate that

there are some deficiencies in the coefficient.However, the approximate determination factor (Adjusted R-squared= 0.769) indicates that there is any deficiency in the determination factor (http://www.eviews.com/home.html).

In the econometric analysis, the normal distribution of residuals as well as asymptotic remainders under the conditions of Gauss-Markov is an important condition. There are several tests to determine the normal distribution. These are examples of remainder histogram, cototid and normal probability, and Jarque-Bera tests (Griffiths *et al*.., 2011). It is important to note that the rate of the kurtosis is about 3 degrees. This figure was 3.11 in our survey. The result again shows that distribution is normal. In this analysis, the normal distribution was verified by the Jarque-Bera test. Figure 1 shows the normal distribution information. The Jarque-Bera coefficient can be concluded that it is quite reliable.

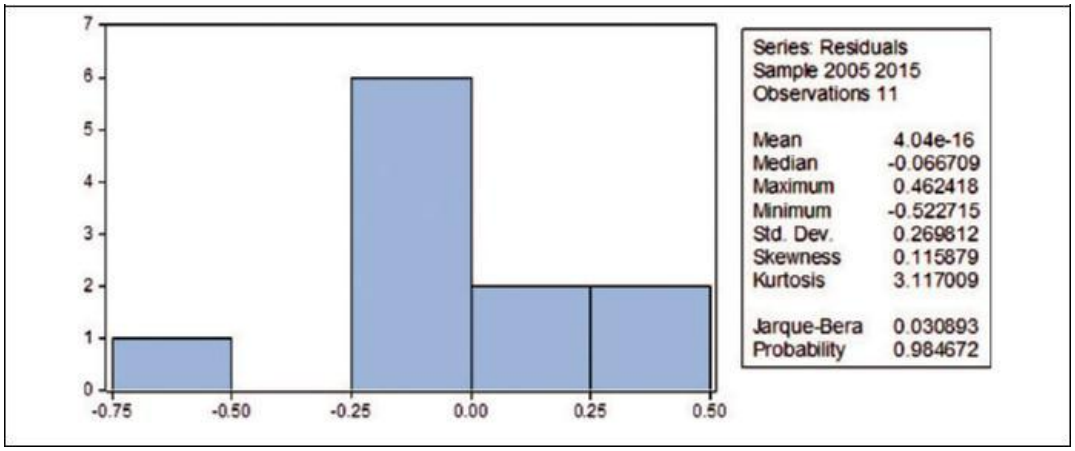

Figure 1. The results of remainders normalization test

Source: The results of the calculations made using the software "Eviews" of ARDSK database

In the estimation of the econometric model, the relationship between the indicator of the current year and the indicator for the previous period is checked. If this dependence exists, the pattern will be damaged. In this regard, a single root test (Dickey-Fuller test) is checked using the "Eviews" application software package to check stochasticity (Hasanli, 2014). The results of Dickey-Fuller test are shown in Table 3. As can be seen from the table, the mark of the Dickey-Fuller coefficient is greater than the critical price over a 99% confidence interval (4.98>2.94). Thus, 99% of confident interval balances are stationary. In other words, the average number of remainders is zero and its dispersion is unchanged. One of the most important steps in conducting an econometric analysis is to check the hetrosecondicity. In this analysis “Brosh-Pagan-Godfrey” test is used.

Table 3. “Dickey – Fuller” test

Zerohipothesis: D(RESID01,2) uni-rooted

Exogenous: Constant

Delay length: 0 (SİC automaticbased, max lag=8)

		t-Statistic	**Probabil.***
Expanded Dickey-Fuller test statistic		-4.977925	0.0005
Criticmark test:	1% level	-2.937216	
	5% level	-2.006292	
	10% level	-1.598068	

Source: The results of the calculations made using the software "Eviews" of ARDSK database

It is known that one of the conditions of Gauss-Markov, which demonstrates the adequacy of the econometric model while performing heteroskelastic tests of the remains by the Breusch-Pagan-Godfrey method, is the constant dispersion of residues. Otherwise, hetrosecondility occurs. In other words, the main symptom of stationary is disturbed. Our analysis shows that the dispersion of residues is stable. Therefore, the results of the test are valid at both levels of significance. This implies that heteroskedasticity is not present. That is, this test once again determines that the dispersion of the residues is closer to the constant number. After a brief interpretation of the tests on the model's adequacy analysis, the interpretation of the model can be made through the Eviews application software. According to the results shown in Table 1, the equation of regression used for the study of the impact of GDP on the type of tourism activity on the state budget tax revenues is as follows:

LOG(BVDO) = 9.31354196194 + 0.436428589456*LOG(TFUDM) (2)

As can be seen from the above econometric model, the 1% increase in the value added in tourism activity ensures that the state budget increases the tax revenues by 0.44%.

5. Conclusions

In this framework South Caucasian and Central Asian countries like Azerbaijan, Georgia, Kazakhstan, Turkmenistan, Kyrgyzstan, Tajikistan and Uzbekistan are main destinations for different types of tourists all over the world. If we look to the official statistics we may see slight changes and this is the result of priorities of the countries. Last decade shows that those countries are oil and gas rich countries. In every mentioned country, oil and gas industry are developed and they became oil and gas exporter countries. Their economies are mainly dependent on oil industry. But taking into consideration last events in the world the prices of oil are changing day by day. This fluctuation results in many losses for the country. That is why in last several years those countries pay much attention to the development of other non-oil sectors like tourism, agriculture, information technologies, automobile and etc. When looked at the world tourism dynamics, it is visible that the number of foreign tourists is increasing every year together with huge profits. So the article will be analyzing the tourism industry of South Caucas and Central Asian countries. Starting with the collapsing of Soviet Union South Caucas and Central Asian countries began to building their economy which was dependent on oil industry. But as years passed all these countries realized the importance of developing other non-oil sectors as oil is counted to run low in future years. As the consequence tourism is one of the most important sectors for sustainable development.

1. Tourism is a promotional factor of each country and is one of the most important types of economic activity for the country's economic growth.

2. The type of tourism activity, both direct and indirectly, has a multiplicative impact on other sectors of the economy, increasing the tax burden on the state budget from both tourism and other types of economic activities.

3. According to the average data base for 2005-2015, the elasticity ratio between the value added tax created by tourism activities and the state budget tax revenues is equal to 0.44. This shows that the 1% increase in the value added on tourist activity in 2005-2015 increased the state budget tax revenues by 0.44%.

4. It is advisable to incorporate other factors into the model to obtain the result more accurately.

So this is a clear explanation why tourism is important for such countries whose economies are under development and rich of natural resources available for tourism.

References

1. State Statistical Committee of the Republic of Azerbaijan (2016). Azerbaijan figures, Baku, 284 p.
2. Available online at http://www.eviews.com/home.html (accessed 20 March 2018)
3. Griffiths W. E., Carter Hill R., C.Lim G., (2011), Using EViews, For Principles of Econometrics, Third Edition, John Wiley and Sons, Inc.
4. Hasanli, Y. (2014). Statistics: Practical examples, Baku.
5. William, J. (2001). Social investment Funds: An organizational approach to improved development assistance // The World Bank Research Observer, Vol 16, no. 1, Spring.
6. Pindyck R. S., Pubinfeld D. L., (1998). Econometric Models and Econometric Forecasts, Fourth edition, Irwin/McGraw-Hill.
7. Reports of The state Statistical Committee of the Republic of Azerbaijan. Available online athttps://www.stat.gov.az/ (accessed 20 March 2018).