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Relationship between tourism sector and export: VAR analysis using Kazakhstan as case study

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- Abstract. Tourism is one of the increasingly dynamic sectors of the economy. In many countries, tourism plays an important role in the formation of gross domestic product, in activating foreign trade balance, in creating a lot of businesses and in employment. The contribution of tourism sector to the country's economy is difficult to calculate exactly because this sector is also, directly and indirectly, contributing to other sectors. Generally speaking, tourism always has a positive effect on economic growth. From the date of Kazakhstan independence declaration, tourism sector has always been given special importance. In Kazakhstan, tourism seems to have developed rapidly, especially after the declaration of independence, and is trying to gain its place in the international tourism. The aim of our work in this context is to test whether there is a relationship between tourism and export revenues and to identify the possible contributions of this sector to export-based economic growth. Thus, time series for the variables of tourism revenues and export revenues, between 1995 and 2015, were examined using the VAR model. The empirical results showed that both tourism revenues and export revenues have their impact on tourism revenues. In conclusion, tourism is a major sector of Kazakhstan's economy and it serves as a good source of foreign exchange. In this regard, investments in the aforesaid sphere of the country and the enactment of favourable policies lead to economic growth.
- Keywords: Kazakhstan, economic growth, tourism revenues, causality analysis, VAR.
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1. INTRODUCTION

Kazakhstan occupies an area of approximately 2.7 million square kilometres from the Caspian Sea in the West to China in the East, with the country's population being 16.4 million. Kazakhstan has demonstrated significant development in terms of tourism infrastructure, accommodation sector, accessibility and good relations with neighbouring countries. Kazakhstan has demonstrated some megatourism projects and has actively supported its image as an attractive, tourism-friendly and dynamically developing Eurasian country. The competitive advantage of Kazakhstan consists in tourism attractiveness of an exotic culture, recognizable image, natural environment, progressive business climate, as well as vast opportunities for sports and adventure. Educational, Scientific and Cultural Organization (UNESCO) World Heritage Sites are places of importance to our cultural heritage as described in the UNESCO World Heritage Convention, established in 1972. Kazakhstan accepted the convention on 29th April 1994, making its historical sites eligible for inclusion on the list. As at 2016, five sites in Kazakhstan were included as follow: Khoja Ahmed Yasawi Tomb, Petroglyphs within the Tamgaliye Archaeological Landscape, followed by Saryarka- Steppe and Lakes of Northern Kazakhstan. Two transnational properties, Silk Roads: the Routes Network of Chang'an-Tianshan Corridor and Western Tien–Shan (UNESCO, 2015).

Kazakhstan is recognized for its nomadic culture by the American and European tourism markets (Yessenova, 2014). The government treats tourism as one of the leading sectors in Kazakhstan's economy. Country's competitive advantage include: vast availability of labour skills, low electricity costs, modern airport infrastructure and attractiveness for foreign direct investments. Weaknesses consist of deficiency of advanced technical abilities, as well as security and peripheral sustainability (Baisakalova & Garkevenko, 2014; Kantarci et al. 2015: 193). Nowadays, tourism in Kazakhstan is considered as a perspective direction in economic development beyond petrol and it has been included into seven clusters of national priorities (Porter, 2005). The State program of tourism development was improved during the year 2010-2015. Regional tourism development programs were adopted on the meso-level. Such kinds of programs were designed to promote the implementation of tourism projects which are of international standard: Jan-Ile, Aktau city, Kapshgay.

2. LITERATURE REVIEW

In many developing countries, the export-based development strategy forms the basic source of boost and economic growth. Especially, after 1960, a large number of less developed and developing countries' changing import substituting policies started to instigate their export and preferred export-based growth as a policy. From literature review, a large number of surveys detailing the causality relationship between export and economic growth were found (Bahar, 2006, p.139). There exist similarities and differences of evidences obtained in empiric studies carried out on the subject of economic growth relationship with revenues from the tourism sector. The result showed that the economic growth of tourism was positively affected, in a general sense, the progress and increase in export led to relative growth with regard to this similarity and differences (Shan and Sun, 1998:1058–1060; Bahar, 2006, p.140). Furthermore, since economies of scale are applied, the connecting foreign exchange restrictions are reduced and the foreign exchange difficulties are lessened, positive externalities are provided in the sectors out of trade, the resources are effectively and profitably used to get competitive power, the investments are revived in traditional sectors and in the result, the export positively affects economic growth in accompaniment with increase in export of one country; (Mckinnon, 1964, pp.388-409; Durbarry, 2004, pp.389-401; Bahar, 2006, p.140). From this point, there is need to express that

theoretical reference which will cause economic growth of tourism as a strategy for development originates from literature of export and economic growth (Vanegas & Croes, 2003, pp.315-330).

If we consider the empirical studies regarding this subject in literature, the increase of investment commodity with export-based growth model were indicated, the effects of economic growth of tourism sector with import of investment commodity were inspected in the same studies.

For instance, Nowak and Sahli (2008) indicated influences of these two variances on economic growth. These influences on Turkey, Tunisia, Morocco and Egypt were reviewed. In these studies, it was extrapolated that the international tourism behaviours (actions) have significant influence on the economic growth and progress of these countries. The same study was implemented by Nowak et al (2007). Following the study on Spain, they defend the hypothesis that increases export, import of investment commodity and affects positively the economic growth by this import. Meanwhile, the hypothesis of tourism-based growth in the study was tested.

It was concluded that there had been a significant relationship between tourism export, investment commodity import and economic growth in the result of studies following the rules of Johansen Co-integration Test and Granger Causality Test.

As observed in the above mentioned studies, tourism was generally accepted as an export item. For instance, tourism was approached as export by Kareem (2008). Using panel data management of tourism export for African countries, the influence – 692 III Interdisciplinary Tourism Researches Congress - on economic growth of these countries was analysed. At the end of the empirical study, we found out that tourism export led to economic growth. The influences of the commodity export and foreign exchange revenues on economic growth of Turkey were surveyed in the period of 1980-2005, Estimation (2006). The conclusion consists in the fact that the commodity export has positively and statistically reasonable influences on the development of Turkey, but it has no significant impact on growth of tourism revenue in the study applying the Ordinary Least Squares. It was carried out by Kızılgol (2006) in other studies who tested the hypothesis on export and tourism based growth for Turkey. These hypotheses were tested by the aid of GSYİH within the period of 1963-2005, a co-integration analysis was carried out with data of export and tourism revenues, even by correction model and Granger causality test. From the study, the long-term relationship between export revenues, tourism incomes and growth was found. It was observed that these two hypotheses had been accessible to Turkey.

Using monthly data within the year 2003-2012, it was analysed by applying the time –series econometric techniques of dynamic relationships between growths, export and tourism revenues in Turkey. The causality towards the growth of export and tourism revenues and towards export from tourism revenues by this growth was discussed in a long-term period according to the test results of Granger causality. Whereas in a short-term period, there is causality from tourism revenues towards export by growth and from growth toward tourism revenues. The result of impulse –response and variance decomposition (separation) analysis also support findings from Granger causality test.

Due to these consequences, there appeared unilateral causality from economic growth towards tourism revenues (Kizilgol & Erbaykal, 2008). In this study, the causality relationship between economic growth accompanying tourism incomes, considered as one of the most important income items for Turkey was surveyed in Toda-Yamamoto management framework by using three-month tourism incomes and GDP referring to 1992:01-2006:02 periods. Contrary to studies in literature for Turkey, the results showed that the direction of causality led to increase in economic growth and higher income from tourism. By this result, there is need to attain a steady and executable growth rate of Turkey in order to get more tourism incomes.

The effect of export and tourism incomes for Turkey was analysed in this study by means of cointegration and causality analysis using annual data set with respect to export revenues and tourism incomes as well as gross national product from 1969-2009. According to the results of Johansen cointegration test, it was concluded that a long-term relationship exist between the export revenues, tourism incomes and economic growth. Moreover, the causality analysis based on error correction model showed that there existed only unilateral causality from export and tourism incomes towards economic growth.

The hypothesis of long-term growth based on export and tourism can be considered valid. It is observed that the rises in export tourism incomes increased GNP for a long period. When the calculated flexibility effect is interpreted, a rise of 1% in export revenues increases GNP nearly in amount by %0.16, a rise of %1 in tourism incomes increases GNP nearly in amount by %0.10. Export and tourism series verify theoretical expectations in positive connection with GNP series.

3. METHODOLOGY

The main aim of the study was to test long-term relationship between tourism incomes and export, and to make possible contributions for this sector relating it to export. In conclusion, the hypothesis "there is positive impact of tourism incomes on export" will be tested by this study.

In this study, it makes more difference than in other studies from the point of view of the created model approximation and the applied tests. Starting from this point, the superiority of relationship between two series will be dimensioned using the export (y) time series with those of tourism incomes (x). Statistical data from 1995-2015 regarding the said two variances were reached by databases of the Ministry of Tourism of the Republic of Azerbaijan, State Statistic Committee, Central Bank of the Republic of Azerbaijan and World Bank and all variances were expressed as natural logarithms. While measuring relationship between the aforesaid two series, VAR method will be used. Impulse – response function and variance decomposition results for approximated VAR model will be determined.

It is necessary to indicate the time series that will primarily be analysed, regression technique is used if stagnant in revealing the relationships between variances in the model. Otherwise, it may not be possible to advance a model conforming to the used time series and to make a prediction (Kutlar, 2000, 1-13.).

There is one thing that should be expressed by the stationarity; this requires the statistic priorities of time series not to be changed with time. Stated in other words, the average and variance of series have stable or long-term trend to average. (Engle & Granger, 1987, pp.987-1007; Bahar, 2006, p.140). Generally, it is clear that time series belonging to various variances related to the economy are not stable or stagnant. Stability of series is broken by virtue of trend, seasonal effects and random causes. In this sense, unit root tests are easy to comprehend whether or not the series are stable.

A great amount of macroeconomic time series contain unit roots. Unit root tests are significant in the survey of stationarity of one-time series. This is why existence of unstable regressor makes the several standard hypothesis test invalid. In other words, regression analyses in unstable series causes high test statistics and false regression. Both tourism incomes and EXPORT variances were deemed as stable trend in stationarity test.

As shown in Table 1, ADF test results applied for level grade of variances showed their state of stability. This feature is important for VAR analysis.

Table 1

Test Statistics (in grade)					
Ho. It exists as unit root					
Variances	Tests	Constant		Constant and trend	
		t-statistics	p-value	t-statistics	p-value
	ADF	-3.9219*	0.0079	-7.7220	0.07032
LN(İHR)	P-p	-7.3394*	0.0000	-1.6817	0.7214
	ADF	-3.2580*	0.0313	3.5130	0.0651
LN(TG)	P-p	-3.3409*	0.0265	-3.4755	0.0697

Results of unit root test

Note: *No hypothesis is rejected. Unit root does not exist. (at 5% significant level)

VAR Model

VAR model covers all selected economic superiorities as an integral part. If it should be said more clearly, variances or superiorities in econometric studies are simultaneously surveyed using the aforesaid model. Similar to theoretical models, a categorical decomposition of intrinsic and extrinsic variances doesn't exist. This does not allow for break model definition of constraints and suppositions put forward by economic theory. Similarly, no pre-restriction has been made on relationships between variances. Thereby, the adverse effects of presuppositions which the economists have to make in the phase of model setup are eliminated to a large extent. Statistic and econometric tests of various hypotheses put forward by economic theory were realized using numerical economic data (Ozgen & Guloglu, 2004, pp.93-114.). VAR analysis carried out without these economic constraints yielded results better than classical structural modelling. This makes fictionalizing possible or help in amending the existing relationship between two variances in the VAR model. Being both intrinsic and extrinsic, they could not be implemented (Bahar, 2006, p.143).

The conducted regression results are issued in the following equations;

$$\Delta y_{t} = \alpha_{1} + \sum_{p}^{\kappa} \beta_{1p} \Delta x_{t-p} + \sum_{p}^{\kappa} \gamma_{1p} \Delta y_{t-p} + \varepsilon_{1t}$$

$$\tag{1}$$

$$\Delta x_t = \alpha_1 + \sum_p^k \delta_{2p} \Delta y_{t-p} + \sum_p^k \beta_{2p} \Delta x_{t-p} + \varepsilon_{2t}$$
⁽²⁾

VAR model with two variances are expressed as shown above in Eq. 1 and 2. In this model: y denotes Ln(IHR), x expresses tourism incomes (Ln(TG)). P indicates lags length, \mathcal{E} shows that the average is zero, co-variances is zero with its lagging estimations and variances being constant, and random error terms are having normal distribution.

Error terms are not correlated with all intrinsic and extrinsic variances. It is impossible to encounter problems simultaneously because only the lag estimations of intrinsic variances are in the right side of the model. Every equation under these circumstances can be envisaged using the least squares method (Greene, 1993; Bahar, 2006, p.143).

The lag length is 1 following a great deal of criteria (5 criteria) as shown in Table 2 in the analysis implemented to determine the related lag length of its model.

Table 2

	у	Х
	0.805429	0.157504
Y(-1)	(0.16225)	(0.06398)
	[4.96411]	[2.46168]
	0.172479	0.414241
X(-1)	(0.46309)	(0.18262)
	[0.37245]	[2.26835]
	1.120359	8.563256
С	(5.97662)	(2.35683)
	[0.18746]	[3.63338]

Determination of the related Lag Length

Note: * this indicates a quantity of the related lag for the relevant criteria We speculate or approximate VAR (1) intending 1 lag.

4. EMPIRICAL RESULTS AND DISCUSSION

The related lag length of the approximated model was attained as one in this study. Inverse roots of AR characteristic polynomial indicated in Graphics 1 were observed in unit circle. It means that the whole model is stable.



Graphics 1. Inverse roots of characteristic polynomial

There are no autocorrelation problem according to the Autocorrelation LM Test applied for the purpose of testing whether the error terms of model are correlated (Table 3).

Table 3

Autocorrelation test

Lags	LM-Stat	Prob-Value
1	8.175	0.4653
2	10.171	0.7674
3	17.791	0.5178

Furthermore, as shown in the table, we were not faced with the problem of changing variance (heteroscedasticity) in the model due to the results of White Test applied, which tested whether it was constant for all samples of error term variance.

Table 4

White test result

VAR Residual Heteroskedasticity Test: No Cross Terms (only levels and squares)						
Date: 02/05/2018						
Sample: 1995 2015						
Include observations: 20						
Join test:						
Chi-sq		d	lf Prob		ob	
16.65453		12		0.1631		
Te d'el de la companya de						
Individual components:						
Dependent	R-squared	F(4, 15)	Prob.	Chi-sq(4)	Prob.	
res1*res1	0.185116	0.851883	0.5144	3.702324	0.4478	
res2*res2	0.267203	1.367377	0.2918	5.344055	0.2538	
res2*res1	0.185845	0.856000	0.5122	3.716891	0.4457	

Consequently, the conducted tests proved that structurally, there had not been any problem of VAR model approximated in the study.

After testing for provision of stable conditions, the Impulse-Response analysis can be implemented. Impulse – Response Functions showed the impulse or effect of one standard deviation shock detected by VAR analysis in one of the random error terms on both present and future values of endogenous shock. The following impulse-response functions resulted using the method of "Cholosky decomposition".



Graphics 2. Impulse-response functions

Explanation: While horizontal axle of graphics indicate direction and superiority of impulse of other variance given to other one-unit, the positive shock related to the relevant variance, after shocking the vertical axle, showed the last 18 months-duration. While straight lines indicate the pint estimation, the dotted / dashed lines represent the ± 2 standard deviation confidence intervals for impulses by variances.

The situation in the impulse – response graphics indicated in the Figure, which drew our attention, became balanced against the shocks of tourism incomes. It emerged both in themselves and in export within a period of 18 days. Beyond this situation, 0.297081 unit reacted with one standard deviation shocking that emerges in tourism incomes of export. This impulse reached 0.059331 unit which increased in the first three periods, then gradually, it descended but not balanced. Tourism incomes react or give an impulse on the unit of 0.116598 on one standard deviation shocking that emerges on its own. Even this impulse falls down rapidly in the first three periods, thereafter, the speed continued to decrease and became balanced. While the tourism incomes failed to impulse on one standard deviation shock, unit of 0.020111 is impulsed in the second period. This impulse demonstrated the small impulse till the fifth period and then became balanced as it gradually decreased.

Table 5a

Variance Decomposition of	f Y:		
Period	S.E.	Y	X
1	0.297081	100.0000	0.000000
2	0.383221	99.72461	0.275393
3	0.434447	99.46696	0.533038
4	0.468555	99.28475	0.715249
5	0.492389	99.16248	0.837519
6	0.509466	99.08026	0.919742
7	0.521880	99.02401	0.975988
8	0.530986	98.98480	1.015203
9	0.537707	98.95699	1.043008
10	0.542688	98.93701	1.062990
11	0.546391	98.92250	1.077503
12	0.549148	98.91187	1.088125

Results of variance decomposition

From the table above, 100% of change in the first period of export were self-originated, 99.72% from itself and 0.28% from change in tourism incomes in the second period. Approximately, 1.1% of changes originated from change in tourism incomes and 98.9% from export itself.

From the table above, 99% of change in the first period of tourism incomes originated from self and 1% from export. In the 2nd period, 85% was derived from itself and 15% from change in export. Approximately, 54% of changes were derived from change in export, while 46 percentage of change was obtained from change in tourism incomes.

In Table 6, the results of Granger causality test to define whether there is a relationship between tourism incomes and export are presented, and direction of relationship if available:

Table 5b

Variance Decomposition of X:				
Period	S.E.	Y	X	
1	0.117151	0.942744	99.05726	
2	0.136784	14.86899	85.13101	
3	0.150888	27.68080	72.31920	
4	0.161708	36.34226	63.65774	
5	0.169763	41.93857	58.06143	
6	0.175686	45.61748	54.38252	
7	0.180036	48.10364	51.89636	
8	0.183240	49.82613	50.17387	
9	0.185608	51.04338	48.95662	
10	0.187364	51.91661	48.08339	
11	0.188669	52.91661	47.44989	
12	0.189642	53.01353	46.98647	
13	0.190367	53.35462	46.64538	
14	0.190909	53.60682	46.39318	
15	0.191314	53.79393	46.20607	
16	0.191616	53.93310	46.06690	
17	0.191843	54.03680	45.96320	
18	0.192013	54.11418	45.88582	

Results of variance decomposition

Table 6

Granger Causality Test Results

Data period:1995-2015			
Lag length: 1 (for SC)			
H ₀ Hypothesis	Data	F value	Possibility
		0.13872	0.7142
It is not Granger cause of Y, X.		6.05988	0.0248*

The zero hypotheses "Tourism incomes are not Granger cause of export revenues" was adopted in Table 9. While the hypothesis "export revenues are not Granger cause" being rejected at 5% significance level, the alternative hypothesis "Export revenues are Granger cause of tourism incomes" was adopted. In a way, the export revenues influenced tourism incomes. Thereby, unilateral relationship exist between export revenues and tourism incomes (Export revenues \rightarrow Tourism incomes).

5. CONCLUSION

The Tourism sector became the focus of many countries for both provision of new work places and earning of foreign exchange. Therefore, the influence of income on Kazakhstan tourism being essential in world tourism, which was obtained from the realization of international tourism, on export in Kazakhstan was explored in this study. Using statistical data covering the years 1995-2015 in this study, it was tested whether there exists the dynamic and causal relationship between tourism incomes and export revenues.

Granger causality test applied in the study, showed a unilateral relationship between export revenues and tourism revenues. On the other hand, it has been shown from the VAR analysis that the lag estimations of export and tourism revenues influence each other to a reasonable extent. From the results of impulse-response analysis, as variances of the export and tourism revenues react against shock of a standard deviation for 18 days, a shock of one standard deviation emerging from export revenues and a shock of one standard deviation emerging from tourism incomes considerably influenced export. Separately, tourism revenues are being balanced against the shocks arising from both themselves and from exports over a period of 18 days. A 100% of the change in the first period of export according to results of variance decompositions belonging to variances in the installed VAR model originates from itself, but in the upcoming periods, 98.9% originates from itself and approximately 1.1% arise from changes in tourism revenues. In a similar manner, 99% of the changes in the first period of tourism revenues is derived from itself, but in forthcoming periods, 46% originates from self and 54% from changes in export.

Consequently, tourism is a major sector that provides an important foreign exchange inflow for Kazakhstan. In this regard, investments in the aforesaid sphere of the country lead to economic growth by the enactment of favourable policies.

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