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Institutional Quality and Tourism: Panel Causality Analysis in the Case of Mediterranean Countries

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ABSTRACT

Using panel data methods this study examines the relationship between institutional quality and tourism in the case of 12 Mediterranean countries. Six indexes of the Worldwide Governance Indicators database and a general index calculated as their average were taken into consideration as institutional quality indicators. International tourism receipts per tourist and international tourism receipts as a percentage of export were used as tourism performance indicators. In analysis, the cross-sectional dependence was examined by Pesaran (2004) CD test and in accordance with the findings of this test, first and second-generation panel unit root tests were applied. Taking into consideration of the stationarity of the variables and non-homogeneity of the parameters, the relationship between institutional quality and international tourism revenues was examined by Dumitrescu and Hurlin (2012) heterogeneous panel causality test. Findings of the causality analysis strongly supported the causality toward international tourism receipts per tourist from institutional quality variables. Causality to the international tourism receipts as a percentage of export was supported for some of the institutional quality variables.

Keywords: Institutional Quality; International Tourism Receipts; Heterogeneous Panel; Causality Analysis; Mediterranean Countries

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ÖZET

Bu çalışmada panel veri yöntemleri kullanılarak 12 Akdeniz ülkesinde kurumsal kalite ve turizm ilişkisi incelenmiştir. Kurumsal kalite göstergesi olarak Dünya Yönetişim Göstergeleri veri tabanının altı endeksi ile bunların ortalaması şeklinde hesaplanan genel bir endeks dikkate alınmıştır. Turizm sektörünün performans göstergeleri olarak ise turist başına uluslararası turizm geliri ve ihracatın yüzdesi olarak uluslararası turizm geliri değişkenleri kullanılmıştır. Analizlerde ilk olarak panel veride yatay kesit bağımlılığı Pesaran (2004) CD testi ile incelenmiş ve bu testin bulguları dikkate alınarak birinci ve ikinci nesil panel birim kök testleri uygulanmıştır. Değişkenlerin durağanlığına ve parametrelerin homojenliğine ilişkin elde edilen sonuçlar hesaba katılarak kurumsal kalite ile uluslararası turizm gelirleri arasındaki ilişki Dumitrescu ve Hurlin (2012) heterojen panel nedensellik testi çerçevesinde incelenmiştir. Nedensellik analizi bulguları, kurumsal kalite değişkenlerinden turist başına uluslararası turizm gelirlerine doğru nedensellik ilişkisini güçlü şekilde desteklemiştir. İhracatın yüzdesi olarak uluslararası turizm gelirlerine doğru nedensellik ilişkisinin varlığı ise kurumsal değişkenlerinin bir kısmı için doğrulanmıştır.

Anahtar Kelimeler: Kurumsal Kalite; Uluslararası Turizm Gelirleri; Heterojen Panel; Nedensellik Analizi; Akdeniz Ülkeleri

Introduction[1]

Institutions can be characterized as formal and informal constraints that determine the limits of interaction among people, give a certain structure to the incentives of this interaction, or define and restrict the preference sets of individuals. By creating a stable structure for the interaction between economic units, institutions contribute to the reduction of uncertainty and transaction costs and therefore affect economic performance. From this viewpoint, economies that perform differently in long periods of time are due to the existence of institutions that encourage significant productive activities or, on the contrary, institutions that develop redistribution activities (North, 2010: 9-19). Institutional quality is also expected to affect tourism, which is ultimately an economic activity, through its implications for uncertainty and transaction costs. Thereby, high institutional quality decreases uncertainty and transaction costs in the tourism sector for decision-making units, such as firms, intermediaries, suppliers, and tourists. This situation is expected to contribute to a more competitive structure, decreases costs and increases efficiency and service quality of the tourism firms, intermediaries, and suppliers. An institutional structure that ensures protection of property rights, independence of the judiciary, prompt and effective resolution of disputes, transparency in public decisions, low corruption, crime and violence is likely to create a more favourable environment for investments in the tourism sector and support the growth of the sector as in other sectors. High institutional quality is also

expected to positively affect tourism demand by reducing uncertainty and transaction costs in the decision-making process. In addition, institutional quality can support the rise in brand values of tourism firms, destinations, or countries. Therefore, tourism demand may increase for the relevant firm, destination, or country. Furthermore, brand value can be expressed as an indication of the capability of tourism firms to gain market power, that is, their ability to apply high prices. On the contrary, poor institutional quality, for example, in issues related to fundamental rights and freedoms, property rights, corruption, and security, in general, may cause a negative perception of the outlook for the country, furthermore can also adversely affect the brand values of tourism and other service firms. This situation may result in weakening of tourism demand for the country or destination. On the contrary, gaining brand value of tourism firms may also cause it to an increase in demand for them as well as to have a more inflexible demand structure. And this condition is expected to give firms the ability to apply high prices over costs or a competitive advantage (Kim et al., 2018, pp. 536-537).
On the other hand, it is also possible that international tourism flows affect the formal and informal institutional structure of the host country. Tourists coming to a country can contribute to the awareness of the problems causing ineffective economic consequences in existing formal institutions and strong motivation to change them. While informal institutions may be affected because of various economic and social exchanges that residents engage with the tourists coming to the country intensely.
The explanations above provide theoretical basis for the tourism and institutions linkage. This study focuses on this linkage by investigating the relationship between institutional quality and tourism receipts for Mediterranean countries within the scope of panel data causality analysis. Countries included in this study are Spain, France, Italy, Greece, Turkey, Israel, Egypt, Croatia, Morocco, Albania, Greek Cypriot Administration, and Tunisia. The analysis is based on data for the 2002-2017 years. It is known that the countries included in this study have high potentials in terms of both sun, sand and sea tourism and cultural tourism. Reviewing the existing panel data literature on this subject showed that, due to data limitation regarding institutional quality variables, the countries with quite different tourism potential were taken into consideration in the same studies together. It is thought that there are problems related to the generalization of the estimation results due to the fact that in countries with low tourism development potential the developments in institutional quality have limited impact on tourism performance variables, whereas in countries with high tourism development potential this effect may be stronger. Similarly, in countries where the volume of tourism flows is different, the degree to which informal institutions are affected by these flows will also differ. This study presents results that provide higher generalization possibility considering countries with high potential in terms of both sun, sand and sea tourism and cultural tourism.
In the studies examining the institutional structures of the countries and the performance of the tourism sector, it is seen, that mostly the institutional structure was taken into consideration with only one dimension. In addition, in the literature, variables such as total international tourism receipts or the number of tourists, which are not very convenient for comparison, are used as performance indicator of the tourism sectors of countries which are different in terms area, population or economy. However, this study

uses comprehensive indicators measuring the quality of institutions from different perspectives and aims to observe whether the effects of different institutional variables differ or not. In the current literature, which generally includes studies based on panel data, for the performance of the tourism sector, total international tourism receipts and the number of tourists were used which can vary widely depending on the countries. But in this study, more standard variables such as international tourism receipts per tourist and international tourism receipts as a percentage of export were considered. The effect of institutional quality indicators on the international tourism receipts per tourist is important in terms of determining the impact of the changes in institutional quality on the tourism sector performance as well as on the competitiveness of tourism firms.

The rest of this paper is organized as follow. The studies that deal with the institutions and tourism linkage were evaluated in the next section of this study. The econometric method and data set were introduced, respectively, in the third and fourth sections. The findings of the study were presented in the fifth section. Finally, the results of the study were given, and evaluations were made in the light of the findings in the sixth section.

1. Literature Review

In addition to the limited number of studies dealing with the impact of institutional variables on tourism activity, it is seen that a large portion of these studies focus on the impact of corruption on tourism. Despite the importance and interest of institutions in the operations of all economic sectors, as stated by Kim et al. (2002), only a few empirical studies have investigated the role of institutional variables in influencing international tourism. For example, Das & Dirienzo (2010), Lau & Hazari (2011), Poprawe (2015), Saha & Yap (2015), Lv & Xu (2017) and Demir & Gozgor (2017) focus on the effect of the corruption. Among them, Das & Dirienzo (2010) used Corruption Perception Index (CPI) published by Transparency International Organization and their findings for 119 countries sample indicate that a decrease in the corruption level boosts the international tourism competitiveness. Similarly, in a study based on pooled data of 197 observations, Lau & Hazari (2011) found that the effect of corruption on tourism is negative. Namely, their estimation shows that a one-unit increase in the level of corruption measured by the CPI reduces tourism demand by at least 8.6%. Using the CPI values as an indicator of the corruption, Poprawe (2015) also found that a decrease in corruption increases tourist arrivals in the panel data estimations covering over 100 countries and 1995-2010 period. Accordingly, an increase of 1 point in the CPI causes an increase of 2% to 7% in tourist arrivals. On the other hand, based on the panel least squares and the fixed effects regressions of 130 countries for the period of 1999-2009, Saha & Yap (2015) obtained that the effects of CPI-related corruption on tourism demand are not linear. In the quantile regression model covering the 1998-2011 period and 62 countries and regions Lv & Xu (2017) found that the nonlinear relationship between the CPI corruption and the tourism demand is significant in the 50th and 75th quantities.

Demir & Gozgor (2017) studied the subject for the demand of tourists to Turkey. In the study in which fixed effects, generalized moment method and Hausman-Taylor estimations were used, they concluded that the relative corruption effects tourism negatively for the period of 1996-2014 in 70 countries. Demir & Gozgor (2019) used the same estimation methods as Demir & Gozgor (2017) and addressed one dimension of the institutional structure. The estimation results in their study, in which the impact of freedom of press on tourism examined for 160 countries in the period 1995-2016, indicate that press freedom supports both the number of tourists and tourism revenues. Using the same methods, regarding the institutional structure Gozgor et al. (2019) considered the legal system and property rights variables. Their estimations for all the 152 countries, as well as 88 high-income and 64 low-income countries in the 1995-2015 period, support that the effective legal system and better protection of property rights encourages tourism.

Considering two variables related to institutions, Artan et al. (2018) examined the issue for 9 Mediterranean countries. In the analyses based on panel causality test for the period covering 1995-2015, the corruption and the democratic accountability variables were used as indicators of the institutional structure. The applied causality test supported a unidirectional causality running from these institutional variables towards tourism expenditures.

Saha et al. (2017) studied the impact of political and economic freedoms on tourism for more than 110 countries in the period covering 1995-2012 years. Unlike other studies, they considered the number of tourists and tourism income as well as their per capita values as indicators of countries' tourism performance. Their findings of panel fixed effects and generalized moment methods showed that civil and economic freedoms are positively and significantly associated with tourism.

Tang (2018) investigated the impact of governance and institutional quality on tourism for Malaysia. He examined whether tourism demand originating from 45 countries was affected by institutional variables for the period of 2005-2015 or not. In the study a dynamic panel data method was applied, and the obtained results indicate that the institutions play an important role in explaining the tourism demand. International tourists are found to be more concerned about political stability, government effectiveness, regulatory quality, the rule of law and corruption rather than freedom of expression and accountability.

Kim et al. (2018) investigated the effect of the overall quality of a country's national governance agencies, as well as the quality of some of its key features on the international tourism inflows and on the country's tourism revenues. The study based on panel data from 108 countries covering the 1996-2011 years. Kim et al. (2018) found that the regulatory quality and the rule of law are governance variables that have the greatest impact on international tourism flows. In addition, their findings show that the effect of institutional quality is stronger in countries with high income compared to developing countries.

Ghalia et al. (2019) investigated the effects of institutional quality on tourism by applying the gravity model combined with political risks, distance, and socio-economic factors. They used data for the 2005-2014 years of 131 tourism sources and 34 target countries

and found that the institutional quality and risk of conflict are driving factors in promoting the flow of tourists for both source and target countries.
Kubickova (2019) examined the issue for 7 Central American countries and for the 1995-2013 period by considering institutional variables related to economic freedom. Their results indicated that the regulatory efficiency (business freedom, labour freedom, monetary freedom) has the highest impact on tourism. The effect of the rule of law, which is composed of property rights and freedom from corruption variables, on the destination competitiveness was found to be very low.
As can be seen from the review given above, the inclusive variables regarding the institutional structure have been taken into consideration in a very limited number of studies. In addition, panel data studies are generally covering many countries where tourism sectors have very different growth potentials. To determine the effect of institutional quality, it is a case that naturally makes it difficult to achieve the purpose of the study, together with the countries where the growth potential of the tourism sectors varies so much. Because in countries where the tourism potential is weak or there are strong restrictions it can be expected that the improvements in institutional quality will not have a significant effect on the performance indicators of tourism. In addition, it has been observed that a significant share of the studies reviewed above considered the total international tourism receipts and the number of tourists as performance indicators of tourism. It can be stated that these variables are far from standard criteria for comparing the performances of tourism sectors between countries. For these reasons, both the numerous variables that measure the institutional quality and the more standard variables related to the tourism performances of the countries were taken into consideration in this study conducted for Mediterranean countries with sun sand and sea and cultural tourism potentials. The tourism related variables are international tourism receipts per tourist and international tourism receipts as a percentage of export.

2. Econometric Method

Panel data analysis primarily requires the investigation of the stationarity characteristics of variables. Appropriate panel unit root tests may differ depending on whether there is cross-sectional dependence in data. Therefore, in the study, at first, the cross-sectional dependence was examined, and proper panel unit root tests were used in line with the findings of this examination. Following this, to examine the relationships among institutional quality and international tourism revenues, the homogeneity of the parameters of the constructed model was tested. Finally, panel causality analysis was carried out considering the results of homogeneity test.

2.1. Cross-Sectional Dependence Tests

For the selection of the appropriate unit root test in the stationarity analysis of panel data varies it is required to examine the cross-sectional dependence in the data. If there is a cross-sectional dependence, the second-generation panel unit root tests that model this dependency should be applied. In panels with a time dimension larger than the cross-section dimension, cross-sectional dependence can be examined by Pesaran (2004) CD tests. Pesaran (2004) CD test statistics relied upon the average of the pairwise correlation coefficients and may be shown as follows:

$$CD = \sqrt{\frac{2}{N(N-1)}} \sum_{i=1}^{N-1} \sum_{j=i+1}^{N} \hat{\rho}_{ij} \quad (1)$$

where $\hat{\rho}_{ij}$ indicates the correlation coefficient between the error terms of i and j units in the panel. The null and alternative hypotheses can be expressed as $H_0: \rho_{ij} = 0$ and $H_1: \rho_{ij} \neq 0$. Here, the null hypothesis indicates that there is no correlation between panel units, while the alternative hypothesis indicates that the panel units are correlated. The test statistic shows χ^2 distribution with $N(N-1)/2$ degree of freedom for fixed N and $T \to \infty$.

2.2. Unit Root Tests

Before investigating the relationship among panel variables as in time series it is essential to determine the stationary characteristics of this variables. Considering the results of Pesaran (2004) CD tests, this study applied Levin at al. (LLC, 2002), Im et al. (IPS, 2003) and Pesaran (2007) CIPS tests to determine whether the series of institutional quality and tourism income variables contain unit root. The LLC and IPS tests suppose that there is no cross-sectional dependence between panel units. However, Pesaran (2007) CIPS test also models the cross-sectional dependence. The LLC test assumes that the panel units have the same autoregressive parameter, while the IPS test allows this to differ for the panel units. These two tests are not described here, as they are widely used and known in panel data studies. Pesaran (2007) CIPS test is based on cross-sectional augmented Dickey-Fuller (CADF) statistics. The basic model in the CADF test is the extended version of the equations of the ADF (Augmented Dickey and Fuller, 1981) unit root test models with lagged cross-sectional averages of the panel. In this test, the correlation between the panel units is modelled by lagged cross-sectional averages and their first differences. In error terms, if there is an autocorrelation problem in the factor structure related to the lagged cross-sectional average and to the first difference, the lags of the dependent variable and the first difference of the cross-sectional averages are added to the model. The CADF equation can be presented as follows (Pesaran, 2007: 269-283):

$$\Delta y_{it} = a_i + b_i y_{i,t-1} + c_i \bar{y}_{t-1} + \sum_{j=0}^{p} d_{ij} \Delta \bar{y}_{t-j} + \sum_{j=1}^{p} \delta_{ij} \Delta y_{i,t-j} + e_{it} \quad (2)$$

Here $\bar{y}_t$ is the cross-section mean of the observations. Stationary analysis can be done for each cross-section in the panel according to the t statistics related to the b_i coefficients. For the whole panel the $CIPS$ statistic is calculated as the average of these t statistics ($\frac{1}{N}\sum_{i=1}^{N} CADF_i$). The test hypotheses can be expressed as $H_0: b_i = 0$ and $H_1: b_i < 0\ i = 1, 2, \dots, N_1;\ b_i = 0\ i = N_1 + 1, N_1 + 2, \dots, N$. Here, the null hypothesis indicates that the data for each cross-section in the panel contains a unit root, while the alternative hypothesis indicates that the data does not contain a unit root for at least one panel unit (Ağazade, 2016, p. 135).

2.3. Heterogeneity of the Coefficients

Implementing the causality analysis also requires examining whether the parameters of the constructed models are homogeneous according to the panel units. The appropriate method should be preferred according to the findings of the homogeneity analysis. If the model parameters are homogeneous, the traditional Granger (1969) causality test can be applied. In case of heterogeneity of the parameters, causality analysis should be done by employing the heterogeneous panel causality tests. In this study, the homogeneity of the parameters was tested by Swamy (1970) S test. Swami S test statistics can be expressed with the following equation (Tatoğlu, 2017, p. 247):

$$\hat{S} = \sum_{i=1}^{N} (\hat{\beta}_i - \bar{\beta}^*)' \hat{V}_i^{-1} (\hat{\beta}_i - \bar{\beta}^*) \quad (3)$$

Here, $\hat{\beta}_i$ is the OLS estimator of the panel units, $\bar{\beta}^*$ is the weighted within group estimator and $\hat{V}_i$ is the difference between the variances of these two parameters. Swamy (1970) S test statistics have χ^2 distribution with $K(N - 1)$ degree of freedom. The null hypothesis of the test states that the parameters of the cross-sections are homogeneous: $H_0: \beta_i = \beta$.

2.4. Dumitrescu & Hurlin (2012) Panel Causality Test

Considering the results of the Swamy (1970) S test indicating the heterogeneity of the parameters, this study applied Dumitrescu & Hurlin (2012) heterogeneous panel causality test. The basic models of this test are the equations of the traditional Granger (1969) causality test, in which correction parameters are added, considering heterogeneity of the panel units. The Dumitrescu & Hurlin (2012) approach for causality analysis can be expressed as one of the equations of the Panel Vector Autoregressive (PVAR) model as follows (Dumitrescu & Hurlin, 2012: 1451):

$$y_{it} = \alpha_i + \sum_{k=1}^{K} \gamma_i^{(k)} y_{i,t-k} + \sum_{k=1}^{K} \beta_i^{(k)} x_{i,t-k} + \varepsilon_{it} \quad (4)$$

Here, *x* and *y* are the stationary variables. k is the lag length and the same for all cross-sections. $\gamma_i^{(k)}$is the autoregressive parameter and $\beta_i^{(k)}$ is the slope parameters. These parameters can be different for each unit of the panel. The null hypothesis and alternative hypothesis can be defined as $H_0: \beta_i = 0\ \forall i = 1, \dots, N$ and $H_1: \beta_i = 0\ \forall i =$

$1, \dots, N_1$; $\beta_i \neq 0 \quad \forall i = N_1 + 1, N_1 + 2, \dots, N$. The proposed statistic by Dumitrescu and Hurlin (2012) to test the causality are based on the average of the Wald statistics ($W_{i,t}$). This average statistic can be expressed as follows:

$$W_{N,T}^{Hnc} = \frac{1}{N}\sum_{i=1}^{N} W_{i,t} \quad (5)$$

Under the null hypothesis of non-causality, individual $W_{i,t}$ statistics converge to a χ^2 distribution with K degrees of freedom. $W_{N,T}^{Hnc}$ statistic has an asymptotic distribution under the null hypothesis of non-causality. For the $T, N \to \infty$ and for fixed T sample the standardised test statistics are as follow:

$$Z_{N,T}^{Hnc} = \sqrt{\frac{N}{2K}}\left(W_{N,T}^{Hnc} - K\right) \to N(0,1) \quad (6)$$

$$Z_{N}^{Hnc} = \sqrt{\frac{N}{2K}\, x\, \frac{(T-2K-5}{T-K-}}\, x\left[\left(\frac{T-2K-3}{T+K-2}\right) W_{N,T}^{Hnc} - K\right] \to N(0,1) \quad (7)$$

3. Data and Variables

To examine the relationship among the institutional quality and the international tourism revenues this paper uses the data from Spain, France, Italy, Greece, Turkey, Israel, Egypt, Croatia, Morocco, Albania, Greek Cypriot Administration, and Tunisia. Data period covers the 2002-2017 years. Since the data related to the institutional quality indicators are not available for consecutive years before 2002, the research period was limited to the specified years. In studies on institutional quality, it is observed that indicators that measure only a certain dimension of institutional quality, such as property rights, corruption, or the rule of law, were taken into consideration. In this study, six instructional quality indices, which evaluate the institutional structures of countries from different aspects and a general institutional index calculated as their average were used. Data on institutions were taken from the World Bank Global Governance Indicators database. The six indexes used as indicators of the institutional structure are:

1. Control of corruption,
2. Government effectiveness,
3. Political stability and absence of violence / terrorism,
4. Regulatory quality,
5. The rule of law,
6. Voice and accountability.

These indexes of institutional quality indicators can take values between -2.5 and 2.5 and the low index value indicates that the country situation is low in terms of the relevant institutional indicator. The high value of the index indicates that the country is in good condition in terms of the relevant indicator.

As indicators of tourism revenues this study uses the international tourism receipts per tourist (in US dollars) and the ratio of international tourism receipts to exports. Data on tourism revenues are taken from the World Bank World Development Indicators database.

The variables, the abbreviations used in the following sections and data resources are given in the Table1.

Table 1: Variables, Description and Sources

Abbreviations	Variables	Value	Resource
I	Institutions	-2.5–2.5	Average of control of corruption, government effectiveness, political stability and absence of violence / terrorism, regulatory quality, the rule of law, and voice and accountability
I1	Control of corruption	-2.5–2.5	World Bank Global Governance Indicators
I2	Government effectiveness	-2.5–2.5	World Bank Global Governance Indicators
I3	Political stability and absence of violence / terrorism	-2.5–2.5	World Bank Global Governance Indicators
I4	Regulatory quality	-2.5–2.5	World Bank Global Governance Indicators
I5	The rule of law	-2.5–2.5	World Bank Global Governance Indicators
I6	Voice and accountability	-2.5–2.5	World Bank Global Governance Indicators
TR1	International tourism receipts per tourist	US dollars in logarithm	World Bank World Development Indicators
TR2	International tourism receipts as a percentage of export	%	World Bank World Development Indicators

Mean values of these variables by country are given in Table 2. These values may provide basic information on the country's performance in the relevant indicator, but do not on the direction of change. For this reason, additional explanation is given here on the change direction of institutional and tourism performances. As given in the table, although there are differences according to the considered institutional indicator, Spain, France, and Greek Cypriot Administration appear to be the countries with the highest institutional variables. Whereas, the countries with the lowest mean values of institutional indicators are Egypt, Morocco, and Albania. When it comes to tourism performance variables, Israel, Greek Cypriot Administration, and Spain have the highest mean values if TR1 is considered, and Albania, Morocco, and Greece if TR2 is considered. The countries with the lowest mean values for tourism performance indicators are Tunisia and Israel, respectively. The direction of change in institutional and tourism variables by country during the research period are also important for understanding the differences among countries. Institutional variables of Israel, Croatia and Albania generally have increasing trends, while other countries have decreasing. Rather than a certain trend, on the other hand, for most countries TR1 increased early in the research

period and then decreased. Whereas, TR2 showed decreasing trend for all countries except Israel.

Table 2: Country Mean Values

	I	I1	I2	I3	I4	I5	I6	TR1	TR2
Spain	0.928	1.025	1.192	0.006	1.112	1.111	1.121	6.848	15.729
France	1.198	1.382	1.509	0.435	1.185	1.435	1.241	6.608	8.508
Italy	0.588	0.239	0.477	0.462	0.869	0.458	1.023	6.806	7.713
Greece	0.487	0.103	0.534	0.149	0.669	0.591	0.876	6.778	25.939
Turkey	-0.138	-0.059	0.214	-1.062	0.253	0.024	-0.197	6.818	16.987
Israel	0.622	0.930	1.267	-1.222	1.119	0.959	0.677	7.658	6.369
Egypt	-0.684	-0.628	-0.529	-1.026	-0.508	-0.297	-1.113	6.777	21.259
Croatia	0.406	0.135	0.544	0.606	0.464	0.163	0.525	6.790	40.144
Morocco	-0.308	-0.283	-0.133	-0.418	-0.180	-0.170	-0.666	6.787	28.900
Albania	-0.236	-0.642	-0.297	-0.081	0.052	-0.539	0.094	6.693	55.821
Greek Cypriot	1.015	1.032	1.274	0.514	1.200	1.037	1.033	6.981	24.913
Tunisia	-0.167	-0.088	0.206	-0.303	-0.155	-0.021	-0.639	6.000	15.108

4. Empirical Findings

As stated in the previous section this study began to empirical analysis by examining the cross-sectional dependency. The results of Pesaran (2004) CD tests are given in Table 3.

Table 3: Cross-Sectional Dependence

Test	I	I1	I2	I3	I4	I5	I6	TR1	TR2
Pesaran CD	0.5036	0.2149	-0.9139	-1.0007	6.6392[a]	-0.4637	0.6434	11.1178[a]	14.1217[a]
Correlation	0.015	0.007	-0.028	-0.031	0.204	-0.014	0.020	0.342	0.435

Note: [a] indicates that the relevant statistic is significant at 1% level.

As seen from the table, for I4, TR1 and TR2 the null of cross-sectional independence is rejected by Pesaran CD statistics 1% significance level. However, for the remaining variables the null hypothesis could not be rejected, suggesting the lack of cross-sectional dependence. In the last line of the table, there are average correlation coefficient between the units for each variable. Accordingly, there is approximately 20.4% positive correlation between countries for the institutional indicator of I4. The average correlation coefficients are found to be 34.2% and 43.5% for TR1 and TR2, respectively. As it was figured out, Pesaran (2004) CD statistics supported that there is cross-sectional dependence between the panel units for I4, TR1 and TR2, and no cross-sectional dependence for the other variables in the table. For this reason, in the study the stationarity characteristics of the variables were examined by using the first and the second-generation panel unit root tests. The results of these tests are given in Table 4.

Table 4: Unit Root Test Results

Test		I	I1	I2	I3	I4	I5	I6	TR1	TR2
CIPS	None	-1.132	-1.789[b]	-1.419	-1.196	-1.279	-1.168	-1.012	-1.845[a]	-1.654[b]
	Constant	-2.174[c]	-1.929	-1.619	-2.806[a]	-2.580[a]	-1.877	-1.793	-2.396[b]	-2.361[b]
	Trend	-2.357	-2.438	-2.151	-2.774[b]	-4.196[a]	-2.210	-2.674[c]	-2.562	-2.373
LLC	None	-2.537[a]	-2.784[a]	-2.268[b]	-1.241	-1.587[c]	-1.748[b]	-2.513[a]	1.112	-4.002[a]
	Constant	-4.080[a]	-2.253[b]	-2.887[a]	-2.736[a]	-0.492	-0.841	-0.549	-1.619[c]	-4.304[a]
	Trend	-2.622[a]	-3.689[a]	-2.412[a]	-4.548[a]	-3.044[a]	-2.504[a]	-6.008[a]	-3.587[a]	-4.973[a]
IPS	Constant	-0.433	-2.604[a]	-1.513[c]	-2.478[a]	0.176	-0.279	-0.338	-1.686[b]	-2.169[b]
	Trend	-1.389[c]	-0.432	-1.477[c]	-3.461	-0.692	-2.203[b]	-2.556[a]	-1.144	-2.329[b]

Note: [a], [b] and [c] indicate that the relevant statistic is significant at %1, %5 and %10, respectively.

As stated in Table 3 Pesaran (2004) CD statistics indicated that there is no cross-sectional dependence for the I, I1, I2, I3, I5 and I6, and there is cross-section dependence for the I4, TR1 and TR2. According to the results of Table 4, the statistics of LLC and IPS unit root tests which assume that there is no cross-sectional dependence provide sufficient support that the I, I1, I2, I3, I5 and I6 are stationary. Assuming cross-sectional dependence, the CIPS test supports that I4, TR1 and TR2 variables are stationary. Considering these findings that all variables are stationary at their levels, the relationship between institutional variables and tourism revenues was examined within the framework of causality analysis.

Before the causality analysis, we applied Swamy (1970) S test to examine whether the parameters of the model are homogeneous or not. Firstly, for this purpose the lag lengths of PVAR model were determined. All three of Akaike, Schwarz and Hannan-Quinn information criteria indicated 1 optimal lag in all models except I2 and TR2 and I4 and TR2, among the models expressed in Table 5 and Table 6. In the model formed for I2 and TR2, Schwarz and Hannan-Quinn suggested 1 optimal lag and Akaike suggested 2 optimal lags. In the model formed for I4 and TR2, the optimal lag length was 1 according to Schwarz, and 2 according to Akaike and Hannan-Quinn. As can be seen from Table 5 and Table 6, Swamy (1970) S test χ^2 statistics were found to be significant in all models formed for both tourism revenues variables and institutional indicators, and the zero hypothesis that the model parameters were homogeneous was rejected for all models. This result supports that the parameters of the models formed for both directions of causality are not homogeneous compared to the panel units. Considering the non-homogeneity of the parameters we applied the Dumitrescu & Hurlin (2012) heterogeneous panel causality test and the findings of this test are also given in Table 5 and Table 6. Table 5 reports the findings of the causality analysis from institutional variables to tourism revenues.

Table 5: Causality from Institutional Structure to International Tourism Revenues

Model	Swamy χ^2	$W_{N,T}^{Hnc}$	$Z_{N,T}^{Hnc}$	Z_{N}^{Hnc}	Lags of Institutional Variables
I→TR1	103.65[a]	3.715	6.650[a]	4.378[a]	Italy, Greece, and Tunisia (+) Croatia and Albania (-)
I1→TR1	90.65[a]	2.796	4.399[a]	2.778[a]	Spain, Italy, and Greece (+) Albania (-)
I2→TR1	100.61[a]	3.463	6.032[a]	3.939[a]	Italy, Greece, Egypt, and Tunisia (+) Croatia, Morocco, and Albania (-)
I3→TR1	93.34[a]	2.647	4.033[a]	2.518[b]	Greece and Tunisia (+) Spain and Albania (-)
I4→TR1	129.07[a]	5.331	10.608[a]	7.190[a]	Spain, Italy, Greece, Israel, Egypt, and Tunisia (+) Morocco, Albania (-)
I5→TR1	115.07[a]	4.353	8.214[a]	5.489[a]	Spain, Italy, and Greece (+) Croatia, Albania (-)
I6→TR1	79.83[a]	1.781	1.913[c]	1.011	Greece (+) Tunisia (-)
I→TR2	119.64[a]	4.242	7.941[a]	5.295[a]	Spain, Italy, and Egypt (+) Croatia (-)
I1→TR2	60.58[a]	0.513	-1.192	-1.195	
I2→TR2	110.21[a]	3.642	6.470[a]	4.250[a]	Spain and Egypt (+) Croatia, Morocco
I3→TR2	80.24[a]	1.843	2.064[b]	1.119	Israel and Egypt (+)
I4→TR2	85.93[a]	2.386	3.394[a]	2.064[b]	Israel and Egypt (+) Morocco (-)
I5→TR2	128.53[a]	4.501	8.576[a]	5.746[a]	Italy and Egypt (+) Croatia (-)
I6→TR2	63.71[a]	0.754	-0.604	-0.777	Israel (+)

Note: [a], [b] and [c] indicate that the relevant statistic is significant at %1, %5 and %10, respectively.

According to the findings given in the table, the null hypothesis of non-causality towards TR1 variable from all other institutional variables except I6, was rejected by both of $Z_{N,T}^{Hnc}$ and Z_{N}^{Hnc} statistics. The existence of a causality relationship from the I6 variable to the TR1 variable was supported by $Z_{N,T}^{Hnc}$ statistics and only at 10% significance level. As can be seen from the table, the causality relationship towards the TR2 variable is strongly supported in models in which the institutional structure is marked by I, I2, I4 and I5. Also, as seen in the last column of the table, the coefficients of the lagged institutional structure variables of Spain, Italy, Greece, Israel, Egypt and Tunisia were found positive and statistically significant in the PVAR models predicted for TR1 indicating the causality relationship for these individual countries. Whereas, the lagged coefficients of Croatia, Morocco, and Albania, which are also statistically significant, were negative. In the PVAR models predicted for TR2, the coefficients of lagged institutional structure variables are positive for Spain, Italy, Israel, and Egypt, while negative for Croatia and Morocco.

The Dumitrescu & Hurlin (2012) heterogeneous panel causality test results related to the causal relationship from the tourism revenues to the institutional structure are given in Table 6.

Table 6: Causality from International Tourism Revenues to Institutional Structure

Model	Swamy χ^2	$W_{N,T}^{Hnc}$	$Z_{N,T}^{Hnc}$	Z_N^{Hnc}	Lags of Tourism Revenues
TR1→I	78.40[a]	2.790	-0.297	-0.862	Turkey (-)
TR1→I1	92.03[a]	1.480	1.177	0.488	Croatia (-)
TR1→I2	56.48[a]	1.271	0.663	0.123	Croatia (-)
TR1→I3	124.88[a]	1.180	0.441	-0.035	Italy (+)
TR1→I4	55.62[a]	1.403	0.987	0.353	Morocco (+) France (-)
TR1→I5	89.42[a]	1.798	1.956[c]	1.042	Greek Cypriot (+) Greece (-)
TR1→I6	134.21[a]	2.074	2.631[a]	1.522	Greece, Morocco (-)
TR2→I	94.89[a]	2.087	2.663[a]	1.545	France (+) Morocco (-)
TR2→I1	90.91[a]	1.191	0.468	-0.016	
TR2→I2	70.69[a]	2.032	2.527[b]	1.448	France and Israel (+)
TR2→I3	139.89[a]	2.523	3.730[a]	2.303[b]	Tunisia (+) Morocco and Albania (-)
TR2→I4	73.29[a]	2.623	3.976[a]	2.478[b]	Spain, France, Italy, and Tunisia (+)
TR2→I5	86.41[a]	1.293	0.718	0.162	Greece (+)
TR2→I6	124.99[a]	2.877	4.597[a]	2.919[a]	Greece (+) Tunisia (-)

Note: [a], [b] and [c] indicate that the relevant statistic is significant at %1, %5 and %10, respectively.

As can be seen from the table, Dumitrescu & Hurlin (2012) test results provide weaker support for the existence of causality relationship from tourism revenues to institutional structure. Namely the existence of a causal relationship from TR1 towards institutional variables was supported only for I5 and I6 and only by the $Z_{N,T}^{Hnc}$ statistic. And from the TR2 tourism income indicator, the existence of a causality was supported by both the $Z_{N,T}^{Hnc}$ and Z_N^{Hnc} statistics for the I3, I4 and I6 institutional structure variables, and the by $Z_{N,T}^{Hnc}$ statistics for the I and I2 institutional structure variables.

In the PVAR models predicted for the institutional structure variables, only the causal relationship between TR2 and I3, I4 and I6 was strongly supported. It was observed that the coefficients of the lagged TR2 variable, which were found to be significant in the models in which the causality relationship from the TR2 tourism income variable to the I3, I4 and I6 institutional structure variables was evaluated, were positive for Spain, France, Italy and Greece, negative for Morocco and Albania and mixed for Tunisia.

Conclusions

Improving institutional quality can affect international tourism revenues through reducing uncertainty and transaction costs and increasing tourism brand values. On the other hand, tourist inflows may cause a stronger motivation to improve institutional quality in the country. In this study, considering the different indicators related to institutional quality, the relationship between institutional quality and international tourism revenues was examined within the framework of causality approach in the example of Mediterranean countries by using panel data methods. The indicators related to the institutional structure used in the study consist of the control of corruption, the government effectiveness, political stability and the absence of violence / terrorism, the regulation quality, the rule of law, freedom of expression and accountability, and the overall institutional structure index calculated as the average of these six indicators. For tourism sector performance two different variables were used. These are international tourism receipts per tourist and international tourism receipts as a percentage of export.

To guarantee the accuracy of the findings reached in this paper the cross-sectional dependence in data and stationary characteristics of the variables were investigated before causality analysis. The Pesaran (2004) CD tests showed that there exists cross-sectional dependence between the panel units for the institutional variable of regulatory quality and for both tourism revenue variables. The average correlation between the countries included in this study for regulatory quality was 20.4%, and for the tourism receipts per tourist and tourism receipts as a percentage of export were 34.2% and 43.5%, respectively. The CD test supported the cross-section independence for the control of corruption, government effectiveness, political stability and the absence of violence / terrorism, the rule of law and freedom of expression and accountability. In line with the findings obtained regarding cross-sectional dependence, the stationarity characteristics of the variables were examined by both first- and second-generation panel unit root tests. The results of the panel unit root tests showed that the variables were stationary at their levels. For this reason, causality analysis was done by using the variables in their levels. Considering the Swamy (1970) S test results that the parameters of the models constructed for causality analysis are heterogeneous, this study applied Dumitrescu & Hurlin (2012) heterogeneous causality test. Dumitrescu & Hurlin (2012) test strongly supported the existence of a causal relationship towards the international tourism receipts per tourist from six institutional quality variables except for freedom of expression and accountability for the whole panel. These results are similar to the Tang's (2018) results showing that tourists are more concerned about other institutional variables than voice and accountability. When the tourism income variable is measured by tourism receipts as a percentage of export, it is seen that the causality relationship from institutional quality to international tourism revenues is valid for the government effectiveness, regulatory quality, rule of law and general institutional quality index. These results for international tourism receipts as a percentage of export are similar to the results of the Tang (2018) study that tourists' concerns about freedom of expression and accountability in the country are low and

their concerns about political stability, government effectiveness, regulatory quality and the rule of law are relatively high. Although the individual effects of the countries differ in PVAR models formed for international tourism revenues, findings supporting the effects of institutional indicators in different models were positive for Spain, Italy, Greece, Israel, Egypt, and Tunisia and negative for Croatia, Morocco, and Albania. When looking at the individual effects of institutional quality indicators of the countries, it can be stated that findings of these study support the results of Kim et al. (2018). Their results indicate that the effect of institutional quality on tourism is stronger in developed countries compared to developing countries.

Dumitrescu & Hurlin (2012) test supported the existence of causality from tourism income variables to institutional quality variables in models estimated for tourism receipts as a percentage of export and absence of political stability and violence/terrorism, regulatory quality and freedom of expression and accountability. Considering the individual effects of the countries in the PVAR models constructed for these institutional indicators, the increase in tourism receipts contributed to the institutional quality improvement in Spain, France, Italy, and Greece, to the deterioration in Morocco and Albania, and finally have different directional effects in Tunisia according to the employed institutional quality indicator.

Finally, the obtained results strongly support the unidirectional causality relationship from institutional quality variables to tourism in case the international tourism receipts per tourist is considered as an indicator of the tourism performance of the countries. This result is in line with the results of Artan et al. (2018), which corruption and accountability were considered as institutional quality indicators. The estimations regarding the individual effects of the countries also show that the impact of institutional quality variables on tourism is mostly positive. These results indicate that the improvement in institutional quality in general causes favourable consequence in tourism performances of the Mediterranean countries. In addition, it is understood that the institutional quality is effective in increasing the market power in terms of applying high prices and in gaining higher brand value. The policy implications for these findings are that countries should pay more attention to improving their institutional quality in order to increase tourism receipts per tourist, which can be considered as an indicator of total tourism receipts as well as the competitiveness of tourism companies. Improvement of the institutional quality causes the related country to take a higher share in the world tourism market in terms of total tourism receipts or number of tourists, but it is also important in terms of increasing the competitiveness of the sector and thus producing higher added value.

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